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]	рН	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.
внз	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.
ВН5	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.
ВН7	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]	рН	Conductivity [µS/cm@25C]	Dissolved Oxygen [%]	Sampling Method	Comments
	Oct 2003 - 1st Round (BASELINE EVENT)		4.9	7.2			-					-	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.
BH8	Apr 2007 - Third Round	-	4.88	6.39	6.2	6.155		-				-	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.
	Oct 2003 - 1st Round (BASELINE EVENT)	-	1.9	2.2			-	-		-		-	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.
ВН9	Sep 2012 - Fourth Round	-			5.9	5.775		-				-	-	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.
	Oct 2003 - 1st Round (BASELINE EVENT)		5	7			-	-		-		-	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.
BH10	Apr 2007 - Third Round		4.39	7.17	5.94	5.835		-				-	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.
	Oct 2003 - 1st Round (BASELINE EVENT)	-	4	6			-	-		-		-	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.
BH104B	Apr 2007 - Third Round	-	4.12	5.89	5.81	5.715						-	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.
	Oct 2003 - 1st Round (BASELINE EVENT)	-	4.500	6			-	-		-		-	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	-					-					-	-	No information reported by CRA.
BH109	Apr 2007 - Third Round		4.400	6.18	6.28	6.14	-						-	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
	Oct 2003 - 1st Round (BASELINE EVENT)	-	4.600	5.6			-	-		-		-	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.
BH110	Apr 2007 - Third Round	-	4.650	5.49	6.3	6.24		-		-		-	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]	рН	Conductivity [µS/cm@25C]	Dissolved Oxygen [%]	Sampling Method	Comments
	Oct 2003 - 1st Round (BASELINE EVENT)	-	4.900	7.6 (*)			-	-				-	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
BH111	Dec 2005 - 2nd Round	-	5.090	7.53	6.45	6.41		-				-	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	0.43	0.41						-	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.
ľ	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.
	Oct 2003 - 1st Round (BASELINE EVENT)		Dry	3								-	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
ľ	Dec 2005 - 2nd Round		1.19											No information reported by CRA.
BH112	Apr 2007 - Third Round		Dry	2.67	6.35	6.305		-				-	-	Well dry. Sample not collected.
ľ	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

					Location ID	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207	BH207	BH208A	BH208A	BH209	BH209	BH210	BH210	BH211	BH211	BH212	BH212	BH213	BH213	BH214	BH2A	BH2A	ВНЗА	BH4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
					Sample Depth	n 0.7	1.9-2	0.8	0.5	1.3	2.2	-	2.5	4.4	0.7	2625	0.0	44	0.5	2724	0.8	2.2-2.8	0.7	2.2	0.6	1025	0.6	1.7-2	0.05	0.5	4.5	0.5	0.0	254	0.5	2.5-3	0.7	2.5-3	0.5	225	0.5	2222
								0.8	0.5	1.3	3.3		2.5	1.1	0.7	2.0-3.3	0.8	1.1	0.5	2.7=3.4	0.8	2.2-2.0	0.7	2.2	0.0	1.0-2.3	0.6	1.7-2	0.65	0.5	1.3	0.5	0.9	3.3*4	0.5	2.5-3	0.7	2.5*5	0.5	3-3.3	0.5	2.2-3.3
					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	26/08/2015 2	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	27/08/201	5 28/08/2015	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015
																																								4 /		
			GAC HH (	GAC HH	GAC HH RE																																			4 /		
Chemical	Gr Chemical Name	Unit	EQL OM/IND S	A RES+PL S																																				4 /		4
			ND 1.45-	AND 1.45-	PL SAND 1.4	1																																		4 /		
			3.48%TOC	3.48%TOC	5-3.48%TOC																																			4 /		4
Metals	Areanic	mg/kg	0.6 640#5	27#5	40#5	15	14.5	9.55	12.1	10.9	30	13.7	21.8	10.0	17.8	163	16.6	16.6	12.7	13.4	23.6	20.2	11.8	10.5	10.2	18.8	10.1	10.1	11.8	14.5	11.6	18.0	1/1.2	21.4	10.1	22.4	94	16.4	13.7	14.7	16.5	15.5
iviotais	Cadmium	mg/kg	0.02 190#5	11#5	85#5	0.35	0.255	0.33	0.20	0.31	0.310	0.414	0.263	0.324	0.600	0.377	0.377	0.328	0.378	0.308	0.449	0.341	0.347	0.301	1.44	0.303	0.547	0.380	0.265	0.280	0.210	0.475	0.603	0.385	1 13	0.533	2.03	0.325	0.344	0.338	0.395	0.378
	Charming (III - V/I)		0.0	11#0	03#3	17.2	15.4	10.4	31.2	17.4	15.2	20	20.6	21.9	15.9	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	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	mg/kg	1.4 68000#5	2400#5	7100#5	22.6	2 33	6.09	35.3	8 03	3.08	25.8	4.42	12.8	48	6.14	66.5	8 23	54.3	3 25	31.2	5.20	9.01	6.47	13.0	4.3	20.6	6.42	10.8	41	9.74	10.0	31.4	6.36	28	3.56	82.3	4.42	80.7	5.08	8.36	12
	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	30.4	264	8 15	251	10.7	140	8.4	32.7	5.73	44.5	7.8	271	5.02	2910	6.91	38.0	101	16.0	178	300	8.03	85.7	9.05	468	5.77	41.4	6.80	12.4	23.7
	Mercury	ma/ka	0.14 1100#5	40#5	56#5	0.289	<0.14	<0.14	<0.14	<0.14	<0.00	0.162	-0.14	<0.14	0.487	c0.13	0.608	<0.14	-0.14	<0.14	<0.14	<0.14	0.152	-0.14	<0.14	c0 14	<0.14	<0.14	<0.14	0.493	c0.14	0.151	<0.14	<0.03	1.9	<0.14	0.702	<0.14	<0.14	<0.03	<0.14	<0.14
	Nickel	ma/ka	0.2 980#5	130#5	180#5	17.9	14.8	12.2	38.2	16.5	21.8	17.4	20.11	22.4	18	18.5	19.3	17.1	18.7	20.14	24.5	21.2	16.5	22.6	6.81	19.2	14.7	22	16.6	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	mg/kg	1 12000#5	250#5	430#5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<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	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	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)	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	<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	<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
Inorganics		mg/kg	48			<48	<48	<48	8120	4280	2040	3750	883	573	<48	<48	<48	<48	<48	<48	481	<48	545	88.2	1090	49.6	7440	80.7	<48	<48	<48	579	841	63.9	356	95.9	601	74.7	775	80.9	212	1040
	Moisture	%				14	3.8	9.9	11	16	7.2	8.8	5.2	12	14	7.7	17	11	9.4	6	13	6.9	12	8.9	7	5.7	17	6.5	8	15	15	6.3	7.1	4.4	7	5.8	28	4.8	17	9.5	7.3	14
	Ammoniacal Nitrogen as NH4	ma/ka	15			<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	45.6	<15	<15	<15	18.2	<15	<15	<15	<15	<15	<15	<15	23.8	<15	27.7	<15	35.3	15.8	18.4	18.4	<15	71.4
	Easily Liberated Sulphide (Moisture	(mg/kg	15			<15	<15	<15	20	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	40.4	<15	<15	252
	pH (Lab)	pH_Units	1			9.32	8.74	11	11.7	9.55	8.43	11.3	9.88	8.95	9	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	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
	<u> </u>																																									

GAC: Generic Assessment Criteria

(blank): No assessment criteria availab

-: 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)

AB Inbev tag Brewery, Mortlake OM Project 47075502

#### Table 5 - TPH, BTEX, Oxygenates, Chlorinated Hydrocarbons, PAHs, PCBs, Hydrogenated Benzenes, Hydrogenated Hydrocarbons, Solvents, Organics, Other and Asbestos Concentrations in Soils

					Locati	ion ID BH201	IA BH201	11A BH202	A BH203A	BH204	BH204 3.3	BH205	BH205	BH206	BH207	BH207 2.6-3.5	BH208A B	1.1	BH209 I	BH209 2.7-3.4	BH210 E	3H210 2.2-2.8	BH211 BH	1211 BH:	212 BH:	212 BH213 2.5 0.6	BH213	BH214 0.85	BH2A 0.5	BH2A 1.5	BH3A 0.5	BH4A 0.9	BH4A 3.5-4	BH5A 0.5	BH5A 2.5-3	BH7A 0.7	BH7A 2.5-3	BH8A 0.5	BH8A 3-3.5	BH9A BH9A 0.5 2.2-3.3
					Sample	Date 25/08/20	015 25/08/2	2015 25/08/20	20/08/201	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	25/08/2015	25/08/2015 2	5/08/2015 25	/08/2015 2	5/08/2015 25	5/08/2015 2	26/08/2015 26	08/2015 26	5/08/2015 26/0	8/2015 27/08	/2015 27/08	2015 27/08/201	5 27/08/2015	25/08/2015	25/08/2015 2	25/08/2015	28/08/2015 27	/08/2015 27/	/08/2015 2	8/08/2015 2	28/08/2015 27	7/08/2015 2	7/08/2015 2	6/08/2015 26	08/2015 26	/08/2015 26/08/2015
Chemical C	ir Chemical Name	Unit	EQL OM/IND ND_1. 3.48%	SA RES+PL 45- AND_1.4	H_ GAC_HH S S- I5- PL_SANI DC 5-3.48%	D_1.4																																		
TPH	GRO >C5-C12	mg/kg	0.04			<0.04	4 <0.04	44 <0.044	4 <0.044	<0.044	<0.044	0.243	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	:0.044	5.16 <0	.044 <0.0	044 <0.0	044 <0.044	<0.044	0.05	<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 >C6-C8 Aliphatics	mg/kg mg/kg	0.01 3300 0.01 9200	#5 34#5 #5 93#5	34#5 93#5	5 <0.01 5 <0.01	< 0.0	01 <0.01	< 0.01	<0.01	< 0.01	0.0129	<0.01	< 0.01		< 0.01	0.0312	< 0.01		<0.01		< 0.01	0.0342 <0	0.01 <0.	.01 <0	01 <0.01 01 <0.01	< 0.01	0.012	< 0.01	<0.01	<0.01	<0.01	< 0.01		< 0.01	< 0.01	<0.01	0.0145	<0.01	<0.01 <0.01 <0.01 0.0197
	>C10-C12 Aliphatics	mg/kg	0.01 2500 0.01 12000	J#5 13U#5	130#		< 0.0	01 <0.01	< 0.01	< 0.01		0.0939		< 0.01			<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	2.06 <0	0131 <0. 0.01 <0.	.01 <0.	01 <0.01 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	0.0874 0.0255
	>C16-C21 Aliphatics	mg/kg				#5 <0.1 <0.1	<0.1		9.99	0.48 <0.1		30	<0.1		0.682 6.7		1.2		29.7		3.15	<0.1	23.2 <	0.1 <0	).1 <0	.1 <0.1	<0.1	4.97 20.7	<0.1 0.177	<0.1 <0.1	3.14	1.68		0.234		<0.1			<0.1	<0.1 1.29 <0.1 3.06
	>C21-C35 Aliphatics	mg/kg mg/kg	0.1	64000#		0#5 <0.2 <0.1	<0.1	1 14.3		<0.1	<0.2 <0.1	150 120	<0.2 <0.1	1.71 1.66	21.5 14.8	<0.1	3.83	<0.1		0.9		<0.2 <0.1	57.3 <	:0.1 <0	).1 <0	.1 6.06	<0.1	120.7 100	2.277	<0.2 <0.1		54.5	<0.1	6.66	<0.2 <0.1	21.95 21.9	<0.2 <0.1	7.06 5.83	<0.2 <0.1	<0.2 9.75 <0.1 6.69
	>C12-C44 Aliphatics	mg/kg	0.1 1.6E6 0.1			0#5 <0.1 <0.1	<0.1	1 14.3	70 180	<0.1 0.48	<0.1 0.808	39.4 195	<0.1 0.466	<0.1 2	4.24 26.4	<0.1 <0.1	<0.1 5.9	<0.1	39.1 173	<0.1	1.92 23.7	<0.1	10.6 <	0.1 <0	).1 <0 ).1 <0	.1 <0.1	<0.1 <0.1	28.4 154	<0.1 2.28	<0.1 <0.1	3.03 15.9	88.5	<0.1	0.968 7.86	<0.1	5.13 27	<0.1 <0.1	0.567 8.18	<0.1 <0.1	<0.1 <0.1 <0.1 11
	>EC5-EC7 Aromatics >EC7-EC8 Aromatics	mg/kg mg/kg	0.01 23000	)#5 230#5	250# 690#	<0.01 5 <0.01	1 <0.0	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 <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	0.01 <0. 0.01 <0.	.01 <0.	01 <0.01 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 <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 0.01 19000	#5 41#5 )#5 140#5	45#5 240#	5 <0.01 5 <0.01	1 <0.0°		<0.01	<0.01 <0.01	<0.01	0.0291 0.0626	<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	0.671 <0 1.38 <0	0.01 <0. 0.01 <0.	.01 <0.	01 <0.01 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 0.0151 0.0583 0.0174
	>EC12-EC16 Aromatics	mg/kg mg/kg	0.1 37000 0.1 28000	)#5 320#5 )#5 540#5	1800# 1900#	#5 0.792 #5 2.79				0.486 <0.1	0.402 <0.1	4.43 21.9	0.519 <0.1		0.705 3.83	<0.1 <0.1	1.56	<0.1	1.65	<0.1		<0.1 <0.1	4.15 < 10.5 <	0.1 <0	).1 <0	.1 2.15	<0.1 <0.1	1.5 10.6	0.511 1.86	1.7 1.41	0.714	1.61		0.358	<0.1 <0.1	1.92 8.47	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 2.81 <0.1 19.4
	>EC21-EC35 Aromatics >EC35-EC44 Aromatics	mg/kg mg/kg	0.1 28000 0.1 28000	)#5 1500#5	1900#	#5 8.85 #5 3.15	<0.1	1 3.8	78.3 118	0.269 <0.1	0.462 <0.1	75.1 55.1	0.693 <0.1	3.46 <0.1	20 16.6	<0.1 <0.1		c0 1	71	0.961 <0.1	4.96 1.4	<0.1 <0.1	26.6 <	0.1 4.		.1 31.1	<0.1 <0.1	50.3 33.3	9.32 4.61	6.2	24.7 12.7		<0.1 <0.1		<0.1 <0.1	70 28.5	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 66.3 <0.1 16.4
	>EC40-EC44 Aromatics	mg/kg mg/kg	0.1			1.14 15.6		1 <0.1 1 4.86		< 0.1	<0.1 0.864	25.3 156	<0.1 1.21	<0.1 3.46	7.78 41.1	<0.1 <0.1	1.48	<0.1 <0.1	17.4	<0.1 0.961		<0.1 <0.1		0.1 <0	).1 <0 .1 <0	.1 3.97	<0.1 <0.1	14.8 95.6	1.93 16.3	1.7 13.3	5.16 42.9	14.2	<0.1 <0.1		<0.1 <0.1	10.5 109	<0.1 <0.1	<0.1 <0.1	<0.1 <0.1	<0.1 5.98
RTEX	>C5-C44 Aliphatics & Aromatics	mg/kg	0.1 0.01 24#	5 0.12#5	0.256	15.6	<0.1	1 19.1 09 <0.009	385	0.755 1.23	1.68	352	1.68	5.47	67.5	<0.1	25.9	<0.1	304	1.82	30 <0.009	<0.1	163 <	0.1 5.	.1 <0	0.1 60.9	<0.1 <0.009	250	18.6	13.3	58.9 <0.009	219	<0.1	35	<0.1	136	<0.1 <0.009	8.22	<0.1	<0.1 105 0.111 116
	Toluene	mg/kg	0 58000 0 6200	)#5 230#5	710#	5 <0.000 5 <0.000	2 <0.00	02 < 0.002	< 0.002	< 0.002						< 0.002	< 0.002	<0.002	< 0.002			:0.002		0.002 <0.0 0.003 <0.0		002 <0.002			< 0.002	< 0.002	< 0.002	< 0.002 <	<0.002	< 0.002	< 0.002	< 0.002	<0.002 0.0 <0.003	07 - 0.0024	0.002	<0.002 <0.002 <0.003 <0.003
	Xylene (m & p)  Xylene Total	mg/kg mg/kg	0.01				6 <0.00	06 < 0.006				0.01 - 0.0075 <0.009			<0.006	<0.006			<0.006	<0.006	<0.006	:0.006		0.005 <0.0 0.006 <0.0	006 <0.0	006 <0.006	<0.006	<0.006					<0.006	<0.006		<0.006	<0.006	<0.006	0.006	<0.006 <0.006
	Xylene (o) Total BTEX	mg/kg mg/kg	0 7200	#5 64#5	74#5	5 <0.00	3 <0.00	03 <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	<0.003 <0	0.003 <0.0	003 <0.0	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	<0.003	0.003	<0.003 <0.003
Oxygenates	MTBE Tert Amyl Methyl Ether	mg/kg	0.01 5740 0.01	#6 35.3#6	40.5#	#6 <0.00		05 <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	0.005 <0.0	005 <0.0	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
Chlorinated	H Chloromethane	mg/kg	0.01 0.573	#6 0.0036#	6 0.0044	6#6 <0.00	7 <0.00	07 <0.007	7 <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	0.007	<0.007 <0	.007 <0.0	007 <0.0	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
	Chloroethane	mg/kg	0.01 0.04 0.01 640 0.01 22.6	4.22#6	5.12#	#6 <0.01	1 <0.0	0.000	<0.00	<0.00	<0.006	<0.006	<0.00 <0.01 <0.01	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.01	<0.01	<0.006 <0	0.01 <0.	.01 <0.	01 <0.01	<0.006	<0.00	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006 <0.1 <0.1	<0.00	<0.1 <0.1	<0.01	<0.01 <0.01
	Dichloromethane	mg/kg	0.01 22.6 0.01 162# 0.01 18.9	6 0.608#6	5 1.16#	#6 <0.01	<0.0°	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 <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	<0.1	<0.01	<0.1	<0.01	<0.01 <0.01
	1,1-dichloroethane	mg/kg	0.01 208#	#6 0.126#R #6 1.41#6 #6 0.0699#	1.7#	6 <0.000	8 <0.00	08 <0.008 06 <0.008	<0.008	<0.008	<0.008	<0.01 <0.008 <0.006	<0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.008	<0.008	<0.008	:0.008	<0.008 <0	.008 <0.0	008 <0.0	0.008 <0.008	<0.008	<0.01 <0.008 <0.006	<0.008 <0.006	<0.008 <0.006	<0.008 <0.006	<0.008	<0.008	<0.008 <0.006	<0.008	<0.08	<0.008	<0.08	0.008	<0.008 <0.008
	Chloroform	mg/kg mg/kg	0.01 81#	5 0.68#5	0.75#	\$5 <0.000 5 <0.000		08 <0.008				<0.008	<0.008	<0.008	<0.008	<0.008			<0.008	<0.008	<0.008			.008 <0.0	008 <0.0	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
	Carbon tetrachloride	ma/ka	0.01 640# 0.01 3#5	0.021#5	0.021	#5 <0.01	< 0.0	0.01		< 0.01	<0.007	< 0.01	<0.007 <0.001 <0.009	< 0.01	<0.007 <0.01 <0.009	<0.007 <0.01 <0.009	<0.07		< 0.01	<0.007	<0.007		<0.007 <0 <0.01 <0	0.007 <0.0		007 <0.007 01 <0.01	<0.007 <0.01 <0.009	<0.007 <0.01 <0.009	<0.007 <0.01 <0.009	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	< 0.01	<0.01	<0.007 <0.01 <0.009	<0.07	<0.01	<0.007 <0.007
	1,1,2-trichloroethane	mg/kg	0.01 1.2# 0.01 89.7	#6 0.552#6	0.755	#6 <0.00	9 <0.00	09 <0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.1	<0.01	<0.009	<0.009	<0.009	<0.009	<0.009 <0	0.01 <0.	.01 <0.	01 <0.01	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009 <	<0.009	<0.009		<0.009	<0.009	<0.1	<0.009	<0.009 <0.009 <0.01 <0.01
	Sum of PCE and TCE	mg/kg mg/kg		5 0.14#5	0.14#	<0.00		14 <0.014					<0.005		<0.005	<0.005	0.279	0.0206	<0.005	<0.005	<0.005	:0.005	<0.005 <0 <0.014 <0	1.005 <0.0	014 <0.0	005 <0.005	<0.005		<0.005						<0.005		<0.005	<0.05	0.005	<0.005 <0.005 <0.014 <0.014
	TCE+DCE+VC PCE+TCE+DCE+VC	mg/kg mg/kg		0.485		<0.04	1 <0.04 6 <0.04	46 <0.046	< 0.046	< 0.046	<0.041	<0.041	<0.041	< 0.046	<0.041 <0.046	<0.041		0.0366	<0.041	<0.041	<0.046	:0.041	<0.046 <0	0.041 <0.0 0.046 <0.0	046 <0.	046 < 0.046	< 0.046	< 0.046	< 0.046	<0.041	< 0.046	<0.046 <	<0.046		< 0.046		<0.046	<0.41	0.046	<0.041 <0.041 <0.046 <0.046
PAH	Acenaphthylene	mg/kg	0.01 220# 0.01 90000	)#5 400#5	3300#	#5 0.057 <sub>4</sub>	4 <0.01	09 <0.009 12 <0.012	< 0.012	< 0.012	< 0.012	0.0453	< 0.012	< 0.012	0.0486	< 0.012	<0.012	<0.012	0.0566	<0.012	<0.012	:0.012		.012 0.02	205 <0.0	009 0.013 - 0.0 012 0.0278	< 0.012	0.0171	< 0.012	< 0.012	0.0299	0.083 <	<0.012	0.0289	< 0.012	0.0843	< 0.012	0.016	0.009	<0.012 0.015
	Fluorene	mg/kg	0.01 90000 0.01 66000	)#5 390#5	3200#	#5 <0.000 #5 0.0183		08 <0.008 01 <0.01	3 <0.008 <0.01	<0.008 <0.01	<0.008 <0.01	0.0732 0.0796	<0.008	<0.008 <0.01	<0.008 <0.01	<0.008 <0.01	<0.008 <0.01		0.0606 0.0479	<0.008	<0.008 <0.01	<0.008	0.0481 <0 0.0486 <0	0.008 <0.0	008 <0.0	0.0159 01 0.0121	<0.008 <0.01	0.0505 0.0387	<0.008 <0.01	<0.008		0.0418 < 0.0482			<0.01	0.0115 <0.01	<0.008 <0.01	<0.008 <	<0.008 <0.01	<0.008 0.011 <0.01 0.0546
	Anthracene	mg/kg	0.02 22000 0.02 53000	0#5 5300#5	34000	#5 0.512 0#5 0.098		16 <0.015		<0.015			<0.015				0.128		0.258	<0.015	<0.0277	:0.015	0.352 <0 0.0788 <0	0.015 0.2	218 <0.0 859 <0.0	0.329	<0.015			<0.015		0.317		0.0399	<0.015 <0.016		<0.015	0.215	0.015	<0.015 0.36 <0.016 0.105
	Pyrene	mg/kg	0.02 23000 0.02 54000	)#5 1200#5	3700#	#5 0.835 #5 0.682	< 0.01	17 <0.017 15 <0.015	7 0.429 5 0.412	< 0.015		1.31	<0.017	0.0473 0.0532	0.592 0.534	<0.017 <0.015		<0.017	1.89	<0.017	0.047	:0.017	0.389 <0	.017 1.2	27 <0.0	0.82	<0.017	1.57	0.0893	<0.017	0.445	2.09	<0.015	0.359	<0.017	0.971	<0.017	0.237	0.017	<0.017 0.4 0.0167 0.317
	Benz(a)anthracene Chrysene	mg/kg	0.01 170# 0.01 350#	£5 22#5	31#5	5 0.401 5 0.382	2 <0.0	0.01		< 0.01	<0.014	1.06 0.976	<0.014	<0.014 0.0163	0.419				1.06 0.988	<0.014	0.0481			0.014 0.9		0.449	<0.014	0.66 0.608	0.0909	<0.014	0.245	1.06		0.236	<0.014 0.0245	0.684	<0.014		<0.014	0.0247 0.283 <0.01 0.218
	Indeno(1,2,3-c,d)pyrene	mg/kg mg/kg	0.02 510#	£5 36#5	45#5	5 0.357 5 0.192	< 0.01	18 <0.018	0.203 0.124		<0.015 <0.018	0.97 0.543	<0.015 <0.018	0.0382 0.029	0.632 0.408				0.837 0.547	<0.015 <0.018	<0.03	:0.015	0.147 <0 0.0775 <0	0.015 1.0 0.018 0.6	05 <0.0 668 <0.0	0.485 018 0.27	<0.015 <0.018	0.545 0.297	0.0834 0.0481	<0.015 <0.018	0.289	1.47 < 0.787 <	<0.015 <0.018	0.156	<0.018	0.975	<0.015 <0.018	0.122 d	0.015	0.0182 0.259 <0.018 0.121
	Benzo(g,h,i)perylene	mg/kg	0.02 3.6# 0.02 4000	#5 340#5	360#	5 0.060 5 0.233		24 <0.024		<0.023 <0.024	<0.023 <0.024	0.186	<0.023 <0.024	<0.023 0.0301	0.124	<0.024	<0.023 · 0.0442 ·	<0.023 <0.024	0.151 0.556	<0.023 <0.024	0.0286	:0.023	<0.023 <0 0.105 <0	0.023 0.1 0.024 0.7	755 <0.0	0.0732 024 0.358	<0.023 <0.024	0.0882	<0.023 0.0682	<0.023 <0.024	0.0634	0.216 < 0.967 <	<0.023 <0.024		<0.023 <0.024	0.269 1.16	<0.023 <0.024	<0.023 < 0.108 <	0.023	<0.023 0.0404 <0.024 0.144
	Benzo(k)fluoranthene	mg/kg	0.02 45# 0.01 1200	5 3.3#5 #5 92#5	4#5 110#	0.47 5 0.192		15 <0.015 14 <0.014	0.103		<0.015 <0.014	1.3 0.546	<0.015 <0.014	0.0377	0.805 0.281							:0.015		0.015 1.4 0.014 0.5		0.588	<0.015 <0.014	0.715 0.287		<0.015 <0.014			<0.015						0.015	0.0246 0.306 <0.014 0.108
	PAHs (sum of 4)	mg/kg mg/kg				0.662 1.087	7 <0.07	29 <0.029 71 <0.071	0.575		< 0.071	3.065	<0.071	0.1165	1.086 2.015		0.2066	<0.071	2.787	<0.071		:0.071	0.4722 <0	1.029 1.9 1.071 3.3	386 <0.0	0.843 071 1.471	<0.029 <0.071	1.684	0.3066	< 0.071	1.048	4.063 <	<0.071	0.875	0.0305 0.0515	4.789		0.4375		0.0316 0.414 0.0526 0.679
	benzo(g,h,i)perylene + indeno(1,2,3-	mg/kg -(mg/kg				4.53 0.425	5 <0.04	18 <0.118 42 <0.042	0.266	<0.118 <0.042	< 0.042	10.4 1.219	<0.118	0.3 0.0591	5.09 0.929	<0.118 <0.042	0.0748	< 0.042	1.103	< 0.042	0.311	0.042	0.1825 <0	1.118 9.0 1.042 1.4	123 <0.0	118 4.92 042 0.628	<0.118 <0.042	7.74 0.682	0.1163	<0.118 <0.042	0.455	1.754 <	<0.042	0.352	< 0.042	2.135	< 0.042	0.1846 -	0.042	<0.118 2.78 <0.042 0.265
PCBs	Coal Tar (Bap as surrogate marker) Tetrachlorobiphenyl, 3,3,4,4- (PCB 7	7 ma/ka	0 0.16	5 0.98#5 #1 0.037#1	1.2#	5 0.357 #1 -	<0.01	15 <0.015	0.203	<0.015	<0.015	0.97	<0.015	0.0382	0.632		<0.003	<0.015	0.837	<0.015	0.03	- 0.015	0.147 <0	.015 1.0	05 <0.0	0.485	<0.015	0.545	0.0834	<0.015	0.289	1.47	<0.015	0.26	<0.015	1.05	<0.015	0.122	- 0.015	0.259
	Tetrachlorobiphenyl, 3,4,4,5- (PCB & Pentachlorobiphenyl, 2,3,3,4,4- (PC	8 mg/kg Emg/kg	0 0.053	#1 0.012#1 #1 0.12#1	0.012	#1 - #1 -	-	-	-	-	-	-	-	-	-		<0.003 <0.003	:	-	-	-	:	-			-	-	-	-	-		-	:	-	-	-	-	-	-	
	Pentachlorobiphenyl, 2,3,4,4,5- (PC PCB 118	mg/kg mg/kg	0 0.53	#1 0.12#1 #1 0.12#1	0.12# 0.12#	¥1 -	- :	-	-	:	:	-	-	-	-	-	<0.003 <0.003		-									-	-	:				:	:	-	:	:	-	
	Pentachlorobiphenyl, 2,3,4,4,5- (PC Pentachlorobiphenyl, 3,3,4,4,5- (PC	Emg/kg Emg/kg	0 0.53	#1 0.12#1 6#1 0.000037	0.12# #1 0.00003	#1 37#1	- :	- :	- 1	- :	- :	- :	- :	- :	- :		<0.003 <0.003					:					- :	- 1		- :	-			-	-		-	-		
	Pentachlorobiphenyl, 3,3,4,4,5 (PC Hexachlorobiphenyl, 2,3,3,4,4,5 (PC Hexachlorobiphenyl, 2,3,3,4,4,5 (PC Hexachlorobiphenyl, 2,3,4,4,5,5 (PC	C mg/kg C mg/kg	0 0.53	#1 0.12#1 #1 0.12#1	0.12# 0.12#	¥1 - ¥1 -	-	-	-	-	-	-	-	-	-		<0.003 <0.003	:	-	-	-	:	-			-	-	-	-	-		-	:	-	-	-	-	-	-	
	Hexachiorobiphenyl, 3,3,4,4,5,5- (PC	umg/kg	0 0.0005	3#1 0.000127	#1 0.0001 <u>:</u>	#1 - 2#1 -	-		-	-	-	-	-	-	-		<0.003 <0.003	:	-			:	-	-			-		-	-	-	-	:	-	-		-	-	:	
	Total PCB WHO 12	mg/kg	0 0.53	#1 0.12#1	0.12#	¥1 -	-		- 1	- :	- :		- :	- :		-	<0.003 <0.036	:		:		:		: :					- :		- :		:	-	-	-	-	-	1	
	PCB 52	mg/kg mg/kg	0				- :	- :	- 1	- :	- :	- :	- :	- :	- :	-	<0.003 <0.003					:					- :	- 1		- :	-			-			-	-		
	PCB 138	mg/kg mg/kg	0			-	- :	-	-	-	-	-	- :	-	- :	-	<0.003 <0.003	-	-		-	:	-			-	-		-	- :	-		-	:	-			-	:	
	PCB 153 PCB 180	mg/kg mg/kg	0			-	-	-	-	-	-	-		-		-	<0.003 <0.003	-	-			-	-					-	-		-	-	-		-		-	-		
Halogenated	Total PCB 7 Congeners Chlorobenzene	mg/kg mg/kg	0.01 59#	0.2#3 5 0.38#5	0.38#	3 - 45 <0.00	5 <0.00	05 <0.005	- 5 <0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	< 0.005	<0.021 <0.05	<0.005	<0.005	<0.005	<0.005	:0.005	<0.005 <0	.005 <0.0	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	0.0955	<0.05	0.005	<0.005 <0.005
	Bromobenzene 2-chlorotoluene	mg/kg mg/kg	0.01 105#	#6 0.75#6 )#1 1600#1	0.892	#6 <0.01 #1 <0.00	9 <0.00	0.001 09 <0.009	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01 <0.009	<0.01	<0.1 <0.09	<0.01 <0.009	<0.01 <0.009	<0.01 <0.009	<0.01 <0.009	<0.01	<0.01 <0 <0.009 <0	0.01 <0. 0.009 <0.0	.01 <0.	01 <0.01	<0.01	<0.01	<0.01	<0.01	<0.01 <0.009	<0.01 <0.009 <	<0.01 <0.009	<0.009	<0.01 <0.009	<0.1	<0.01	<0.1	<0.01	<0.01 <0.01 <0.009 <0.009
	4-chlorotoluene 1,3-dichlorobenzene	mg/kg	0.01 23000 0.01 34#	5 0.37#5	0.38#	#1 <0.01 #5 <0.00	8 <0.00	01 <0.01 08 <0.008	<0.01 3 <0.008	<0.01 <0.008	<0.01 <0.008	<0.01 <0.008	<0.01	<0.01 <0.008	<0.01	<0.01 <0.008	<0.1 <0.08	<0.01	<0.01 <0.008	<0.01	<0.01 <0.008	<0.01	<0.01 <0 <0.008 <0	0.01 <0. 0.008 <0.0	.01 <0.	01 <0.01 008 <0.008	<0.01 <0.008	<0.01	<0.01 <0.008	<0.01	<0.01 <0.008	<0.01	<0.01	<0.01	<0.01 <0.008	<0.1	<0.01	<0.1	<0.01	<0.01 <0.01 <0.008 <0.008
	1,2-dichlorobenzene	mg/kg mg/kg	0.01 4800	#5 52#5 #5 20#5	52#5 20#5	5 <0.00 5 <0.01	5 <0.00 I <0.0	05 <0.005 01 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.05 <0.1	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005	<0.005 <0 <0.01 <0	0.005 <0.0 0.01 <0.0	.01 <0.0	005 <0.005 01 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.005 <	<0.005 <0.01	<0.005 <0.01	<0.005 <0.01	<0.05 <0.1	<0.005 <0.01	<0.05 <	<0.005	<0.008 <0.008 <0.005 <0.005 <0.01 <0.01
	1,2,4-trichlorobenzene 1,2,3-trichlorobenzene	mg/kg mg/kg	0.02 240# 0.02 110#	£5 2.3#5 £5 1.3#5	2.3#	5 <0.02 5 <0.02	2 <0.02	02 <0.02 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 <0.02	<0.02 <0.02	<0.02 <0.02	<0.2 <0.2	<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	0.02 <0.	.02 <0.	02 <0.02 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 <0.02	<0.02 <0.02	<0.02 <0.02	<0.02 <0.02	<0.2 <0.2	<0.02 <0.02	<0.2	<0.02 <0.02	<0.02 <0.02 <0.02 <0.02
Halogenated	Bromomethane	mg/kg mg/kg	0.01 370# 0.01 30#	1 87#1 1 6.8#1	87#1 6.8#	1 <0.00	6 <0.00 I <0.0	06 <0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06 ·	<0.006 <0.01	<0.006	<0.006 <0.01	<0.006 <	<0.006	<0.006 <0	0.006 <0.0	.01 <0.0	006 <0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006 <	<0.006	<0.006	<0.006	<0.06	<0.006	<0.06 <	<0.006 <0.01	<0.006 <0.006 <0.01 <0.01
	Trichlorofluoromethane 1,2-dibromoethane	mg/kg mg/kg	0.01 3100	#1 730#1 #1 0.036#1	730#	#1 <0.00 #1 <0.01	6 <0.00 I <0.0	06 <0.006 01 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.06 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <	<0.006	<0.006 <0 <0.01 <0	0.006 <0.0	.01 <0.0	006 <0.006 01 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <0.01	<0.006 <	<0.006 · <0.01	<0.006 <0.006 <0.01 <0.01
Solvents Organics	Carbon disulfide TOC	mg/kg	0.01 11#	5 0.11#5	0.11#	<del>45</del> <0.00	7 <0.00	07 <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 <0	.007 <0.0	007 <0.0	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 <0.2 0.443
Other Asbestos	Waste Limit, Total Amosite Asbestos	%	0.1			- 1	0	0	- 0	- 0	- 0	- 1	- 0	- 0	<0.1	-	<0.1 0	-	<0.1	0	1	-	- 0				-	- 0	- 0	-	- 0	1	-	- 0	- 0	- 0	-	- 0	-	0 -
	Chrysotile Asbestos Crocidoilite Asbestos					0	0	0	1 0	0	0	0	0	0	1 0	-	1 0	-	1 0	0	0	:	0	- (		0 0	-	0	0	:	0	1 0	:	0	0	0	-	0	:	0 -
	Additional Asbestos Components (U Fibrous Actinolite	ls - -				- 0	- 0	-	1 0	- 0	- 0	1 0	- 0	- 0	1 0		1 0	-	1 0		1 0	-	- 0		0 .	- 0	-	- 0	- 0	-	- 0	1 0	-	0	- 0	- 0	-	0	:	0 -
	Fibrous Anthophyllite Fibrous Tremolite	-				0	0	0	0	0	0	0	0	0	0	-	0	-	0	0	0	-	0	- (		0	-	0	0	-	0	0	-	0	0	0	-	0	-	0 -
	Non-Asbestos Fibre	-				0	0	ő	0		Ö	ő	0	ő	0	-	Õ		0	0	Õ	-	1		5 .	ŏ	-	ő	Ō	-	0	0	-	0	0	0	-	0		0 -
Comments							#1 USE	EPA RSL																																

#1 USEPA RSL
#2 Dutch Serious 2009
#3 Dutch Intervention 2009
#4 Detra C4SL 12/2014
#5 AECOM (modified LOM/CIEH S4ULs)
#6 AECOM (modified EIC)

#### Table 6 - VOC Concentrations in Soils

					Location ID	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207	BH207	BH208A	BH208A	BH209	BH209	BH210	BH210	BH211	BH211	BH212	BH212	BH213	BH213	BH214	BH2A	BH2A BI	I3A B	H4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
					Sample Depth	0.7	1.9-2	0.8	0.5	13	3.3	4	2.5	11	0.7	26-35	0.8	11	0.5	27-34	0.8	2 2-2 8	0.7	22	0.6	18-25	0.6	17-2	0.85	0.5	15 (	5	n 9	3.5-4	0.5	25.3	0.7	25-3	0.5	3-3.5	0.5	2 2-3 3
					<u> </u>		1.3-2	0.0	0.5	12	3.3		2.5		0.7	2.0-5.5	0.0		0.5	2.17-0.47	0.0	2.2-2.0	0.7	2.2	0.0	1.0-2.3	0.0	1.7-2	0.03	0.5	1.0	.9	0.3	3.3-4	0.0	25~5	U.,	2.0-0	00	5-5.5	0.0	2-5.5
					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	25/08/201	5 25/08/201	25/08/201	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	7/08/2015 2	7/08/2015 2	7/08/2015 2	5/08/2015 2	5/08/2015 25	08/2015 28/08	/2015 27/0	8/2015 27	/08/2015 28	/08/2015 2	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015 2	26/08/2015 26	/08/2015
																																							4	/ /		
			GAC HH	C GAC HH	GAC HH RE																																		4	/ /		
Chemica	Gr Chemical Name	Unit	EQL OM/IND S	A RES+PL S																																			4	/ /		
			ND 1.45-	AND 1.45-	PL SAND 1.4	\$																																	4	/ /		
			3.48%TOC	3.48%TOC	5-3.48%TOC																																		4	/ /		
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	<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
*00	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	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	01 <	0.01	<0.01	<0.01	<0.01	<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	<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	mg/kg 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	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	:0.005 <0.	005 <0	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	< 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	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	< 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	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	< 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	<0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	<0.01	< 0.01	<0.01	< 0.01	< 0.01	<0.01	< 0.01	<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	<0.1	< 0.01	<0.01	<0.01	<0.01	< 0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.01	<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	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	< 0.007	< 0.007	<0.007	<0.007	<0.007	< 0.007	<0.007	<0.007 <0	007 <0	0.007	<0.007	<0.007	<0.007	< 0.07	<0.007	<0.07	<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	<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	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	<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	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	<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	mg/kg mg/kg	0.01 /30#6	9.87#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	<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 1,1,2,2-tetrachloroethane	mg/kg	0.01 1540#6	1 9#5	2.0#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	<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	0.005	<0.005	10.005	<0.005	<0.05	<0.005	<0.05	<0.005	<0.005	10.005
	1,2,3-trichloropropane	mg/kg	0.01 200#3	0.0051#1	0.0051#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	<0.01	<0.016	<0.01	<0.016	<0.01	<0.01	<0.01	0.016	016 <	0.016	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	₹0.016
	n-propylbenzene	mg/kg	0.02 0.11#1	32 4#6	34 4#6	<0.010	<0.010	<0.010	<0.070	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.070	<0.010	<0.010 <0.	01 <	0.01	<0.010	<0.01	<0.010	<0.070	<0.010	<0.010	<0.010	<0.010	<0.010
	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	40.01	<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	008 <0	0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.08	<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	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	<0.014	0.014 <0	014 <0	0.014	< 0.014	< 0.014	<0.014	<0.14	< 0.014	<0.14	<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	< 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	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	< 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	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	< 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		0.01 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	< 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	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	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014	:0.014 <0.	014 <0	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	< 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	mg/kg 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	< 0.016	<0.016	< 0.016	<0.016	<0.016	< 0.016	<0.016	<0.016 <0	016 <0	0.016	<0.016	< 0.016	<0.016	<0.16	<0.016	<0.16	<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	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	< 0.035	<0.035 <0	035 <0	0.035	< 0.035	< 0.035	< 0.035	< 0.35	< 0.035	< 0.35	< 0.035	< 0.035	< 0.035

#1 USEPA RSL
#2 Dutch Serious 2009
#3 Dutch Intervention 2009
#4 Defra C4SL 12/2014
#5 AECOM (modified LQMICIEH S4ULs)
#6 AECOM (modified EIC)

AECOM Infrastructure Environment UK Limited

Table 7 - Metals and Inorganics Concentrations in Groundwater

					Well ID	BH2	ВН3	BH4	BH5	ВН7	ВН8	ВН9	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
1	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	The state of the s		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	ВН3	BH4	BH5	ВН7	ВН8	ВН9	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														
	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
ТРН	>C16-C35 Aliphatics	μg/L			-	<20	<20	<20		<20	-	-	-	<20	<20	<20	-	<20
li-n	>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
	Benzene	μg/L	1	1 <sup>#1</sup>	<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
BTEX	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 <sup>#3</sup>	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	μg/L	1	9.9900000000018E11 <sup>#1</sup>	<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
Owwenstee	MTBE	μg/L	1	900 <sup>#11</sup>	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Oxygenates	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 UK Drinking Water Standards DWS 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 - MAC - 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	ВН3	BH4	вн5	BH7	ВН8	ВН9	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	<b>EQS Coastal GAC</b>														
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	9.9900000000029E11#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	9.9900000000029E11#1		<1	<1	<1	<1	<1	<1	4.05	<1	<1	<2	<1	<1	<1	-
Benzo(b)fluoranthene	μg/L	1	9.9900000000029E11#1		<1	<1	<1	<1	<1	<1	6.42	<1	<1	<2	<1	<1	<1	-
Benzo(k)fluoranthene	μg/L	1	9.9900000000029E11#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

#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

					Well ID	BH2	ВН3	BH4	ВН5	BH7	BH8	ВН9	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
Ar	nalyte	Units	EQL	DWS GAC	EQS Coastal GAC														
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 μg/L	1			<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1
	trans-1,3-dichloropropene 1,3-dichloropropane	μg/L μg/L	1	0.1#1		<1	<1	<1 <1	<1	<1	<1	<1	<1	<1 <1	<1	<1	<1	<1	<1
	Chlorodibromomethane	μg/L	1	9.9900000000015E11 #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	9.9900000000015E11		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Isopropylbenzene	µg/L	1	450#5 0.076#5		<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1
	1,1,2,2-tetrachloroethane 1,2,3-trichloropropane	μg/L μg/L	1	0.076#5		<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<u>&lt;1</u> <1	<1 <1	<1	<1 <1	<1 <1	<1	<1 <1	<1 <1	<1 <1
	n-propylbenzene	μg/L μg/L	1	660#5		<1	<1 <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
svoc	Trihalomethanes	μg/L		100#1 24#3		<4	<4	3.07	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	2.91
SVOC	2-methylnaphthalene	μg/L	<u>1</u> 1	24#3		<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<1 <1	<4 <4	<1 <1	<1	<2 <2	<1 <1	<1 <1	<1	-
	4-bromophenyl phenyl ether	μg/L	- 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 μg/L	3	20#3	20#4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
					20#**														
	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	.9900000000015E11#	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	).9900000000017E11#	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	.9900000000017E11#	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		1		<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
	- SETTOLIDOLTVO	r9'-		L		~0	~0	~0	70	~0	~0	_ ~0	_ ~0	~0	~0	1 ~0	1 ~0	~0	

Table 10 - VOCs and SVOCs Concentrations in Groundwater

					Well ID	BH2	ВН3	BH4	BH5	ВН7	ВН8	ВН9	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
Α	nalyte	Units	EQL	DWS GAC	EQS Coastal GAC														
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	<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	ВН3	BH4	ВН5	ВН7	ВН8	ВН9	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														
	Allalyte	Office	LQL	DWOGAC	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
Environmental Water Quality Standard - Coastal Waters EQS Coastal

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

Units μg/l	EQL			
	EQL			
μg/l				
		<46	<46	0
μg/l		<10	<10	0
μg/l		<1	<1	0
μg/l		<1	<1	0
μg/l		<1	<1	0
e µg/l		<1	<1	0
p) µg/l		<1	<1	0
μg/l		<1	<1	0
ered) µg/l		52.7	52.2	0
ed) µg/l		<0.1	<0.1	0
iltered) µg/l		1.53	1.22	11
II+VI) (Filtered) μg/l		0.939	1.13	9
ered) µg/l		0.066	0.028	40
ed) µg/l		<0.01	<0.01	0
ered) µg/l		1.77	1.81	1
		0.781	0.897	7
		12.6	5.01	43
d) µg/l		21.5	21.9	1
-		7.1	7.14	0
IO3-) mg/l		7.3	7.28	0
OSPHATE (PO4-P) mg/l		<0.2	<0.2	0
		<0.3	<0.3	0
		43	42.3	1
lluble) μg/l		28.2	28.4	0
Ti co	tered)	tered) μg/l red) μg/l red) μg/l filtered) μg/l d) μg/l - NO3-) mg/l OSPHATE (PO4-P) mg/l I Nitrogen as N mg/l as NH4 BRE mg/l	tered) μg/l 1.77 red) μg/l 0.781 riltered) μg/l 12.6 riltered) μg/l 12.6 riltered) μg/l 12.5  - 7.1  NO3-) mg/l 7.3  OSPHATE (PO4-P) mg/l <0.2 I Nitrogen as N mg/l <0.3 as NH4 BRE mg/l 43	tered

<sup>\*</sup>RPDs have only been considered where a concentration is greater than 1 times the EQL.

<sup>\*\*</sup>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))

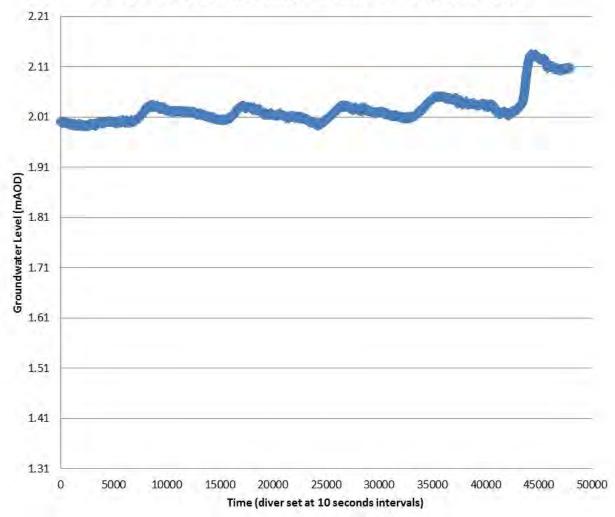
<sup>\*\*\*</sup>Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



# **GRAPHS**

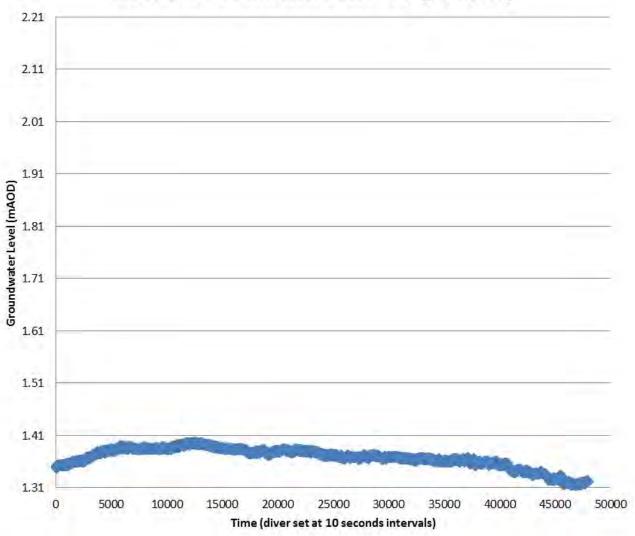
**GRAPH 1** 

## Diver data for borehole BH201A - Stag Brewery



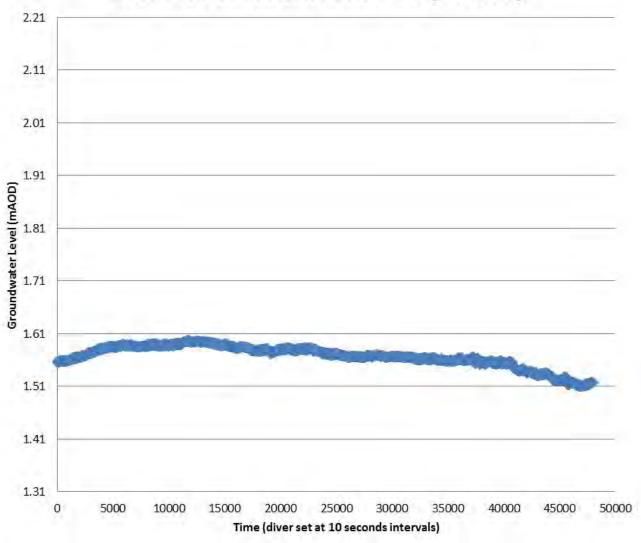
**GRAPH 2** 

# Diver data for borehole BH4 - Stag Brewery



**GRAPH 3** 

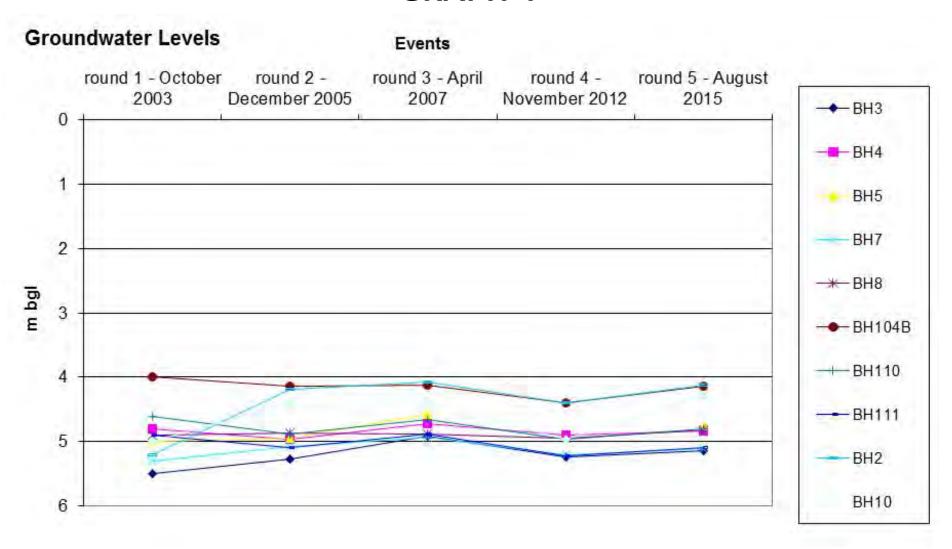
# Diver data for borehole BH10 - Stag Brewery



Final Report 22 September 2015

**AECOM Infrastructure & Environment UK Limited** 

# **GRAPH 4**





# 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 – Cha	anges in Wells De	epths			
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]
ВН3	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 Groun	ndwater Moni	toring Wells (	AECOM, 24-25 Au	gust 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.
ВН3	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.
ВН7	2.5 - 6.7m (*) (Sand)	5.140	6.470	7.150	Good recharge. 3 litres of sludge / silt removed.



Table A2: Do	e-silting of Grour	ndwater Moni	toring Wells (	AECOM, 24-25 Au	gust 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.
ВН9	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

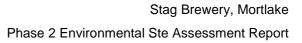
m bgl - metres below ground level

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

<sup>(\*)</sup> 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.

<sup>(\*\*)</sup> 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





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**



Proje		tag Brewei			ke, Lor	idon S	W14	Client		Al	B Inbev			BOREHOI	
Job l		7075502	!	Date Start D	ate 28-0	)8-15 )8-15	Groui	nd Level (1	m)	Co-Ordi	nates ()			BH109	9 <b>A</b>
Con				Sila De			Meth	od / Plant	Used					Sheet	
	Е	SL						Concret	te Corer aı	nd Premier	Rig.			1 of	1
			(mdd)	L						STRAT	A				
Depth BGL		mple / Test Details	PID (pp	Water	Legend	Depth (Thick- ness)		DI	ESCRIPTI	ON		CO	OMME	NTS	Installation
_					2 4 4 4		- CONCE	RETE							\ <u></u>
- 0.5 -			<0.1			(0.35) 0.35 (0.35) 0.70	MADE to coars	GROUNE e, angular coarse. Gra	to subagu	lar gravel.	Sand is	Dry NVO			
- - - 1.0	<b>&gt;</b>	BH109A_0.8	<0.1			(0.50)	yellow tellow te	orick and r rk brown, o coarse. C	natural stor	ne. evelly clay	/ . Sand	Damp NVC	)		
- - - 1.5			<0.1			(0.70)	angular Brown, is fine to	to subang sandy, slig coarse. Coded of flir	ular of flin ghtly grave Gravel is fi	it. elly CLAY	. Sand	Damp NVC	)		
-2.0			<0.1		000	1.90 2.10	- Brown,	sandy fine	to mediu	m, subrour	nded to	Damp NVC			
- - -2.5		<0.1 <0.1 <0.1	<0.1		0	(0.70)	_\ coarse. - Brown,	grey, sligh	ntly gravel	ly, fine to	coarse	Damp NVC	)		
-			\\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		0	2.80	- Brown/o	Gravel is for	avelly, fine	e to coarse	SAND.	Damp NVC	)		
- 3.0 - -				0	(0.70)	<ul> <li>Gravel i</li> </ul>	s fine to maded of flin	nedium, su	bangular t	0					
-3.5			<0.1			3.50		e terminat	ed at 3.5m	ı bgl.					
							- - -								
- - -							- - -								
- - -							- - -								
- - -							- - -								
							- - - -								
-							_ - -								
- - -							- - -								
-							-								
		ackfill					mple De			egend				GENERA REMARI	
		ent seal onite Fill					Small dist	turbed	Concrete Sandy grav Gravelly Sa	-		e Ground dy Gravel		NVO - No visual or Olfa Evidence of Contaminati m bgl - meters below gro Hand pitted to 1.2mbgl	ctory on.
								<u></u>	Groundwate	er Table	₫ Grou	ndwater Strike			
								Ш	Logged	By	CG		App	roved By MM	ſ



Projec	ct Name and Site						Client						BOR	EHOLE	. No
	Stag Brewer	y, Mo	rtlak	ke, Lon	don SV	V14			Al	B Inbev				3H201	
Job N		St	ate	te 20-0	8-15	Groun	nd Level (r	n)	Co-Ordi	inates ()				οπΖυ ι	
	47075502	Eı	nd Date	e 20-0	8-15										
Contr						Metho	od / Plant						Sheet		
	ESL						Concret	te Corer.						1 of 1	
		(md	ı					5	STRAT	Ά					
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DE	ESCRIPTIO	ON		CC	OMMEN	NTS		Installation
-					0.25 -	TARMA	AC over C	ONCRETE	Ξ						
-0.5					(0.45)	MADE of fine-med	GROUND lium, angu	D: Dense, sa ular-subang e. Sand is fi	andy, gular grav	vel of	Dry NVO.				
						Borehold on concr	e terminate	ed at 0.7m	bgl due to	o refusal					
	D 1 C11				-  -	1.0			1						
	Backfill ement seal				Saı	nple De	etails	Le	egend	Mad	e Ground			ENERAL MARKS	
								Groundwate	r Table		indwater Strike		NVO - No vis Evidence of C m bgl - meters Hand pitted to	ontamination. below ground	
							<u> </u>			Grou					
								Logged I	Зу	CG		Appr	oved By	MM	



Proje	ct Name and Site			lva I am	don Cl	5371.4	Client		۸D	Inbev			BOREHOLE	ΞN
Job N	Stag Brewer		Orua Date				d Level (n	n)	Co-Ordina				BH201	Α
	47075502	-   9	Start Da	ate 24-0 te 25-0	8-15 8-15	Groun			Co-Oraini	aics ()				
Cont	ractor					Metho	od / Plant I						Sheet	
	ESL						Concrete	e Corer an	d Solid Ste	em Auger.			1 of 1	_
		(md	er.					,	STRATA	1				
epth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DE	ESCRIPTIO	ON		C	OMME	NTS	
					0.25	- TARMA	C over Co	ONCRETI	Ξ					X
0.5	BH201A_0.7	<0.1			(0.95)	gravelly, fine-coar	fine-coars	se sand. G	ed/ yellow, ravel is llar of brick		Damp NVO	)		
1.0		<0.1			1.20	<u> </u>								
1.5		<0.1			1.20	<ul> <li>Light bro</li> </ul>	own, dense al rounded	e, medium d flint.	-fine SANI	D with	Dry NVO			
2.0	BH201A_1.9-2.0	<0.1			(2.00)	- - - -								
2.5		<0.1				- - - -								
3.0		<0.1		<u>×1/, ×1/,</u>	3.20	- - - - SAND a	nd GRAV	EL. Grave	el is		Wet from 3	3.7mbgl	NVO	
3.5		<0.1	<u>‡</u>	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1		- medium-	-coarse flinght brown.	nt. Sand is	fine-coarse	e		., 8-		
4.0				× 1, 1, 7	(1.90)	- - - -								
4.5				*/* */* */* */* */* */*		- - - -								
5.0					5.10	- Grey, mo	ottled dark LONDON	brown, po CLAY).	ossibly stiff	f	Dry, NVO.			-
<ul><li>5.5</li><li>6.0</li></ul>					(0.90)									
						- Borehole - - - - - -	e terminate	ed at 6.0m	bgl.					
	Backfill				Sa	mple De	tails	Le	egend				GENERAI	
	Cement seal riser							Ashphalt		Made	e Ground		REMARKS	Š
E F	Bentonite seal riser Filter pack riser Filter pack screen					— Sumple		Sand Clay		<u>メ</u> Silty/	clayey PEAT		NVO - No visual or Olfacto Evidence of Contamination. m bgl - meters below groun Hand pitted to 1.2mbgl	1.
	Hole Collapse						Ā	Groundwate	r Table	₫ Grou	ndwater Strike			
								Logged I	Ву	CG/MN	М	App	roved By GM	_



Projec	Stag Brewe			don SW	I	Client	AB	Inbev			BOKEHO	
Job N	47075502	Sta	rate art Date 24-0 nd Date 24-0	8-15 8-15	Ground I	Level (m)	Co-Ordina	tes ()			BH2	UZ
Conti	ractor				Method	/ Plant Used					Sheet	
	ESL				(	Concrete Corer.					1 of	1
		(md	is				STRATA					
Depth BGL	Sample / Test Details	PID (ppm)	Material Legend Legend	Depth (Thick- ness)		DESCRIP			C	OMME	NTS	X
				0.25		over CONCRE						
0.5		<0.1		(0.35)	gravel of co	OUND: Grey, oncrete. Sand is ium, angular-su	fine-coarse. C	d Gravel	Dry NVO			
				0.80	MADE GR	OUND: Brown	. sandv.	/	Dry NVO			
				<u> </u>	fine-medium concrete. Sa	m, angular-suba and is fine-coa	angular gravel se.	of				
				-	Borehole te	erminated at 0.8	m bgl due to re	efusal				
				-		•						
				-								
				-								
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W7 .	Backfill			San	nple Detai		Legend	N . M . d .	Constant		GENER REMAR	AL KS
_	ement seal					Ashphalt		Made	e Ground		NVO - No visual or Olf	actory
°	entonite Fill										Evidence of Contamina m bgl - meters below g Hand pitted to 1.2mbgl	tion. round le
											Time pined to 1.2mbgt	
						Groundw	ater Table	Grour	ndwater Strike			
						Logge	d By	CG		Appr	oved By MI	
							-	CG		11	, IVII	VI.



Proje								Cli	ient					BOR	EHOLE	No
	St	ag Brewer	y, M	ortla	ike, Lor	ndon i	SW14			A.	B Inbev			В	1202/	Λ.
Job N	Ю			Date	note 24-0	8-15	Grou	nd Lev	vel (m)	Co-Ordi	inates ()			БІ	H202/	4
	47	075502	Date   Start Date   24-08-15   Gr													
Cont							Meth		lant Used					Sheet		
	Е	SL						Cor	ncrete Corer ar	nd Solid S	tem Auger.				1 of 1	
			(mc	r						STRAT	Ά					
Depth BGL	Sa	mple / Test Details	PID (p)	Wate	Legend	Dept (Thic ness)	h k-		DESCRIPTI	ON		CC	OMMEN	NTS		Installation
							- TARM	AC ove	er CONCRET	Е						X///
-0.5			<0.1				- MADE	GROU dium,	JND: Grey, sa angular-suban d is fine-coarse	ndy, gular grav	vel of	Wet NVO				
-1.0 -1.0	X	BH202A_0.8					MADE - fine-coa	GROU arse sa	UND: Brown, nd. Gravel is f brounded of c	gravelly, ine-mediu		Dry NVO				
· · ·	Start Date   24-08-15     Color   ESL     Sample / Test Details   O.1     BH202A_0.8   <0.1						inated at 1.8m	ı bgl due to	o refusal							
-	Ba	ackfill					Sample Do	etails	L	egend				GE	NERAL	,
									Ashphalt		a	e Ground			MARKS al or Olfactory ntamination. below ground	y
									Groundwate		<del>-</del>	ndwater Strike		avad D-		
									Logged	ву	CG		Appr	oved By	MM	



See Tibre 20-08-15 End Date 20	REHOLE N	BORE				Clien						t Name and Site	Projec
Sometime 20-08-15   Ead Date 20-08-15   Ead	3H203	B						idon SV	ke, Lon				
Method / Plant Used   Concrete Corer and Solid Stem Auger.   Sheet   1 (	JI 1200			Ordinates ()	n) Co	nd Level	Grour	)8-15 )8-15	ate 20-0	Start Da			
Sample / Text   Bot   Depth   Cagend (Thick   Description   Depth   Cagend (Thick   Description   Description   Depth   Depth   Depth   Depth   Description   Descriptio		Sheet			Jsed	nod / Plan	Meth						
Action   Sample Details   Legend   Sample Details   Legend   Sample Details   Legend   Sample Details   Sample Details   Legend   Sample Details   Sample Details   Legend   Sample Details   Sam	1 of 1	1		id Stem Auger.	e Corer and S	Concre						ESL	
TARMAC over CONCRETE  MADE GROUND: Very dense, sandy, fire-medium, angular-subangular gravel of yellow and red brick, granite and concrete.  One of the process of the proc				ATA	ST						m)		
Ashprent Screen seal riser    Sample Details   Legend   Ashprent   Mode Ground   REMANDE Filter pack streer   Filt		ENTS	COMMEN		SCRIPTION	Б		(Thick-	Legend	Wate	PID (pp	Sample / Test Details	Depth BGL
Concrete / possible granite slab.   No recovery.	$\bowtie$												•
Backfill  Sample Details  Legend  Astiphalt  Bortonite seal riser  Bortonite seal riser  Filter pack surcen			Dry NVO	andy, gravel of concrete.	Very dense, lar-subangula k, granite an	GROUN edium, ang and red bi	- MADE - fine-med - yellow a	(0.70)			<0.1		-0.5
Rorecovery.    Sample Detail   Legend   GENE								0.90	$\bowtie$				
Backfill  Sample Details  Legend  GENE REMA  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the pack screen  Some of the pack screen  GENE REMA  Some of the pack screen  Some of the p				/	granite slab.			1.00					-
Backfill Sample Details Legend  Coment seal riser  Filter pack screen  Briter pack screen  Briter pack screen  GENERAL  Groundwater Table  Groundwater Strike  Groundwater Strike						overy.	- No reco - - -	- - - -					
Backfill  Sample Details  Legend  GENE  REM  NVO - No visual or Evidence of Control  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike							- - -	(2.00)					
Backfill  Sample Details  Legend  GENE  REM  NVO - No visual or Evidence of Control  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike							- - - -	- - - -					
Backfill Sample Details Legend  Sometimes Seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike							- - -	3.00					
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m				ue to refusal	d at 3.0m bg	le termina crete.	- Borehol	-					
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  Ashphalt  REMA  NVO - No visual or Evidence of Contan mbgI - meters belor Hand pitted to 1.2m							- - -						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- -						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- - -						.
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- -	-					
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- - -						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							-						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							- -						.
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							-						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							- -						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							-						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							-						.
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain the plus meters below the pitted to 1.2m							- - -						
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- -	-					
Cement seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Groundwater Table  Groundwater Strike  REMA  NVO - No visual or Evidence of Contain beginning that the pitted to 1.2m							- - -						
Rentonite seal riser  Bentonite seal riser  Filter pack riser  Filter pack screen  Ashphalt  Ashphalt  Made Ground  NVO - No visual or Evidence of Contam m bg! - meters below Hand pitted to 1.2m  Groundwater Table  Logged By  Approved By	ENERAL EMARKS	GEN REM				etails	ımple De	Sa					
Filter pack riser  Filter pack screen  Filter pack screen  Groundwater Table  Groundwater Strike  Evidence of Contain m bgl - meters below Hand pitted to 1.2m	ual or Olfactory	NVO - No visual		∑  Made	Ashphalt								-
Filter pack screen  Groundwater Table  Groundwater Strike	Contamination.  s below ground leve	Evidence of Con m bgl - meters be											
▼ Groundwater Table	1.2mbgi	Hand pitted to 1.											
Logged By GG Approved By			ndwater Strike	∑ Grou	Groundwater Ta								
Taplotted By	MM	proved By	Appro	CG	Logged By								



Proje		ame and Site						Client						BOREHOLI	E No
	St	ag Brewer	y, Mo	ortla	ke, Lon	idon S	W14			Al	B Inbev			PHONO	٨
Job N				Date Start Da	ate 20-0	8-15	Groun	nd Level (1	m)	Co-Ordi	inates ()			BH203	A
		075502		End Da		8-15									
Cont							Metho	od / Plant						Sheet	
	E	SL		ı				Concre			tem Auger.			1 of 1	
			(mdc	er		ъ .	I		,	STRAT	A				
Depth BGL	Sai	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)			ESCRIPTI			C	OMME	NTS	Installation
-						0.20	_		CONCRET			D. MILO			
- 0.5 	<b>×</b>	BH203A_0.5	<0.1			(0.70)	angular t	to sub-ang	D: Very der gular grave	nse, sandy el of brick,	, granite	Dry NVO			
- -						0.90									
1.0			< 0.1		PAAP	1.00	Concrete No recov	e / granite	slab.		/	Damp, NV	O.		1
							- 101600	very.							
-1.5			<0.1				-  -  -								
·							-  -								
-2.0			< 0.1				-  -  -								
						(2.50)	_ _								
- -2.5			<0.1				-  -								
-							- - -								
- 3.0							- -								
-							-  -								
_ 3.5					100 N N N N N N N N N N N N N N N N N N	3.50 3.60	-								
-					P 4 4 P	3.60	Concrete No recov	e / granite verv	slab.		/	Damp, NV	O.		
- - -4.0							- 1101000	very.							
- -						(1.20)	<u>-</u>								
-							-  -								
4.5 - -						4.90	_ _ _								
-						4.80 5.00	D '1. 1	CLAY (r	no recovery	y).		Wet. NVO			
-5.0 -						2.00		e terminat	ed at 5.0m	bgl.					
-							- -								
-							-  -								
							- - -								
-							<u> </u>								
							<u>-</u>								
							_ _								
-							- -								
	Ba	nckfill				Sa	mple De	tails	I A	egend				GENERAI	<u> </u>
							Small distu		Ashphalt	<i>G</i>	Mad	e Ground		REMARK	Š
							⊸ sample				Clay			NVO - No visual or Olfacto Evidence of Contamination	ory
	Filter pack riser													m bgl - meters below groun Hand pitted to 1.2mbgl	nd level.
									Groundwate	er Table	≟ Grou	ndwater Strike			
									Logged	Ву	CG		Appr	roved By MM	



Proje		me and Sit						Client						BORE	HOLE	No
	Sta	g Brewei	ry, Mo	ortla	ke, Lor	ndon S	W14			AF	3 Inbev			DI	1204	
Job N	o		(	Date	ate 21-0	08-15	Groun	d Level (1	m)	Co-Ordin	nates ()			DI	1204	
	470	75502	I	End Da	te 21-0	08-15										
Conti	ractor						Metho	od / Plant	Used					Sheet		
	ES	L						Concret	te Corer an	d Premier	Rig.			1	of 1	
			m)						S	STRATA	A					
Depth BGL		ple / Test Details	PID (ppm)	Water	Legend	Depth (Thick ness)	1	DI	ESCRIPTIO	ON		CC	OMMEN	ITS		Indefine
								C over C	ONCRETE	Ξ		Dry NVO				Y
					XXX	0.28	MADE (	GROUNE	D: Pea shing	gle.		Dry NVO				
-0.5					0000		- CONCR			<i>-</i>		Dry NVO				
			<0.1			0.70		GROUND	D: Red brick	ks.		Dry NVO				-
-1.0			\\\ 0.1		$\rangle\rangle\rangle\rangle$	(0.40)	_ MADE (	GROUND	D: Brown/ r	ed, sandy,	/ ,	Dry NVO				
1.0						1.20		lium, angı	ular-subang	gular brick	ζ.					
	$\simeq$	BH204_1.3	< 0.1			1.50	MADE	GROUNE	D: Very soft	t, brown/ 1	red,	Dry NVO				
1.5						1.30	very san	dy clay. S	and is fine	-coarse.		Dry NVO				
2.0		<0.1				- fine-med	ium, angu nd is fine-	D: Dark gre ular-subang coarse.	y/ black, s gular grave	sandy, el of						
				(1.50)	-											
2.5				-												
2.3			1	-												
		<0.1		2.00	_											
3.0				XXX	3.00		yellow, fi	ne-coarse S	SAND.		Dry NVO					
	=	BH204_3.3	<0.1		0000	3.20	- Brown, s	andy, fin	e-medium,			Damp NVC	)			-
3.5					000	3.50	subangul	lar-subrou	unded GRA							
							- Borehole	terminat	ed at 3.5m	bgl.						
							-									
.							-									
							-									
							-									
							-									
							-									
							_									
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							-									
							-									
							-									
							_									
	Bac	kfill				S	ample De	tails	Le	gend					ERAL	
	Cement	seal					Small distusample	urbed   _	Ashphalt		Mad	e Ground		REM	ARKS	
_	Bentonii	te Fill						P	Concrete		San	d		NVO - No visual Evidence of Cont	amination.	
									Sandy Grav	el				m bgl - meters be Hand pitted to 1.2	Iow ground 2mbgl	leve
									Groundwater	Table	<sup>1</sup> Grou	ındwater Strike				
								-			÷					
									Logged F	By	CG		Appro	oved By	улу	_
		- 1							1 000	-	CG		1.1.	J	MM	



Project Name and Site Location Stag Brewery, Mortlake, London SW						don SW	Client AB Inbev					BOREHOLE No			No
Job No Date 21 00 17						Ground Lovel (m) Co Ordinates ()						В	H205	1	
	47	075502		Start D End Da	ate 21-0 ate 21-0	8-15 8-15									
Con	tract	or					Meth	od / Plant Used					Sheet		
	Е	SL						Concrete Core	and Premi	er Rig.				1 of 1	
			(mc	ı					STRA	ГА					
Depth BGL	Sa	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DESCRI	TION		Co	OMME	NTS		Installation
-					4 4 4 4	0.27	CONCR	RETE							
- 0.5						(0.53)	MADE coarse s	GROUND: Grey, and and gravel of	dense, fine concrete.	to	Dry NVO				-
1.0	><	BH205_1.0	<0.1			0.80	sandy, f	GROUND: Very ine-medium, anguf brick, concrete,	ılar-subangı	ular	Dry NVO				-
- - 1.5			<0.1			(1.70)	fine-coa	rse. Little ricover	y.						
-2.0			<0.1			- - - - -									
- - -2.5 -	×	BH205_2.5	<0.1			(0.50)	Gravel i	orange, gravelly, s fine-medium,			Dry NVO				-
- - - - -			<0.1		0	3.00	gravelly	llar-subrounded, twith depth. Little e terminated at 3.	recovery.	iore					
- - -						- - - -									
-  -						- - - -									
- - -						- - - -									
- - - -						- - - -									
- - - -						- - - -									
- - -						- - - -									
- - - -						- - - -									
-						-									
		ackfill ent seal				Sam	nple De Small dist sample		Legend	∑ Mac	le Ground		GEI REN	NERAL MARKS	,
	Bento	onite Fill						G Gravelly	/ Sand				NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ntamination. below ground	-
								<u>▼</u> Ground	vater Table	≟ Grou	undwater Strike				
								Logg	ed By	CG		Appı	roved By	MM	



Project Name and Site Location Stag Brewery, Mortlake, London SW1							Client	t	A1	B Inbev			BOREHOLE No			
Job No Date Start Date 21-08-15							d Level (	(m)	Co-Ordi				BH206			
4	7075502	1	Start Da End Da	te 21-0	)8-15											
Contrac						Method / Plant Used						Sheet				
ESL							Concrete Corer and Premier Rig.						1 of 1			
		(mdo	er		I I				STRAT	A					T =	
Depth BGL	ample / Test Details	PID (ppm)	Water	Legend	ness)			ESCRIPT			C	OMME	NTS		Installation	
-					0.20			CONCRET								
-0.5					(0.80)	MADE ( coarse sa	GROUN and and g	D: Grey, de gravel of co	ense, fine t oncrete.	О	Dry, NVO.					
-1.5	BH206_1.1	<0.1			(0.80)	Gravel is	GROUN s fine-me d concret	D: Soft bro edium, angu te.	own sandy ılar-subanş	clay. gular of	Dry, NVO.					
					1.80	Borehold on concr	e termina rete.	ted at 1.8n	n bgl due to	o refusal						
B	Backfill				Sam	ple De	tails	L	egend				GENI	===== ERAI	<u></u>	
	nent seal					Small distri sample		Ashphalt	<u> </u>	Mad	le Ground		REMA	ARKS		
	tonite Fill					sample		_		<u>∠</u> √30			NVO - No visual o Evidence of Conta m bgl - meters bel Hand pitted to 1.2r	mination. ow ground		
							<u> </u>	Groundwate	er Table	Grou	undwater Strike					
								Logged	Ву	CG		Appı	roved By	MM		



Projec	t Name and Site						Client					BOREH	OLE No	
Stag Brewery, Mortlake, London SW						V14						BH207		
Job N	0	I	Date	ate 25-0	8-15	Ground Le	evel (m)	Co-Ordina	ites ()			БП	207	
	47075502	1	End Da	te 25-0	8-15									
Contr	actor					Method /	Plant Used					Sheet		
	ESL					C	oncrete Corer a	and Premier R	lig.			1 o	f 1	
		(ma	_					STRATA						
Depth	Sample / Test Details	PID (ppm)	Water		Depth		D EG GD IDI			00		70	1	
BĞL	Details	PIL	>	Legend	(Thick- ness)		DESCRIPT	TON		CC	OMMENT	.5		
					0.20	TARMAC								
					-	MADE GRO	OUND: Grey/re and gravel of c	ed, dense, fine oncrete and b	to rick.	Dry, NVO.				
-0.5	PU207 0 7	<0.1			(0.90)									
	BH207_0.7				(0.50)									
1.0					1.10	-								
		< 0.1			-	Soft, gravell	y, brown CLA n, subangular-s	Y. Gravel is	flint	Dry, NVO.				
1.5					-	(Possibly rev	worked)	abrounded or	min.					
				<u> </u>	-									
20		<0.1			(1.50)									
2.0					-	-								
				- <u>-</u>	-									
2.5	BH207_2.6-3.5	< 0.1			2.60									
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<0.1			-	Brown, dens occasionally	se, gravelly SA medium of fli	ND. Gravel fi nt. Sand is fin	ne, e to	Dry, NVO.				
3.0				0	(0.90)	_ medium.								
	$\Lambda$				[									
3.5	/ \	<0.1		0	3.50									
0.0					-	Borehole ter	minated at 3.51	n bgl.						
					-									
					-	-								
					-									
					-									
					-									
					-	-								
					-									
					-									
					-									
					-									
					-	-								
					-									
					-									
					-									
	Backfill				Saı	nple Detail		egend				GENE		
	ement seal					Small disturbed sample	Ashphalt		Mad Mad	e Ground		REMA		
В	entonite Fill						Gravelly 0	Clay	G Grav	velly Sand	E	NVO - No visual or C evidence of Contami	ination.	
											ll n	n bgl - meters below Hand pitted to 1.2mb	ground level	
									4					
							▼ Groundwa	ter Table	Grou	ındwater Strike				
	T													
							Logged	l By	CG		Approv	ved By	ИM	



Stag Brewery, Mortlake, London SW						V14	Client		AI	B Inbev			BOREHOL			
Job N	No 47075502		Date Start D	ate 25-0	)8-15 )8-15	Groun	nd Level (n	n)	Co-Ordi	nates ()			BH20	8		
Cont	tractor		LIIG De	ac 25 c	70 13	Meth	od / Plant	Used					Sheet			
	ESL					Concrete Corer.							1 of 1			
		(mo							STRAT	A						
Depth BGL	Sample / Tes Details	PID (ppm)	Water		Depth (Thick- ness)		DE	ESCRIPTI	ON		Co	OMME	NTS	Installation		
_				P 4 4 P	0.25 -	CONCR	RETE							\(\int_{1}\)		
- 0.5 -		<0.1			(0.55)	MADE gravel o	GROUND f concrete,	: Brown, brick and	sandy, med I flint.	dium	Dry, NVO.					
						Borehol on conc	e terminato	ed at 0.8m	bgl due to	o refusal						
					-											
	Backfill				Sar	nple De	etails	L	egend				GENERA REMARK	L		
	Cement seal Bentonite Fill							Concrete		Mad Mad	le Ground		REMARK  NVO - No visual or Olfac  Evidence of Contaminatio m bgl - meters below grou Hand pitted to 1.2mbgl	tory n.		
							Ā	Groundwate	er Table	∫ Grou	undwater Strike					
								Logged	Ву	CG		Appı	roved By MM			



Project Name and Site Location Stag Brewery, Mortlake, London SW14  Job No Date 25, 00, 15						don CU	71.4	Client 4 AB Inbev					BOREHOLE No		
						idon 5 w	Ground Laval (m) Co Ordinatas ()					BH208A			4
JOD I		075502		Start D	oate 25-0 ate 25-0	)8-15 )8-15	Groui	ia Levei (III)	Co-Oro	umates ()					
Cont	Contractor					70-13	Meth	od / Plant Used					Sheet		
		SL						Concrete Cor	er and Premi	er Rig.				1 of 1	
			В						STRA	ΓA					
Depth BGL	Sa	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DESCR			C	OMME	NTS		Installation
-					P 4 4 P	0.25	CONCR	RETE							
-0.5			<0.1	]		0.50	to suban	GROUND: Fine gular concrete g	ravel. k brown, slig	htly	Dry NVO Dry NVO				- -
-1.0	X	BH208A_0.8 BH208A_1.1	<0.1	ļ		(0.50)	fine occ subroun	gravelly, fine to asionally coarse ded of brick and	, subangular flint.	to	Dry NVO				_
- - 1.5 -			<0.1	ļ		- - - - -	coarse S subangu	n density, brown SAND. Gravel is lar to subrounden 1.5m and 1.9m	fine to medi ed of flint. Ve	um,					
-2.0			<0.1	l		(2.50)	-								
- 2.5 - -			<0.1	l	0	- - - - -									
3.0			<0.1			3.50									
- 3.5 - - - - -						- - - - -	Borehol	e terminated at 3	3.5m bgl.						
-						- - - - - -									
- - -						- - - - -	-								
-						- - - - -									
- - - -						- - - - -	-								
-						- - - -									
		ackfill ent seal				Sar	nple De		Legend	∑ Mad	le Ground		GEI REN	NERAL MARKS	,
		nite Fill					sample	11 —	lly Sand	<u> </u>			NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ntamination. below ground	
								Groun	dwater Table	∑ Grou	undwater Strike				
								Log	ged By	CG		Appı	roved By	MM	



Proje		lame and Site ag Brewer			ke, Lor	ıdon SW	714	Client	1	AB Inbev				EHOLE	
Job l		075502	- 1 :	Date Start D	ate 25-0	08-15 08-15	Groun	nd Level (m)	Co-Oı	rdinates ()			В	H209	
Con				End Da	ne 23-0	10-13	Meth	od / Plant Used					Sheet		
	Е	SL						Concrete Core	r and Prem	ier Rig.				1 of 1	
			(m)	Ι.,					STRA	TA					
Deptl BGL	Sa	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DESCRI	PTION		CC	OMMEN	NTS		Installation
_					9 4 4 9		CONCR	RETE							
- 0.5 -	×	BH209_0.5	<0.1				gravelly, coarse, a concrete		and. Gravel	is fine to	Dry NVO				
1.0			<0.1			- - - - -	Becomin	ng							
- 1.5 - -						(2.43)									
-2.0						- - - -									
-2.5					2.70										
-3.0		BH209_2.7-3.4 < 0.1					of flint.	gravelly, fine to comedium, subang Very little gravel covery between 1	gular to sub between 3 .2m - 3.4m	orounded .0 -3.2m.	Dry NVO				
-	V \				. · . · a ·	3.40		becoming dense e terminated at 3.							
-  -  -  -						- - - -									
- - - -						- - - -									
- - - -						- - - - -									
-  -  -						- - - -									
_ - - -						- - - - -									
- - -						- - - -									
	Ва	ackfill				San	nple De	etails	Legend					NERAL	
		ent seal onite Fill					Small dist sample	Concre		Mad	e Ground		NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ntamination. below ground	y
								<b>▼</b> Ground	water Table	1 Gro∪	ındwater Strike				
								Logg	ed By	CG		Appr	oved By	MM	



Proje		Name and Site tag Brewer			ike Lor	ndon SW	714	Client		Δ1	B Inbev			BOR	EHOLE	No
Job N		ug Brewer		Date				d Level (1	m)	Co-Ordi				_ E	3H210	)
		075502		Start D	<sub>ate</sub> 26-0 ate 26-0	)8-15 )8-15		`	,							
Cont	ract	or					Metho	od / Plant	Used					Sheet		
	Е	SL						Concre	te Corer an	d Premier	r Rig.				1 of 1	
			(md	H					, ,	STRAT	A					
Depth BGL	Sa	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)			ESCRIPTI(	ON		C	OMME	NTS		Installation
					P 4 4 P	0.30	CONCR	RETE								
-0.5	×	BH210_0.8	<0.1			(0.90)	MADE of to coarse natural s	e, subangu	Dense, builar to roun	rown, san ded grave	ndy, fine el of	Dry NVO				-
- 1.0 						1.20										
- 1.5 			<0.1			(0.90)	Soft, bro	own, sand	y CLAY (p	ossibly re	eworked	Dry NVO				
-2.0			<0.1			2.10										
-		BH210_2.2-2.8	<0.1				is fine to	medium	ine to coar to subroun ravelly with	ded of flin	o. Gravel nt.	Dry NVO				
-2.5 - -	$\land$	<u> </u>	<0.1			(1.40)										
-3.0						- - -										
- 3.5 -			<0.1		0	3.50	Borehole	e terminat	ed at 3.5m	bgl.						
- - -						- - - -										
- - -						- - -										
-						- - -										
-						- - - -										
- - -						- - -										
- - - -						- - -										
- - -						- - -										
-						-										
	В	ackfill		-		San	nple De	etails	Le	egend				GF	NERAL	
		ent seal							Concrete	<u> </u>	Mad	le Ground		REI	MARKS	•
	Bento	onite Fill					sample		Sandy Clay		G Gra	velly Sand		NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ontamination. below ground	-
								Ī	Groundwate	r Table	≟ Grou	undwater Strike				
									Logged 1	Ву	CG		App	roved By	MM	



Proje		Vame and Site tag Brewer			ike Lor	don SW	714	Client	Δ	B Inbev			BOR	EHOLE	No
Job l		ing Diewei	· .	D-4-				nd Level (m)		linates ()			— В	H211	
		075502	:	Start D End Da	ate 26-0	18-15 18-15		,		V					
Con	tract	or					Meth	od / Plant Used					Sheet		
	Е	SL						Concrete Cor	er and Premie	er Rig.				1 of 1	
			(md	ır					STRAT	ГΑ					
Depth BGL		mple / Test Details	PID (ppm)	Water	Legend	ness)		DESCR	IPTION		CC	OMME	NTS		Installation
-						0.25	CONCR								
0.5 0.5	×	BH211_0.7	<0.1				coarse, s	GROUND: Bro subangular to ro stone, wood and ng clayey with d	unded gravel occasional br	of	Dry NVO				
1.0 						(1.25)   -   -   -   -   -   -   -   -   -									
-1.5 - - - -2.0			<0.1			(0.60)	Gravel is angular	own, grey, sandy s fine to medium and subrounded e. (possibly rew	n, subangular l of flint. Sand	to	Dry NVO				-
- 2.0 - - - -	<b>×</b>	BH211_2.2					Brown, is fine to	gravelly, fine to o medium, subar coming more gr	coarse SANI	ided of	Dry NVO				_
- - - - - - -		<0.1													
- - - - - -							Boreholo	e terminated at 3	3.5m bgl.						
- - - - -						- - - - - - -									
- - - -						- - - - -									
- - - - -						- - - - - -									
-						-									
-						<u>                                     </u>							П		
		ackfill					nple De		Legend					NERAL MARKS	
		ent seal onite Fill					Small dist sample	11 —	rete elly Sandy Clay		de Ground velly Sand		NVO - No visu Evidence of Co m bgl - meters Hand pitted to	al or Olfactory ontamination. below ground	у
								<u> </u>	idwater Table	∯ Grou	undwater Strike				
								Log	ged By	CG		Appı	roved By	MM	



Proje		ame and Site ag Brewer			ka Lon	don CI	3714	Client		<b>A</b> T	B Inbev			BOREHOLI	ΕN
Job N		ag biewei	-	>				d Level (n	n)	Co-Ordi				BH212	2
200 I		075502	S	tart Da	te 27-0 te 27-0	8-15 8-15	Ground	G ECVCI (II	-1/	Co-Oiul	inucs ()				
Cont				na Dae			Metho	od / Plant U	Used					Sheet	_
	Е	SL						Concrete	e Corer and	d Premiei	r Rig.			1 of 1	
			m()	L					S	STRAT	A				
epth BGL	Sa	mple / Test Details	PID (ppm)			ness)			ESCRIPTIO	ON		CC	OMMEN	NTS	
0.5	<b>X</b>	вн212_0.6	<0.1			0.30	- MADE C	GROUND sand. Gra	e: Pink / rec avel is fine al coarse b	to mediu	ım of	Dry NVO			
1.5		BH212_1.8-2.5				1.70	- Dense, b	rown, grav fine to m Becoming	velly fine t edium suba g more gra	o coarse s angular to velly with	SAND. 0 h depth.	Dry NVO			
3.0			<0.1			3.50	- - - - - - -								
3.5			<0.1				Borehole	terminate	ed at 3.5m	bgl.					
						-	- - - - - - - - - - - - -								
	Ва	ackfill				Sa	mple Det		Le	gend				GENERAI	L
_		ent seal inite Fill						ırbed	Concrete Gravelly Sar	nd	_	e Ground		REMARK  NVO - No visual or Olfacte  Evidence of Contamination m bgl - meters below grout  Hand pitted to 1.2mbgl	ory
								Ī	Groundwater	Table	≟ Grou	indwater Strike			
									Logged F					roved By MM	



Proje		tag Brewery, Mortlake, London					W14	Client		Al	B Inbev			BOREHOLI	
Job l	No	7075502	I	Date	ate 27-0	08-15		nd Level (	m)	Co-Ordi				BH213	3
Con			1	Eliu Da	ne 27-0	70-13	Meth	od / Plant	Used					Sheet	
	Е	SL						Concre	te Corer an	d Premier	Rig.			1 of 1	
			m)				<u> </u>			STRAT	A			<u> </u>	
Depth BGL	Sa	mple / Test Details	PID (ppm)	Water	Legend	Depth (Thick ness)		D	ESCRIPTI			Co	OMME	NTS	Installation
-						0.24	- CONCR	RETE							
- 0.5 -	×	BH213_0.6	<0.1			(0.76)	MADE clayey, s subangu	sandy, fin ılar gravel	D: Brown / e to coarse of brick, c ne to coarse	angular to	0	Damp NVC	)		
- 1.0 			<0.1			(0.60)	- Soft bro - (Possibl	wn grey s y reworke	lightly graved clay)	relly CLA	Y.				
-1.5 - - - -2.0	X	BH213_1.7-2.0	<0.1			1.60	- Dense, t - Gravel i _ subroun	orown, grass fine to noded of fline to the	avelly, fine nedium, an nt. Occasio oughout.	to coarse gular to nal sand a	SAND.	Damp NVC	)		
- - -2.5			<0.1			(1.40)	- - - - -								
3.0			<0.1		0	3.00		e terminat	ted at 3.0m	bgl.					
- - - - - - - - -							- - - - - - - - - - -								
- - - - - - - - -							- - - - - - - -								
							- - - - - - - -								
	B	ackfill		-		S	ample De	etails	I e	egend				GENERAI	<u> </u>
	Ceme	ent seal onite Fill					Small dist sample		Concrete			de Ground		REMARKS  NVO - No visual or Olfactor  Evidence of Contamination  m bgl - meters below grour  Hand pitted to 1.2mbgl	ory
								Ā	Groundwate	r Table	₫ Gro	undwater Strike			
									Logged	Зу	CG		App	roved By MM	



Projec		e and Sit			ke, Lor	idon SV	V14	Client		AI	B Inbev			BOREHO	
Job N		75502	-   9	Date Start Da	ate 25-0 te 25-0	08-15 08-15	Grour	nd Level (1	m)	Co-Ordin	nates ()			BH2	14
Contr							Meth	od / Plant	Used					Sheet	
	ESL	_						Concret	te Corer a	nd Solid St	em Auger	•		1 of	1
			Э							STRAT	A			·	
Depth BGL	Samp De	ole / Test etails	PID (ppm)	Water	Legend	Depth (Thick- ness)		DI	ESCRIPT			C	OMME	NTS	Installation
-					2 4 4 2		TARMA								-\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	≥ B	BH214_0.85	<0.1			(0.60)	gravel. S medium of flint a	GROUND Sand is me to coarse, and concre	edium to c subangul ete.	own, dense oarse. Grav ar to subro	vel is ounded	Dry NVO Dry NVO			
- 1.0 - - - - 1.5						(1.80)	gravelly Gravel i	sand. San	d is media to coarse.	um to coars subangula	se.				
-2.0															
-2.5	Rack	νfill				2.60	on conci	rete.		n bgl due to	o refusal			CENER	AI
⊠ c	Bacl ement s entonite	seal				Sar	nple De Small dist sample	lurbed	Ashphalt Made Grou		ه د د د د د د د د د د د د د د د د د د د	crete undwater Strike		GENER REMAR  NVO - No visual or Oll Evidence of Contamina m bgl - meters below g Hand pitted to 1.2mbgl	actory tion.
									Logged		——————————————————————————————————————		Appr	roved By GI	<u></u>



Proje	ct Name and Sit	te Locat	ion				Client					BOREHOLE	E No
	Stag Brewe	ry, Mo	ortla	ke, Lon	idon SV	V14			AB Inbe	V		DU044	^
Job N	Ю	I	Date	ate 25-0	8-15	Ground	d Level (r	n)	Co-Ordinates ()			BH214	A
	47075502	E	End Da	te 25-0	8-15								
Cont	ractor					Metho	d / Plant	Used				Sheet	
	ESL						Concret	te Corer an	d Solid Stem Aug	ger.		1 of 1	
		m)						5	STRATA				
Depth	Sample / Test Details	PID (ppm)	Water		Depth				227			DC.	ation
BĞL	Details	PIE	<b>*</b>	Legend	ness)		Dł	ESCRIPTIO	ON	C	OMMENT	i S	Installation
E				P 4 4 P	0.05	TARMA							
ļ.					-	CONCRI MADE C		): Light bro	own, dense, sandy	_/ Dry NVO			
- 0.5 -					(0.60)	gravel. Sa	and is me	dium to co	arse. Gravel is				
ŀ					0.80	of flint ar	nd concre	te.	r to subrounded	Dry NVO			_
-1.0						MADE C	GROUND	): Light bro	own, dense m to coarse.	Diyivo			
ļ.					-	Gravel is	medium	to coarse,	subangular to rete.				
- 1.5					(1.20)	subround	led of flin	it and conc	rete.				
ŀ					-								
-2.0					2.00								
2.0					-	Borehole on concre		ed at 2.0m	bgl due to refusal				
‡					-	on concre	cic.						
ŀ					-								
E													
-					-	_							
ļ.					-								
-					-								
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E						<del>-</del>							
ŀ					-								
- 12					-								
22/6					-								
08.02.10 STAG LOGS - FULL.GPJ AGS3 ALL.GDT 22/9/15	Backfill				Sa	mple Det	tails	Le	egend			GENERAL	C
AGSS	Cement seal							Ashphalt	P <sub>d</sub> C	oncrete		REMARKS	
GB E	Bentonite Fill							Made Groun	nd		E	NVO - No visual or Olfacto Evidence of Contamination.	1.
-JUL											l r	m bgl - meters below groun Hand pitted to 1.2mbgl	ıd level.
- SS													
O P									а				
STA							▼	Groundwater	r Table $\sum_{\underline{\underline{J}}}^{\underline{1}}$ G	roundwater Strike			
22.10													
). 80								Logged I	By MI	М	Approv	ved By GM	



Projec	et N	ame and Sit	e Loca	tion				Client						BORE	HOLE 1	No
	St	ag Brewer	ry, M	ortla	ike, Lor	idon S	SW14			AB	Inbev	,		DI	<b>12</b> A	
Job N	O		]	Date	oate 25-0	8-15	Groun	d Level (1	m)	Co-Ordina	ates ()			БІ	H2A	
	47	075502	1	End D	ate 25-0	8-15										
Contr	acto	or					Metho	od / Plant	Used					Sheet		
	E	SL						Concre	te Corer an	d Premier I	Rig.			1	of 1	
			(ma	L					5	STRATA	<u>.</u>					
Depth BGL	Saı	mple / Test Details	PID (ppm)	Water	Legend	ness)	C-		ESCRIPTIO	ON		CC	OMMEN'	ΓS		Installation
-					4 4 4 4	0.25	- CONCR	ETE								<b>V</b> //
- 0.5	×	BH2A_0.5	<0.1			(0.55)	MADE C fine-med	lium angu	D: Brown sa llar gravel of Sand is fin	of flint and		Dry NVO				
-					P P P P	0.80	- CONCR	ETE				Dry NVO				
1.0 			<0.1		2 4 2	1.10	- Soft, bro	wn, sand	y CLAY. (I	Possibly		Dry NVO				
- 1.5	=	BH2A_1.5	<0.1				- reworked	i clay)								
-						(1.40)	-  -  -									
-2.0			<0.1			(1.40)	-  -									
-		<0.1					- - -									
- -2.5		0.1				2.50	Dense h	rown ora	velly fine	coarse SA	ND	Dry NVO				
		0.1				- Gravel is	fine-med	lium, anded of fli		ND.	Diyivo					
-3.0		<0.1					iai-subiot	ilided of th	π.							
-					0		-									
-3.5						3.50		terminat	ed at 3.5m	høl.						
-							-			- 6						
-							- - -									
-							-									
-							- - -									
-							-									
-							- - -									
-							-									
							- -									
							-									
-							_ -									
							-									
-							-									
							-									
	Do	olefill				C	ample De	toila	I o	egend			П	CEN	EDAI	_
M 6					•	-	Concrete	genu	No.	ade Ground			ERAL ARKS			
	Cement seal  Sentonite Fill					Small distu sample	irbed 3	Sandy Clay			avelly Sand	1	NVO - No visual of Evidence of Conta m bgl - meters bel Hand pitted to 1.2	or Olfactory mination. ow ground le	evel.	
									Groundwate	r Table	1 Gr	oundwater Strike				
											≟ Gro					
									Logged I	Ву	CG	·	Appro	ved By	MM	



Proje	ct N	ame and Sit	te Loca	tion				Client						BORE	HOLE	No
	St	ag Brewe	ry, Mo	ortla	ke, Lon	idon S	W14			AB	Inbev	,		Р	ЦЭΛ	
Job N	lo		I	Date	ate 28-0	8-15	Ground	l Level (r	n)	Co-Ordin	ates ()			D	Н3А	
	470	075502	I	End Da	te 28-0	8-15										
Cont							Metho	d / Plant	Used					Sheet		
	E	SL						Concret	te Corer an	d Premier	Rig.			1	of 1	
			(ma	L					S	STRATA	Λ					
Depth BGL	Sar	nple / Test Details	PID (ppm)	Water	_	ness)		DI	ESCRIPTIO	ON		CC	OMMEN'	ΓS		Installation
						0.25	- CONCRI	ETE.								<b>X</b> ///
- 0.5 -	×	BH3A_0.5	<0.1				MADE G	se sand. ( ally coars	D: Brown, g Gravel is find the, angular- concrete.	ne-mediun	n, r of	Dry NVO				-
-1.0			<0.1			1.50	- - - - -									
1.5 - -			<0.1		0000	(0.50)	- Dense, br	ar-subrou	ndy, fine-mo	edium, VEL of fli	int.	Dry NVO				-
-2.0		<0.1				2.00	- Dense, br - Gravel is	own, gra	velly, fine- lar-subrour	coarse SA	ND.	Dry NVO				_
- -2.5 -	<0.1		(1.00)	of flint.												
-3.0			<0.1		0	3.00		terminate	ed at 3.0m	bgl.						
							- - -									
- - -							- - -									
- - -							- - - -									
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_	<u> </u>	.1 ("11				<u> </u>	1 5	.,		1			TI			
		ıckfill					mple Det	-		gend					ERAL ARKS	
	Cement seal  Bentonite Fill				Small distur sample	bed	Concrete Sandy Grave	el		ade Ground avelly Sand		NVO - No visual Evidence of Cont m bgl - meters be Hand pitted to 1	or Olfactory amination. low ground	у		
								<u>_</u>	Groundwater	· Table	₫ Gro	oundwater Strike				
									Logged F	Ву	CG	j	Appro	ved By	MM	



Proje		Name and Site				1 677		Client						BOR	EHOLE	No
		tag Brewer			ike, Lon	don SV					B Inbev			_ F	3H4A	
Job N		7075502		Date Start D End Da	ate 27-0 ate 27-0	8-15 8-15	Groun	nd Level (n	n)	Co-Ordi	nates ()			·	J. 1. 1.7 (	
Cont	rac	tor					Meth	od / Plant	Used					Sheet		
	E	ESL						Concret	e Corer an	d Premier	Rig.				1 of 1	
			(mi	L					Ş	STRAT	A					
Depth BGL	Sa	ample / Test Details	PID (ppm)	Water	Legend	Depth (Thick- ness)		DE	ESCRIPTIO	ON		C	OMME	NTS		Installation
-0.5	<b>&gt;</b>	BH4A_0.9	<0.1			(1.30)	clayey, g	gravelly, fi	ets.	sand. Gra	vel is	Dry. Possit	ole asbes	stos fragment	s.	
1.0 - -			<0.1			1.30										
- 1.5 - -			<0.1			-  -  -  -	Gravel is	s fine-med	elly, fine-co ium, inded of fli		ND.	Dry NVO				
-2.0			<0.1			- - - -	-									
-2.5 -			<0.1		0	(2.70)										
-3.0			<0.1			- - -	-									
-3.5 - -	X	BH4A_3.5-4.0	<0.1		0	4.00										
-4.0			<0.1				Borehold	e terminate	ed at 4.0m	bgl.						
	Cem	ackfill ent seal onite Fill				Sar	mple De			egend	G Grav	velly Sand		NVO - No visu Evidence of Co m bgl - meters	ontamination. below ground	Ty
		T						Ā	Groundwater		<del>_</del>	undwater Strike		Hand pitted to		
									Logged I	Зу	CG		App	roved By	MM	



Proje		ame and Sit			lva I au	don CU	71 /	Client		AB Inbev			BORI	EHOLE	No
Job N		ag Brewei	-		ike, Lor	idon S W		- 1 I1 ()					— Е	BH5A	
JOD I		075502		Date Start D	ate 28-0 ate 28-0	08-15 08-15	Groui	nd Level (m)	Co-Oi	rdinates ()					
Cont				End Da	ite 20-0	70-13	Meth	od / Plant Used					Sheet		
		SL						Concrete Co		ier Rig.				1 of 1	
			Î						STRA						
Depth	Sai	mple / Test	PID (ppm)	Water	Legend	Depth									ltion
BĞL	, J.	Details	PID	<b>M</b>	Legend	(Thick- ness)		DESCR	RIPTION		C	OMME	NTS		Installation
						0.10		GROUND: Pea		1	Dry NVO				_\//
-		DUSA 0.5				-	gravelly	GROUND: Bro , fine-coarse sa	nd. Gravel is	ciayey,					
0.5 -		BH5A_0.5	<0.1				subangu	dium, occasional lar-subrounded	ally coarse, of red brick						
-						(1.70)									
-1.0			<0.1			(1.70) _									
-						-									
1.5 -			<0.1												
-						1.80	Dense, b	orown, gravelly	, fine-coarse	SAND.	Dry NVO				
-2.0			<0.1			-	Gravel i flint.	s fine-medium,	subangular-r	ounded of					
					0	(1.20)									
-2.5 -			<0.1		0	`									
						3.00									
-3.0 -			<0.1			3.00	Borehol	e terminated at	3.0m bgl.						
						-									
-						-									
						-									
-						_									
						-									
_						-									
-						-									
						_									
-						-									
						-									
-						-									
-						-									
-						-									
						-									
						-									
						-									
	Ва	ıckfill					nple De		Legend				GEN	NERAL	r 1
		nt seal					Small dist sample	urbed Made	e Ground	o Gra	velly Sand			MARKS	
	Bento	nite Fill											NVO - No visua Evidence of Con m bgl - meters b	ntamination.	-
													Hand pitted to 1	1.2mbgl	
								Groun	ndwater Table	∯ Grou	undwater Strike				
										=					
								Log	gged By	CG		App	roved By	MM	



Projec	t Name and Site	Loca	tion				Client						BOREH	OLE No
	Stag Brewer	y, Mo	ortla	ke, Lon	idon SV	W14			AB	Inbev	V		DL	1 <b>7</b> A
Job No	O	I	Date	ate 27-0	8-15	Ground	Level (r	n)	Co-Ordina	ates ()			ВН	17A
,	47075502	I	End Da	te 27-0	8-15									
Contra						Method	l / Plant	Used					Sheet	
	ESL						Concret	te Corer and	d Premier I	Rig.			1 0	of 1
		(mic	L					S	TRATA					
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	ness)		DI	ESCRIPTIO	ON		CC	OMMEN	TS	
-						CONCRE	TE							×
					(0.55)	- -								
-	BH7A_0.7	<0.1			(0.65)	MADE GI slightly gra subangular	avelly, s	Soft, darl ilty clay. G brick with	ravel is fin	e and	Damp NVC	)		
-1.0					1.20	wood.								
-		<0.1			1.50	Brown, sli medium to	ghtly gr	avelly CLA of flint.	Y. Gravel	is	Dry NVO			
-1.5 -		<0.1			1.30	Dense, bro Gravel cor fine-mediu	own, gra	velly, fine- reases with	depth. Gra	avel is	Dry NVO			
-2.0						<del>-</del> -								
				0	(1.50)	- -								
-2.5	BH7A_2.5-3.0	<0.1		· · · · · · · ·		- -								
				0		- - -								
-3.0		<0.1		. · . · a · .	3.00	- Borehole t	erminate	ed at 3.0m	bgl.					
-						-								
						- - -								
						- -								
-						- -								
						- - -								
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	Backfill				Sa	mple Deta	ile	Ιρ	gend				CENE	DAI
						•	$\neg$		gena	N M	Indo Cround		GENE REMA	
_	ement seal entonite Fill					Small disturb sample	ped 3	Concrete Gravelly Cla	у		lade Ground Gravelly Sand		NVO - No visual or Evidence of Contam m bgl - meters below Hand pitted to 1.2m	Olfactory ination. v ground level
										o				
							Ī	Groundwater	Table	± Gı	roundwater Strike			
								Logged F	Ву	CO	G	Appro	oved By	MM



	Name and Si						Client						BORE	HOLE No
;	Stag Brewe	ry, Mo	ortlal	ke, Lon	don SW	714			AB	Inbev			DI	IZD
Job No	)	Г	Date	- 27-0	8-15	Ground	d Level (r	n)	Co-Ordina	ates ()			Br	17B
4	17075502	E	art Da Ind Dat	te 27-0 e 27-0	8-15									
Contra	ctor					Metho	d / Plant	Used					Sheet	
	ESL						Concret	e Corer.					1	of 1
		m)							STRATA					
Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thick-		DE	ESCRIPTIO	ON		CC	OMMEN.	ΓS	Installation
		+ -			ness) = 0.20 -	CONCRI	ETE							
					0.30	MADE C	ROUND	: Brown, s	andy,	. /	Dry NVO			
-0.5					0.60	fine-med	ıum, angı concrete.	ılar-subang Sand is fir	andy, gular gravel ne-coarse.	of				
<u> </u>					7	CONCRI	ETE with	rebar.		/				
					-	Borehole on concre	terminate ete.	ed at 0.6m	bgl due to r	refusal				
					-									
F					-									
E					-									
<u> </u>					-									
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2 -					-									
77					-									
												П		
7 J	Backfill				San	nple Det		Le	gend				GENI REMA	ERAL
Ç ⊠ Ce	ment seal						Pd	Concrete		Made	e Ground	-		
<u> </u>												1	NVO - No visual o Evidence of Contai	mination.
													m bgl - meters belo Hand pitted to 0.6r	ow ground level. nbgl
- n														
										1				
<u>×</u>							▼	Groundwater	Table	Grou	ndwater Strike			
OSUZ:10 STAG LOGS - FULL GPJ AGS3. ALL GPJ A	-										-			
380								Logged I	Зу	CG		Appro	ved By	MM



Project Name and Site Location Client Stag Brewery, Mortlake, London SW14 AE					B Inbev			BOR	EHOLE	No						
Job N		iag biewei		Date	-			d Level (m)	,	Co-Ordi				_ E	BH8A	
3001		075502		Start D	ate 26-0 ate 26-0	)8-15 )8-15	Groun	id Level (III)	,	Co-Olui	mates ()					
Cont				Liid Di	200	.0 10	Meth	od / Plant U	sed					Sheet		
	Е	SL						Concrete	Corer and	l Premie	r Rig.				1 of 1	
			(ma						S	TRAT	A					
Depth BGL	Sa	mple / Test Details	PID (ppm)	Water	-	Depth (Thick- ness)		DES	SCRIPTIC	)N		C	OMME	NTS		Installation
-					0 0 0 0		CONCR									
	_	BH8A				0.40	MADE of	GROUND: f concrete.	Grey, san	dy, fine-	medium	Dry NVO Dry. Black	ach note	ad.		_
0.5 - -		БПОА	2.1			(0.40)	MADE Gravel is	GROUND: s medium to	Black san	d and gr	avel.	Diy. Black	asii iiou	zu.		
-10			<0.1			0.80	sub-rour ash.	nded of flint	. Sand is	fine-coar	rse of	Dry NVO				-
<del>-</del> 1.0			<0.1			[-	Soft, bro	own/ grey, sa	andy, grav	velly CL	AY.					
- 1.5			<0.1			(1.40)	(Possibi	y reworked	ciay).							
- 1. <i>3</i> -			<0.1		<u> </u>	(1.40)										
-2.0			<0.1			-										
- 2.0						2.20	D 1		11 (*		AND	D. MVO				
- 2.5			<0.1			-	Gravel is	orown, grave s fine-mediu	elly, fine-d um subang	coarse S <i>i</i> gular-rou	AND. nded of	Dry NVO				
- 2.3					0	-	flint.									
- -3.0			<0.1			(1.30)										
-	$\mathbb{N}$	BH8A_3.0-3.5	\0.1			-										
- 3.5			<0.1		0	3.50										
-						-	Borehole	e termonated	d at 3.0m	bgl.						
						-										
-						-										
						-										
-						-										
-						-										
-						-										
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-						-										
-						-										
	В	ackfill				San	nple De	etails	Le	gend				GE	NERAL	,
	Ceme	ent seal					Small dist sample	urbed 6	Concrete		Mad	le Ground		REI	MARKS	•
	Bento	onite Fill							Gravelly San	dy Clay	G Grav	velly Sand		NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ontamination. below ground	-
									Groundwater	Table	Grou	undwater Strike				
									Logged B	у	CG		Appı	roved By	MM	



Proje		ame and Site ag Brewer			ke, Lor	idon SW	/14	Client		AB Inbev				EHOLE	No
Job l	No	075502	]	D-4-	ate 26-0			nd Level (m)	Co	o-Ordinates ()			_ E	ЗН9А	
Con				End Da	ite 20-0	10-13	Meth	od / Plant Used					Sheet		
	Е	SL						Concrete Co	rer and P	remier Rig.				1 of 1	
			(m)						STI	RATA					
Depth BGL	Sai	mple / Test Details	PID (ppm)	Water	Legend	ness)		DESCR	RIPTION		Co	OMME	NTS		Installation
-					0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.30	CONCR	RETE							
0.5 0.5	><	ВН9А_0.5	<0.1				fine-coa subroun	GROUND: Det arse sand. Grave ded-rounded of ng clayey with o	el is fine-1 natural s	medium, tone,	Dry NVO				-
1.0			<0.1			(1.90)	·	ig clayey with c	сриі. То	or recovery.					
- 1.5 															
-2.0		BH9A_2.2-3.3		<u>\$</u> _		2.20	MADE	CDOLINIDA DI	ale aande		Wet NVO				
- 2.5 -	$\mathbb{N}$					(1.10)	fine-med	GROUND: Bladium, angular, is shed concrete. Scovery.	red/grev g	gravel of flint	Wet NVO				
3.0	$\mathbb{N}$					3.30									
- - -						- - - -	Borehole on concr	e terminated at rete.	3.3m bgl	due to refusal					
- - -						- - - -									
-						- - - -									
- - - -						- - - -									
-						- - - -									
- - - -						- - - -									
- - -						- - - -									
						-									
		ackfill ent seal				San	nple De Small dist sample		Lege		de Ground		GEI REN	NERAL MARKS	,
	Bento	nite Fill											NVO - No visu Evidence of Co m bgl - meters Hand pitted to	ntamination. below ground	-
								<u>▼</u> Groun	ndwater Tab	ole $\sum_{\underline{}}$ Grou	undwater Strike				
								Los	gged By	CG		Appı	roved By	MM	_



<b>APPENDIX</b>	-	LABORA'			
		IABURA		ICIL . A	
AII LIVIA		LADUINA			

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 BreweryReport 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









Validated

SDG: 150822-16 Location: Stag Brewery Order Number: H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number:

328751 Client Reference: Attention: Gary Marshall Superseded Report:

**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.

Validated

150822-16 SDG: Job:

H\_URS\_WIM-273

Stag Brewery Location: Customer: AEČOM

Order Number: Report Number:

Superseded Report:

328751

Client Reference:	VIIVI-Z73	Attention			ary	Maı	sha	all								
SOLID				_		_			_			_		_		_
Results Legend	Lab Sample I	No(s)		11942793		11942/96			1942797		11942190	10/107		11942799		11942791
X Test				93		96			97		Ö	Ď Ø		99		91
No Determination			Г				T					Ť		T		П
Possible	Custome	r		Ψ.	!	Ψ.	2		堲		<u></u>	P		무		뫄
	Sample Refe	rence		BH204		BH204	5		BH205		100	202		BH206		вн203А
			Г		T							Ť		T		
	AGS Refere	nce														
			H				+					+		$\dashv$		
	Depth (m	.\		1.30		3.30			1.00		١. ٥	ა უ		1.10		0.50
	Deptii (iii	')		0		Ċ			٥		c	>		0		0
			250	60g 400	250	400	250	400	60g	250	400	250	400	60g	400 250	60g
	Containa	_	g Amb		g Amb	g Tub	g Amb	g Tub	Voc	a Amb	a T	g Amb	g Tub	VOC	g Tub Amb	Voc
	Containe	1	er Jar	60g VOC (ALE215) 400g Tub (ALE214)	er Jar	(ALE2	er Jar	(ALES	(ALE2	er Jar	A F	er Jar	(ALE2	(ALE2	ALE2	(ALE2
Access to October The Co	All		Æ.	4) 5	Æ	14)	į́β	14)	15)	P :	4)	P	14)	15)	Λ <u>Α</u>	15)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6		X		X		X			X		X		X	
Asbestos ID in Solid Samples	All	NDPs: 0		^		^	+	^		4	^	+	^		^	$\vdash$
·		Tests: 6		X		X		X		2	X		X		X	
Asbestos Quant Waste Limit	All	NDPs: 0					+						i i			Н
		Tests: 2					t	X		1		Ì			X	
Easily Liberated Sulphide	All	NDPs: 0 Tests: 6											Ī	П	Ī	
				X		X		X		2	X		X		X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6														
EPH CWG (Aromatic) GC (S)	All	NDPs: 0	X		X		X			X		X	_	H	X	Н
El 11 oves (Alomatic) es (e)	OII.	Tests: 6	X		X		X			X	+	X			X	Н
GRO by GC-FID (S)	All	NDPs: 0	Ê	+	^					_	+			H		$\vdash$
		Tests: 6		X		)	(		X		)	K		X		X
Hexavalent Chromium (s)	All	NDPs: 0								+			t	Ħ	$^{+}$	T
		Tests: 6		X		X		X		2	x		X	П	X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6													I	
			X		X		X			X		X	_	<u> </u>	X	
PAH by GCMS	All	NDPs: 0 Tests: 6	2.0										_			
pH	All	NDPs: 0	X		X		X			X		X	_	-	X	
	/ · · ·	Tests: 6		X		X		X			X		X		X	
Sample description	All	NDPs: 0					+			_		+	ř	$\vdash$		Н
		Tests: 5	X		X		X			X					X	Н
Total Organic Carbon	All	NDPs: 0									+	+	t	Ħ		H
		Tests: 6	X		X		X			X		×		1	X	
Total Sulphate	All	NDPs: 0 Tests: 6														
TRU CWC CC (C)	All		X		X		X			X	_	X		<u> </u>	X	Ц
TPH CWG GC (S)	All	NDPs: 0 Tests: 6	X		X		X			X	+	×			X	Н



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:

SOLID Results Legend X Test	Lab Sample I	No(s)	11942793	11942796	11942797	11942798	11942799	11942791
No Determination Possible	Custome Sample Refei		BH204	BH204	BH205	BH205	BH206	ВН203А
	AGS Refere	nce						
	Depth (m	)	1.30	3.30	1.00	2.50	1.10	0.50
	Containe	r	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL
VOC MS (S)	All	NDPs: 0 Tests: 6	x	×	×	x	×	x.

Validated

**SDG**: 150822-16 **Job**: H\_URS\_W Location: Stag Brewery
Customer: AECOM

Order Number: Report Number: Superseded Report:

328751

Client Reference:

H\_URS\_WIM-273 Customer: Attention:

**Sample Descriptions** 

Gary Marshall

#### **Grain Sizes**

very fine	<0.0	63mm	fine	0.063mm - 0.1mm	medium	0.1mm	- 2mm	coarse	2mm - 10	umm	very coars	e >10mi
Lab Sample	No(s)	Custon	ner Sample R	ef. Depth (m)	Co	olour	Description	ı G	rain size	Inclu	sions	Inclusions 2
119427	93		BH204	1.30	Dark	Brown	Sandy Clay	/ 0.	1 - 2 mm	Sto	nes	Vegetation
119427	96		BH204	3.30	Light	t Brown	Loamy Sand	d 0.	1 - 2 mm	Sto	nes	Vegetation
119427	97	BH205		1.00	Light	t Brown	Sandy Loan	n 0.	1 - 2 mm	Bri	ick	Stones
119427	98	BH205		2.50	Light	t Brown	Loamy Sand	d 0.	1 - 2 mm	Sto	nes	Vegetation
119427	99		BH206	1.10	Dark	Brown	Sandy Clay Loam	0.	1 - 2 mm	Bri	ick	Stones
119427	91		BH203A	0.50	Light	Brown	Sandy Loan	n 0.	1 - 2 mm	Bri	ick	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 occurring 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.

Validated

150822-16 SDG Job:

Client Reference:

H\_URS\_WIM-273

Location: **Customer:** Attention:

Stag Brewery **AECOM** Gary Marshall

Order Number: Report Number: Superseded Report:

328751

Customer Sample R BH204 BH205 BH205 BH206 BH203A BH204 ISO17025 accredited mCERTS accredited Aqueous / settled sample Depth (m) 1.30 3.30 1.00 2.50 1.10 0.50 diss.filt Dissolved / filtered sample Total / unfiltered sample Sample Type Soil/Solid Soil/Solid Soil/Solid Soil/Solid Soil/Solid Soil/Solid 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 Trigger breach confirmed Date Sampled 21/08/2015 21/08/2015 21/08/2015 21/08/2015 21/08/2015 20/08/2015 Sampled Time 22/08/2015 22/08/2015 22/08/2015 22/08/2015 22/08/2015 22/08/2015 150822-16 150822-16 150822-16 150822-16 SDG Ref 150822-16 150822-16 11942793 11942796 11942797 11942798 11942799 11942791 Lab Sample No.(s) 1-5&+§@ Sample deviation (see appendix) AGS Reference LOD/Units Component Method Moisture Content Ratio (% PM024 16 7.2 8.8 5.2 12 11 of as received sample) <15 TM024 <15 <15 <15 Exchangeable Ammonia <15 <15 <15 as NH4 mg/kg Μ М М Μ Μ M Organic Carbon, Total <0.2 % TM132 0.266 <0.2 0.627 <0.2 0.522 0.396 Μ Μ Μ М M Μ TM133 9.88 8.95 рН 1 pH 9.55 8.43 11.3 11.7 Units Μ Μ Μ Μ Μ Μ Chromium, Hexavalent <0.6 TM151 <0.6 <0.6 <0.6 <0.6 <0.6 <0.6 mg/kg # # # # # Sulphide, Easily liberated TM180 20 <15 <15 <15 <15 <15 <15 mg/kg # # # # # # Arsenic <0.6 TM181 10.9 30 13.7 21.8 19.9 12.1 mg/kg M Μ М M M M Cadmium < 0.02 TM181 0.21 0.319 0.414 0.263 0.324 0.29 mg/kg Μ Μ Μ M M M Chromium <0.9 TM181 17.4 15.2 20 20.6 21.9 31.2 mg/kg Μ M M Μ M M <1.4 TM181 8.93 3.08 25.8 4.42 12.8 35.3 Copper mg/kg Μ Μ М Μ М TM181 6.08 96.4 10.2 Lead <0.7 10.6 39.4 59.6 mg/kg Μ Μ Μ Μ M Μ Mercury < 0.14 TM181 <0.14 <0.14 0.162 <0.14 <0.14 <0.14 mg/kg М Μ Μ М Μ М Nickel TM181 21.8 17.4 20 22.4 38.2 < 0.2 16.5 mg/kg Μ Μ Μ Μ М Μ Selenium <1 mg/kg TM181 <1 <1 <1 <1 <1 <1 # # # # # 7inc <1.9 TM181 44 4 25.3 93 28 2 54 2 96.4 mg/kg M Μ M M M M Sulphate, Total <48 TM221 4280 2040 3750 883 573 8120 mg/kg М М М M M M

Validated

150822-16 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

Customer: Attention:

AECOM Gary Marshall Report Number: Superseded Report:

328751

Client Reference:			Attention:	Gary Marshall		Superseded Repo	ort:	
PAH by GCMS								
Results Legend # ISO17025 accredited.	Cı	ustomer Sample R	BH204	BH204	BH205	BH205	BH206	BH203A
M mCERTS accredited.  Aqueous / settled sample.  Joselved / filtered sample.  tot.unfilt Total / unfiltered sample.  * Subcontracted test.  * Grecovery of the surrogate stancheck the efficiency of the methoresults of individual compounds samples aren't corrected for the refriger breach confirmed	d. The within ecovery	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s)	1.30 Soil/Solid 21/08/2015 22/08/2015 150822-16 11942793	3.30 Soil/Soild 21/08/2015 22/08/2015 150822-16 11942796	1.00 Soil/Solid 21/08/2015 22/08/2015 150822-16 11942797	2.50 Soil/Solid 21/08/2015 22/08/2015 150822-16 11942798	1.10 Soil/Solid 21/08/2015 22/08/2015 150822-16 11942799	0.50 Soil/Soild 20/08/2015 22/08/2015 150822-16 11942791
1-5&+§@ Sample deviation (see appendix)	1.00#1.7	AGS Reference						
Component	LOD/Units	Method	400	100	404	400	404	404
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	<9 M	173 M	<9 M M	<9 M	10.3 M
Acenaphthylene	<12 µg/kg	TM218	<12	<12	45.3	<12 M M	<12 M	<12 M
Acenaphthene	- 48 μg/kg	TM218	<8	<8	73.2		<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10	<10	79.6	<10 M	<10 M	<10 M
Phenanthrene	<15 μg/kg	TM218	<15	<15	811	<15 M M	28.4 M	160 M
Anthracene	<16 µg/kg	TM218	<16	<16	179	<16 M M	<16 M	41 M
Fluoranthene	<17 μg/kg	TM218	<17	<17	1310	<17 M M	47.3 M	429 M
Pyrene	<15 µg/kg	TM218	<15	<15	1510	<15 M M	53.2 M	412 M
Benz(a)anthracene	<14 μg/kg	TM218	<14	<14	1060	<14 M M	<14 M	192 M
Chrysene	<10 µg/kg	TM218	<10	<10	976	<10 M	16.3	194 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	1300	<15 M M	37.7 M	206 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	546	<14 M M	19.7 M	103 M
Benzo(a)pyrene	<15 μg/kg	TM218	<15	<15	970	<15 M M	38.2 M	203 M
Indeno(1,2,3-cd)pyrene	<18 μg/kg	TM218	<18	<18	543	<18 M M	29 M	124 M
Dibenzo(a,h)anthracene	<23 μg/kg	TM218	<23	<23	186	<23 M M	<23 M	32.7 M
Benzo(g,h,i)perylene	<24 μg/kg	TM218	<24	<24	676	<24 M M	30.1 M	142 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	10400	<118	300	2250

Validated

ALcontrol Laboratories

SDG:

Job:

150822-16

H\_URS\_WIM-273

Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Client Reference:

PH CWG (S)    Results Legend   Customer Sample R   BH204   BH205   BH205   BH206   BH203A   # ISO17025 accredited.												
# ISO17025 accredited.	•	Customer Sample R	BH204		BH204		BH205	BH205	BH206	BH203A		
m mCERTS accredited.  aq Aqueous / settled sample.  diss.filt tot.unfilt  Total / unfiltered sample.  Subcontracted test.  recovery of the surrogate standa		Depth (m) Sample Type Date Sampled Sampled Time	1.30 Soil/Solid 21/08/2015		3.30 Soil/Solid 21/08/2015		1.00 Soil/Solid 21/08/2015	2.50 Soil/Solid 21/08/2015	1.10 Soil/Solid 21/08/2015	0.50 Soil/Solid 20/08/2015		
check the efficiency of the method. results of individual compounds wi samples aren't corrected for the rei (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)	thin covery	Date Received SDG Ref Lab Sample No.(s) AGS Reference	22/08/2015 150822-16 11942793		22/08/2015 150822-16 11942796		22/08/2015 150822-16 11942797	22/08/2015 150822-16 11942798	22/08/2015 150822-16 11942799	22/08/2015 150822-16 11942791		
Component	LOD/Unit	_		_			70	20	20	70		
GRO Surrogate % recovery**	%	TM089	74		96		72	98	80	73		
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 N	М	<44	М	243 M	<44 M	<44 M	<44 M		
Methyl tertiary butyl ether (MTBE)	<5 µg/k	g TM089	<5	М	<5	М	<5 M	<5 M	<5 M	<5 M		
Benzene	<10 µg/kg	TM089	<10	M	<10	M	<10 M	<10	<10	<10 M		
Toluene	<2 µg/k	g TM089	<2 N	М	<2	М	5.4 M	<2 M	<2 M	<2 M		
Ethylbenzene	<3 µg/k	g TM089	<3	M	<3	М	<3 M	<3 M	<3	<3 M		
m,p-Xylene	<6 µg/k	g TM089	<6 N	М	<6	М	7.55 M	<6 M	<6 M	<6 M		
o-Xylene	<3 μg/kg	g TM089	<3 N	М	<3	М	<3 M	<3 M	<3 M	<3 M		
sum of detected mpo xylene by GC	<9 µg/k	g 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: Location:

150822-16 H\_URS\_WIM-273 Stag Brewery Order Number: Report Number: Customer: AECOM 328751 Client Reference: Attention: Gary Marshall Superseded Report: VOC MS (S)

Second content conte	Results Legend # ISO17025 accredited.		Customer Sample R	BH204		BH204		BH205	BH205		BH206		BH203A
Second Control Contr	<ul> <li>M mCERTS accredited.</li> <li>aq Aqueous / settled sample.</li> </ul>		Depth (m)	1.30		3,30		1.00	2.50		1.10		0.50
Secretary   Secr	tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid		Soil/Solid		Soil/Solid	Soil/Solid		Soil/Solid		Soil/Solid
	** % recovery of the surrogate standa check the efficiency of the method	. The	Sampled Time										
Technological memory recognises   Membral Discorrison   Membral	samples aren't corrected for the re		SDG Ref	150822-16		150822-16		150822-16	150822-16		150822-16		150822-16
Discriminstructions and exercises   %   Thirtie   117   102   98.6   98.9   118   71.8   71.8	1-5&+§@ Sample deviation (see appendix)		AGS Reference										
Astronomburochervener**   Signing   Thirtife   48	· ·			117		102		96.6	98.9		116	+	71.6
Astronomburochervener**   Signing   Thirtife   48	Toluene-d8**	%	TM116	99.6		99.9		91.2	97.9		101	+	87 7
Dehicroordinaremethane												_	
Chloromethane	4-Bromofluorobenzene**	%	IM116	101		101		77.1	101		90.4		70.8
September   February   Februar	Dichlorodifluoromethane	<6 µg/	kg TM116	<6	М	<6	М		1	М		Л	
Viry Christofe	Chloromethane	<7 μg/	kg TM116	<7	#	<7	#		1	#		#	
Bromomethane	Vinyl Chloride	<6 µg/	kg TM116	<6		<6		<6	<6		<6		<6
Chiconethane	Bromomethane			<10		<10		<10	<10		<10		<10
Trichlorofituriormethane	Chloroethane	<10	TM116	<10		<10		<10	<10		<10		<10
1.1-Dichloroethene   <10	Trichlorofluorormethane			<6	M	<6	М			M		Л	
Carbon Disulphide	1.1-Dichloroethene	<10	TM116	<10	М	<10	М		+	М		Л	
Dichloromethane		μg/kg	ı		#		#	#		#	‡	#	#
Methyl Tertiary Butyl Ether	·				М		М	М		М	N	Л	М
Lange   Lan	Dichloromethane			<10	#	<10	#		1	#		#	
trans-1,2-Dichloroethene	Methyl Tertiary Butyl Ether			<10	М	<10	М		1	М		Л	
1,1-Dichloroethane	trans-1,2-Dichloroethene	<10	TM116	<10		<10		<10	<10		<10		<10
Cis-1,2-Dichloroethene	1,1-Dichloroethane			<8		<8		<8	<8		<8		<8
2,2-Dichloropropane	cis-1,2-Dichloroethene	<6 µg/	kg TM116	<6		<6		<6	<6		<6		<6
Bromochloromethane	2,2-Dichloropropane			<10		<10		<10	<10		<10		<10
Chloroform	Bromochloromethane	<10	TM116	<10	М	<10	М			M		Л	
No.   No.	Chloroform		_	<8	М	<8	М			М		Л	M
M					М		М	М		М	N	Л	М
Carbontetrachloride	1,1,1-1 richioroethane	μg/</td <td>kg IM116</td> <td><!--</td--><td>М</td><td><!--</td--><td>М</td><td></td><td>1</td><td>М</td><td></td><td>Л</td><td></td></td></td>	kg IM116	</td <td>М</td> <td><!--</td--><td>М</td><td></td><td>1</td><td>М</td><td></td><td>Л</td><td></td></td>	М	</td <td>М</td> <td></td> <td>1</td> <td>М</td> <td></td> <td>Л</td> <td></td>	М		1	М		Л	
Carbontetrachloride	1,1-Dichloropropene			<10	М	<10	М		1	M		л	
1,2-Dichloroethane	Carbontetrachloride	<10	TM116	<10	М	<10			1	М		Л	<10
Benzene	1,2-Dichloroethane		_	<5		<5		<5	<5		<5		<5
Trichloroethene	Benzene	<9 µg/	kg TM116	<9		<9		<9	<9		<9		<9
1,2-Dichloropropane	Trichloroethene	<9 µg/	kg TM116	<9		<9		<9	<9		<9		<9
Dibromomethane   <9 μg/kg   TM116   <9   <9   <9   <9   <9   <9   <9   <	1,2-Dichloropropane			<10		<10		<10	<10		<10		<10
Bromodichloromethane	Dibromomethane			<9	M	<9	М			M		Л	
Cis-1,3-Dichloropropene	Bromodichloromethane	<7 ua	ka TM116	<7	M	<7	М			M		Л	M
μg/kg   μg/kg   M   M   M   M   M   M   M   M   M					М		М	М		М	N	Л	M
M   M   M   M   M   M   M   M   M   M		μg/kg	1		М		М	М		M	N	Л	М
μg/kg   1,1,2-Trichloroethane					М		М	М		М	N	Л	М
1,1,2-Trichloroethane <10 TM116 <10 <10 <10 <10 <10 <10	trans-1,3-Dichloropropene			<10		<10		<10	<10		<10		<10
	1,1,2-Trichloroethane	<10	TM116	<10	М		М		1	М		Л	<10 M

Validated

150822-16 SDG: Job: H\_URS\_WIM-273

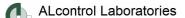
Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Client Reference:

VOC MS (S)											
Results Legend # ISO17025 accredited.		Customer Sample R	BH204		BH204		BH205		BH205	BH206	BH203A
M mCERTS accredited. aq Aqueous / settled sample. diss.fill: Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate stands.	ard to	Depth (m) Sample Type Date Sampled Sampled Time	1.30 Soil/Solid 21/08/2015		3.30 Soil/Solid 21/08/2015		1.00 Soil/Solid 21/08/2015		2.50 Soil/Solid 21/08/2015	1.10 Soil/Solid 21/08/2015	0.50 Soil/Solid 20/08/2015
check the efficiency of the method results of individual compounds w samples aren't corrected for the re	. The ithin	Date Received SDG Ref	22/08/2015 150822-16 11942793		22/08/2015 150822-16 11942796		22/08/2015 150822-16 11942797		22/08/2015 150822-16 11942798	22/08/2015 150822-16 11942799	22/08/2015 150822-16 11942791
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11942793		11942790		11942191		11942790	11542755	11942791
Component	LOD/Unit		<7	+	<7	4	<7		<7	<7	<7
1,3-Dichloropropane	<7 μg/k	g HWHT6		Л		М	~1	М			M
Tetrachloroethene	<5 μg/k	g TM116	<5 M	T	<5	М	<5	М	<5 M	<5	<5 M
Dibromochloromethane	<10 µg/kg	TM116	<10 M	Л	<10	М	<10	М	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116	<10 N	,	<10	М	<10	М	<10 M	<10 M	<10 M
Chlorobenzene	<5 μg/k	g TM116	<5 N	T	<5	М	<5	М	<5 M	<5	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 N		<10	М	<10	М	<10	<10	<10 M
Ethylbenzene	<4 µg/k	g TM116	<4 N	4	<4	М	<4	М	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116	<10 #	T	<10	#	<10	#	<10 #	<10	<10 #
o-Xylene	<10 μg/kg	TM116	<10 N	T	<10	M	<10	M	<10 M	<10	<10 M
Styrene	<10 µg/kg	TM116	<10 #		<10	#	<10	#	<10 #	<10	<10 #
Bromoform	<10 µg/kg	TM116	<10	1	<10	М	<10	М	<10	<10	<10 M
Isopropylbenzene	<5 μg/k	g TM116	<5	#	<5	#	<5	#	<5 #	<5	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 N	T	<10	M	<10	M	<10 M	<10	<10 M
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M	Л	<16	М	<16	М	<16	<16	<16 M
Bromobenzene	<10 μg/kg	TM116	<10 N		<10	М	<10	М	<10	<10	<10 M
Propylbenzene	<10 µg/kg	TM116	<10 M		<10	М	<10	М	<10	<10	<10 M
2-Chlorotoluene	<9 µg/k	g TM116	<9 M	1	<9	М	<9	М	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/k	g TM116	<8 M	Л	<8	М	<8	М	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116	<10 M	Л	<10	М	<10	М	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116	<14 N	Л	<14	М	<14	М	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/k	g TM116	<9 #	#	<9	#	<9	#	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116	<10 M	Л		М	<10	М	<10 M		<10 M
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M	Л	<10	М	<10	М	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/k	g TM116	<8 M	Л	<8	М	<8	М	<8 M		<8 M
1,4-Dichlorobenzene	<5 μg/k		<5 M	Л		М	<5	М	<5 M		<5 M
n-Butylbenzene	<11 µg/kg	TM116	<11		<11		<11		<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 N	Л		М	<10	М	<10		<10 M
1,2-Dibromo-3-chloroprop ane	<14 µg/kg	TM116	<14 N	Л		М	<14	М	<14 M		<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116		#	<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 N	Л	<13	М	196	М	<13 M	<13 M	<13 M



Validated

328751

150822-16 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

VOC I	/OC MS (S)								
	Results Legend	(	Customer Sample R	BH204	BH204	BH205	BH205	BH206	BH203A
# M	ISO17025 accredited. mCERTS accredited.								
aq diss.filt	Aqueous / settled sample. Dissolved / filtered sample.		Depth (m)	1.30	3.30	1.00	2.50	1.10	0.50
tot.unfilt	Total / unfiltered sample. Subcontracted test.		Sample Type Date Sampled	Soil/Solid 21/08/2015	Soil/Solid 21/08/2015	Soil/Solid 21/08/2015	Soil/Solid 21/08/2015	Soil/Solid 21/08/2015	Soil/Solid 20/08/2015
**	% recovery of the surrogate standarcheck the efficiency of the method.	rd to	Sampled Time	,				,	
	results of individual compounds wir samples aren't corrected for the red	thin	Date Received SDG Ref	22/08/2015 150822-16	22/08/2015 150822-16	22/08/2015 150822-16	22/08/2015 150822-16	22/08/2015 150822-16	22/08/2015 150822-16
(F)	Trigger breach confirmed	overy	Lab Sample No.(s)	11942793	11942796	11942797	11942798	11942799	11942791
Compo	Sample deviation (see appendix)	LOD/Units	AGS Reference Method						
	Trichlorobenzene	<20	TM116	<20	<20	<20	<20	<20	<20
, ,-		μg/kg		#	#	#	#	#	#



150822-16

SDG:

**CERTIFICATE OF ANALYSIS** 

Order Number:

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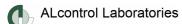
H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

Location:

#### Asbestos Identification - Soil

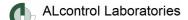
Stag Brewery

			ASI	Destos	iaentii	ication	- 2011				
		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



Validated

Stag Brewery 150822-16 SDG: Location: Order Number: H\_URS\_WIM-273 328751 Job: **Customer: AECOM** Report Number: Client Reference: Attention: Gary Marshall Superseded Report: Non-Asbestos Date of Crocidolite Fibrous Analysed By Comments Amosite Chrysotile Fibrous Fibrous Anthophyllite Analysis (Brown) (White) (Blue) Actinolite Tremolite Fibre Asbestos Asbestos Asbestos Cust. Sample BH203A 25/08/15 Martin Detected (#) Not Detected Not Detected Not Detected Not Detected Soil Not Detected Not Detected containing 0.50 SOLID Ref. Cotterell (#) (#) (#) (#) (#) Depth (m) loose fibres Sample Type Date Sampled 20/08/2015 and debris 00:00:00 typical of asbestos Date Receieved 24/08/2015 07:59:04 SDG bitumen Original Sample Method Number 150822-16 11942791 TM048



Validated

328751

150822-16 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number: Attention: Gary Marshall

Client Reference:

Superseded Report:

# **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 (#)

Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

**SDG:** 150822-16 **Job:** H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

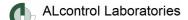
Order Number:
Report Number: 3
Superseded Report:

328751

**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	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		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



Validated

328751

 SDG:
 150822-16
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

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
Туре	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
рН	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

Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273

Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number:

328751

Client Reference:

ention: Gary Marshall Superseded Report:

# **ASSOCIATED AQC DATA**

#### Ammonium Soil by Titration

Component	Method Code	QC 1157
Exchangeable Ammonium as NH4	TM024	<b>93.03</b> 79.30 : 104.61

#### Easily Liberated Sulphide

Component	Method Code	QC 1159	QC 1129
Easily Liberated Sulphide	TM180	<b>106.83</b> 49.14 : 123.89	<b>95.34</b> 49.14 : 123.89

#### EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1124	QC 1179
Total Aliphatics >C12-C35	TM173	<b>98.33</b> 71.67 : 116.67	<b>92.29</b> 68.25 : 114.73

### EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1124	QC 1179
Total Aromatics >EC12-EC35	TM173	<b>84.0</b> 59.92 : 107.95	<b>82.0</b> 60.67 : 124.27

#### GRO by GC-FID (S)

Component	QC 1197	
Benzene by GC (Moisture Corrected)	TM089	<b>96.0</b> 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>90.0</b> 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	<b>89.75</b> 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	<b>99.0</b> 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	<b>90.5</b> 80.03 : 117.19
QC	TM089	<b>107.33</b> 75.74 : 124.65
Toluene by GC (Moisture Corrected)	TM089	<b>94.0</b> 82.06 : 117.54

Validated

Order Number:

328751

 150822-16
 Location:
 Stag Brewery

 H\_URS\_WIM-273
 Customer:
 AECOM

 Customer:
 AECOM
 Report Number:

 Attention:
 Gary Marshall
 Superseded Report:

Hexavalent Chromium (s)

Client Reference:

SDG:

Job:

Component	Method Code	QC 1111	QC 1157
Hexavalent Chromium	TM151	98.0	98.0
		92.20 : 106.60	92.20 : 106.60

#### Metals in solid samples by OES

Component	Method Code	QC 1164	QC 1154	QC 1117
Aluminium	TM181	<b>120.77</b> 86.49 : 129.71	<b>94.62</b> 86.49 : 129.71	<b>102.31</b> 86.49 : 129.71
Antimony	TM181	<b>100.0</b> 77.50 : 122.50	<b>92.83</b> 77.50 : 122.50	<b>108.96</b> 77.50 : 122.50
Arsenic	TM181	<b>95.58</b> 82.63 : 117.37	<b>85.93</b> 82.63 : 117.37	<b>106.19</b> 82.63 : 117.37
Barium	TM181	<b>100.0</b> 79.45 : 120.55	<b>92.48</b> 79.45 : 120.55	<b>102.26</b> 79.45 : 120.55
Beryllium	TM181	<b>101.71</b> 85.92 : 121.27	<b>92.09</b> 85.92 : 121.27	<b>104.96</b> 85.92 : 121.27
Boron	TM181	<b>132.82</b> 77.41 : 143.83	<b>93.13</b> 77.41 : 143.83	<b>105.34</b> 77.41 : 143.83
Cadmium	TM181	<b>93.78</b> 81.95 : 118.05	<b>88.57</b> 81.95 : 118.05	<b>105.04</b> 81.95 : 118.05
Chromium	TM181	<b>100.39</b> 81.29 : 118.71	<b>88.24</b> 81.29 : 118.71	<b>96.47</b> 81.29 : 118.71
Cobalt	TM181	<b>97.5</b> 83.86 : 116.14	<b>88.0</b> 83.86 : 116.14	<b>103.5</b> 83.86 : 116.14
Copper	TM181	<b>101.22</b> 78.57 : 121.43	<b>92.7</b> 78.57 : 121.43	<b>106.49</b> 78.57 : 121.43
Iron	TM181	<b>107.59</b> 87.50 : 122.82	<b>95.86</b> 87.50 : 122.82	<b>102.07</b> 87.50 : 122.82
Lead	TM181	<b>88.19</b> 74.18 : 117.25	<b>90.94</b> 74.18 : 117.25	<b>98.82</b> 74.18 : 117.25
Manganese	TM181	<b>104.2</b> 82.91 : 117.09	<b>95.2</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09
Mercury	TM181	<b>92.46</b> 81.99 : 118.01	<b>87.6</b> 81.99 : 118.01	<b>105.03</b> 81.99 : 118.01
Molybdenum	TM181	<b>96.97</b> 81.45 : 118.55	<b>92.04</b> 81.45 : 118.55	<b>110.19</b> 81.45 : 118.55
Nickel	TM181	<b>100.0</b> 79.64 : 120.36	<b>90.7</b> 79.64 : 120.36	<b>104.65</b> 79.64 : 120.36
Phosphorus	TM181	<b>99.7</b> 81.03 : 118.97	<b>91.21</b> 81.03 : 118.97	<b>100.15</b> 81.03 : 118.97
Selenium	TM181	<b>104.79</b> 87.05 : 121.93	<b>95.73</b> 87.05 : 121.93	<b>114.87</b> 87.05 : 121.93
Strontium	TM181	<b>105.75</b> 83.64 : 116.36	<b>89.27</b> 83.64 : 116.36	<b>99.23</b> 83.64 : 116.36
Thallium	TM181	<b>93.37</b> 77.50 : 122.50	<b>84.25</b> 77.50 : 122.50	<b>97.84</b> 77.50 : 122.50
Tin	TM181	<b>97.67</b> 78.30 : 113.98	<b>96.01</b> 78.30 : 113.98	<b>111.3</b> 78.30 : 113.98
Titanium	TM181	<b>121.88</b> 71.02 : 128.98	<b>99.22</b> 71.02 : 128.98	<b>103.91</b> 71.02 : 128.98

Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273 Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

328751

Metals in solid samples by OES

		QC 1164	QC 1154	QC 1117
Vanadium	TM181	<b>103.82</b> 86.61 : 113.39	<b>91.18</b> 86.61 : 113.39	<b>102.94</b> 86.61 : 113.39
Zinc	TM181	<b>99.51</b> 90.81 : 120.30	<b>91.88</b> 90.81 : 120.30	<b>108.12</b> 90.81 : 120.30

### PAH by GCMS

Client Reference:

Component	Method Code	QC 1112	QC 1121	QC 1102
Acenaphthene	TM218	<b>99.5</b> 70.00 : 130.00	<b>97.0</b> 76.50 : 121.50	<b>97.5</b> 76.50 : 121.50
Acenaphthylene	TM218	<b>87.5</b> 70.00 : 130.00	<b>89.0</b> 73.50 : 118.50	<b>90.0</b> 73.50 : 118.50
Anthracene	TM218	<b>93.0</b> 70.00 : 130.00	<b>93.0</b> 74.25 : 117.75	<b>96.0</b> 74.25 : 117.75
Benz(a)anthracene	TM218	<b>97.0</b> 70.00 : 130.00	<b>108.5</b> 82.07 : 118.33	<b>101.0</b> 82.07 : 118.33
Benzo(a)pyrene	TM218	<b>98.5</b> 70.00 : 130.00	<b>101.5</b> 79.75 : 116.97	<b>105.5</b> 79.75 : 116.97
Benzo(b)fluoranthene	TM218	<b>98.5</b> 70.00 : 130.00	<b>101.0</b> 82.41 : 117.15	<b>101.0</b> 82.41 : 117.15
Benzo(ghi)perylene	TM218	<b>94.5</b> 70.00 : 130.00	<b>107.5</b> 77.09 : 114.38	<b>96.0</b> 77.09 : 114.38
Benzo(k)fluoranthene	TM218	<b>95.0</b> 70.00 : 130.00	<b>100.5</b> 81.43 : 115.17	<b>100.5</b> 81.43 : 115.17
Chrysene	TM218	<b>95.0</b> 70.00 : 130.00	<b>104.0</b> 82.50 : 113.51	<b>97.0</b> 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	<b>95.0</b> 70.00 : 130.00	<b>106.0</b> 81.00 : 120.00	<b>98.0</b> 81.00 : 120.00
Fluoranthene	TM218	<b>97.0</b> 70.00 : 130.00	<b>96.0</b> 78.67 : 117.61	<b>96.5</b> 78.67 : 117.61
Fluorene	TM218	<b>98.0</b> 70.00 : 130.00	<b>93.5</b> 76.50 : 121.50	<b>95.5</b> 76.50 : 121.50
Indeno(123cd)pyrene	TM218	<b>92.5</b> 70.00 : 130.00	<b>104.0</b> 79.19 : 117.60	<b>96.0</b> 79.19 : 117.60
Naphthalene	TM218	<b>96.0</b> 70.00 : 130.00	<b>91.0</b> 77.00 : 117.50	<b>94.5</b> 77.00 : 117.50
Phenanthrene	TM218	<b>98.5</b> 70.00 : 130.00	<b>95.5</b> 75.00 : 123.00	<b>98.0</b> 75.00 : 123.00
Pyrene	TM218	<b>95.5</b> 70.00 : 130.00	<b>94.0</b> 77.82 : 116.98	<b>95.0</b> 77.82 : 116.98

#### рΗ

	Component	Method Code	QC 1188	QC 1135
Γ	pН	TM133	100.5	99.75
			96.22 : 103.78	97.19 : 102.81

#### Total Organic Carbon

Validated

**SDG**: 150822-16

Job: H\_URS\_WIM-273
Client Reference:

**Location:** Stag Brewery **Customer:** AECOM

Gary Marshall

Attention:

Order Number: Report Number: Superseded Report:

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**Total Organic Carbon** 

Component	Method Code	QC 1110	QC 1121
Total Organic Carbon	TM132	98.63	94.06
		88.82 : 111.18	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	100.6
		83.24 : 124.28	83.24 : 124.28
1,1,1-Trichloroethane	TM116	88.8	107.6
		81.77 : 121.07	81.77 : 121.07
1,1,2-Trichloroethane	TM116	97.0	94.6
		79.24 : 112.23	79.24 : 112.23
1,1-Dichloroethane	TM116	91.6	107.4
4.0 Piable made as	T14440	72.58 : 116.06	72.58 : 116.06
1,2-Dichloroethane	TM116	94.8	109.8
1,4-Dichlorobenzene	TM116	77.50 : 122.50	77.50 : 122.50
1,4-Dichiolobenzene	TIVITIO	<b>88.0</b> 73.23 : 116.39	<b>97.4</b> 73.23 : 116.39
2-Chlorotoluene	TM116		
		<b>88.4</b> 69.22 : 110.64	<b>93.0</b> 69.22 : 110.64
4-Chlorotoluene	TM116	86.2	92.0
		68.57 : 106.26	68.57 : 106.26
Benzene	TM116	95.4	107.2
		84.33 : 124.27	84.33 : 124.27
Carbon Disulphide	TM116	98.6	110.4
		77.20 : 122.80	77.20 : 122.80
Carbontetrachloride	TM116	100.2	107.6
		84.20 : 119.90	84.20 : 119.90
Chlorobenzene	TM116	103.4	106.4
Chloroform	TM116	85.28 : 129.96	85.28 : 129.96
Chloroform	TIVITIO	<b>92.4</b> 82.73 : 119.72	<b>106.8</b> 82.73 : 119.72
Chloromethane	TM116		
Oniorometriane	1101110	<b>128.8</b> 55.16 : 145.46	<b>122.4</b> 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	96.4	107.4
,		73.56 : 118.93	73.56 : 118.93
Dibromomethane	TM116	95.2	92.0
		73.40 : 116.60	73.40 : 116.60
Dichloromethane	TM116	94.8	107.4
		76.16 : 121.98	76.16 : 121.98

Validated

150822-16 SDG: Job:

Location: Stag Brewery H\_URS\_WIM-273 **Customer: AECOM** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

328751

VOC MS (S)

Client Reference:

	,	QC 1125	QC 1180
Ethylbenzene	TM116	94.0	103.0
		80.07 : 125.98	80.07 : 125.98
Hexachlorobutadiene	TM116	68.8	120.0
		30.92 : 132.28	30.92 : 132.28
Isopropylbenzene	TM116	82.2	102.8
		69.27 : 125.32	69.27 : 125.32
Naphthalene	TM116	110.0	102.2
		79.15 : 121.98	79.15 : 121.98
o-Xylene	TM116	86.8	88.2
		75.46 : 111.52	75.46 : 111.52
p/m-Xylene	TM116	94.9	101.0
		76.97 : 121.75	76.97 : 121.75
Sec-Butylbenzene	TM116	74.6	108.8
		49.27 : 129.90	49.27 : 129.90
Tetrachloroethene	TM116	106.2	113.6
		87.96 : 133.65	87.96 : 133.65
Toluene	TM116	92.6	103.2
		79.23 : 114.58	79.23 : 114.58
Trichloroethene	TM116	91.8	100.8
		84.09 : 114.24	84.09 : 114.24
Trichlorofluoromethane	TM116	90.8	107.0
		76.22 : 114.82	76.22 : 114.82
Vinyl Chloride	TM116	77.8	97.4
		59.68 : 118.68	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.

Validated

150822-16 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number:

Client Reference:

Attention: Gary Marshall Superseded Report:

328751

Chromatogram

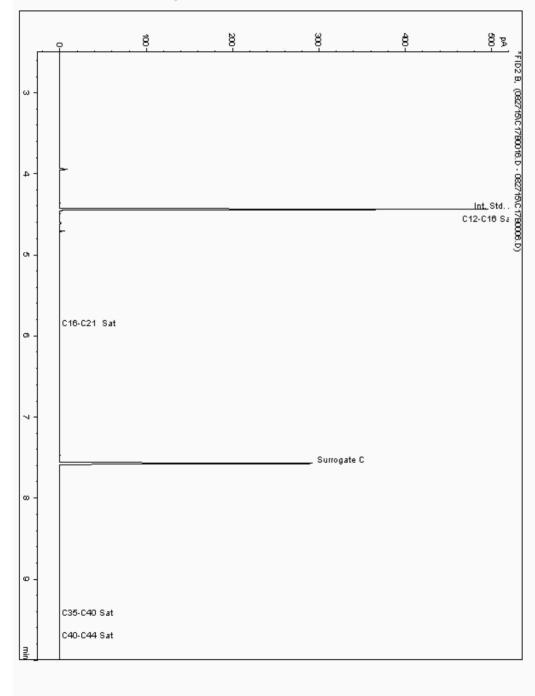
Analysis: EPH CWG (Aliphatic) GC (S) **Depth**: 3.30 Sample No : 11954758 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

Sample Identity: Date Acquired : 11342140-27/08/2015 18:44:18 PM

Units ppb Dilution

CF 0.980 Multiplier



Client Reference:

## **CERTIFICATE OF ANALYSIS**

Validated

150822-16 SDG: Job: H\_URS\_WIM-273 Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Chromatogram

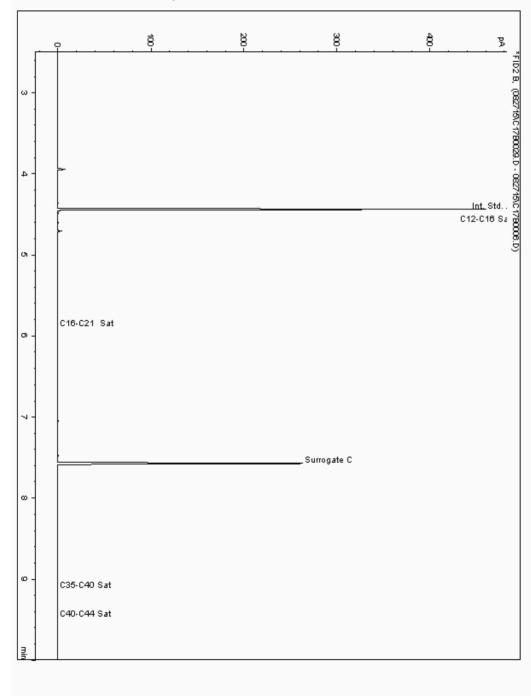
Analysis: EPH CWG (Aliphatic) GC (S) **Depth**: 1.30 Sample No : 11954791 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11342131-27/08/2015 22:58:35 PM Sample Identity: Date Acquired :

Units ppb Dilution

CF 0.970 Multiplier



Validated

150822-16 Location: Stag Brewery SDG: Job: H\_URS\_WIM-273 **Customer:** AECOM

Client Reference: Attention: Gary Marshall Order Number: Report Number: Superseded Report:

328751

Chromatogram

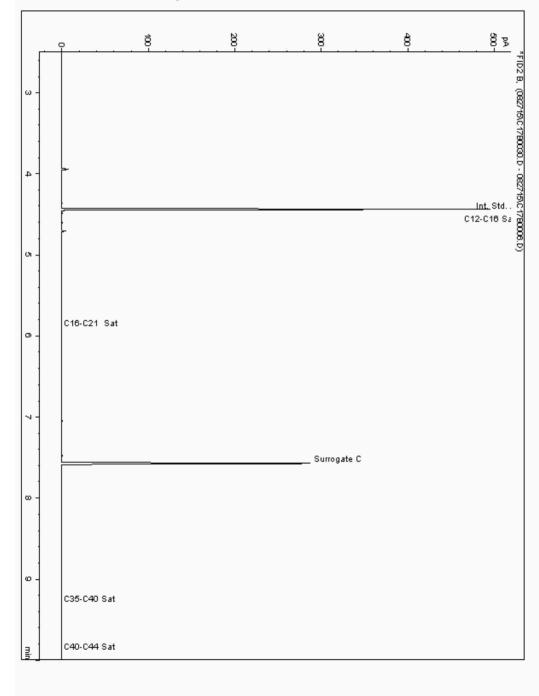
Analysis: EPH CWG (Aliphatic) GC (S) **Depth**: 1.10 Sample No : 11956254 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11342167-27/08/2015 23:18:56 PM Sample Identity: Date Acquired :

Units ppb Dilution

CF 0.960 Multiplier



Validated

SDG: 150822-16 Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Chromatogram

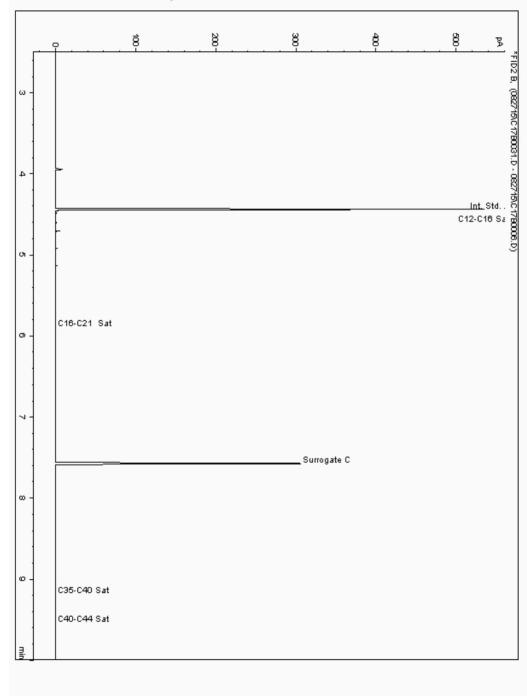
Analysis: EPH CWG (Aliphatic) GC (S) Sample No : **Depth**: 2.50 11956372 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

Sample Identity: Date Acquired : 11342158-27/08/2015 23:39:01 PM

Units ppb Dilution

CF 0.990 Multiplier



Chromatogram

Validated

SDG: 150822-16 H\_URS\_WIM-273 Job:

Analysis: EPH CWG (Aliphatic) GC (S)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

328751

Client Reference:

Sample No : 11959414 Sample ID :

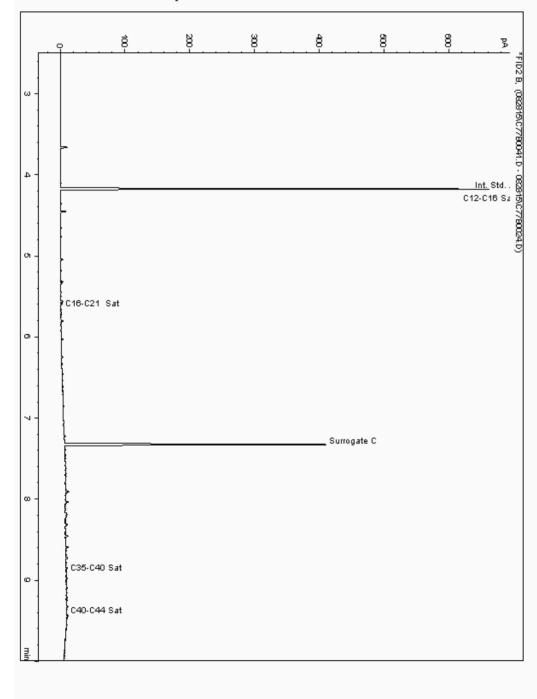
**Depth**: 0.50

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11342122-01/09/2015 07:58:49 PM Sample Identity: Date Acquired :

Units ppb Dilution

CF 1.040 Multiplier



Validated

SDG: 150822-16 H\_URS\_WIM-273 Job:

Analysis: EPH CWG (Aliphatic) GC (S)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

328751

Client Reference:

Chromatogram Sample No : 11959467

Sample ID :

**Depth**: 1.00

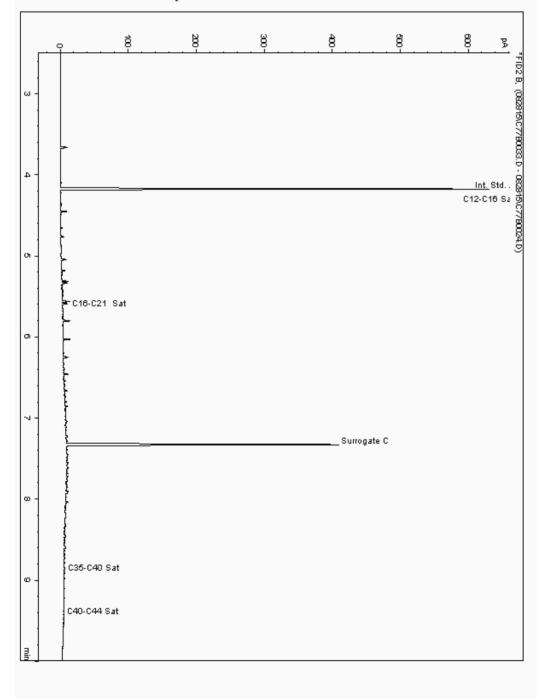
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11342149-

Sample Identity: Date Acquired : 29/08/2015 02:23:16 PM

Units ppb Dilution

CF 1.040 Multiplier



Validated

150822-16 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

328751

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth**: 3.30 Sample No : 11954758 Sample ID :

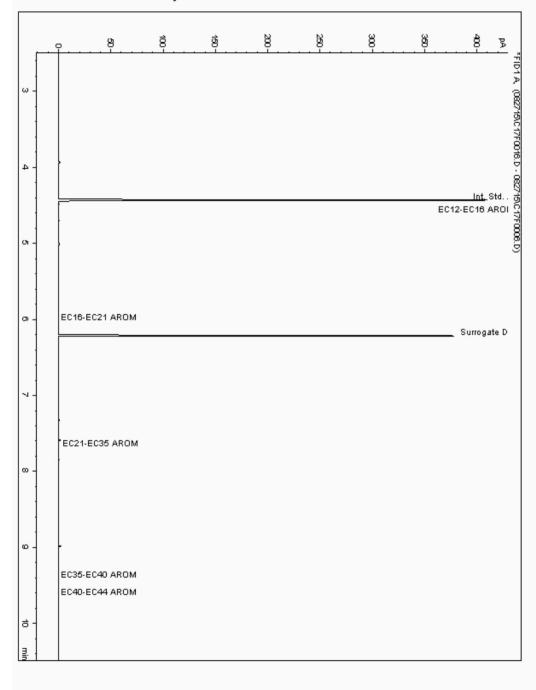
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

Sample Identity:

11342141-27/08/2015 18:44:18 PM Date Acquired :

Units ppb Dilution

CF 0.980 Multiplier



Validated

328751

150822-16 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention: Superseded Report:

Gary Marshall Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth**: 1.30 Sample No : 11954791

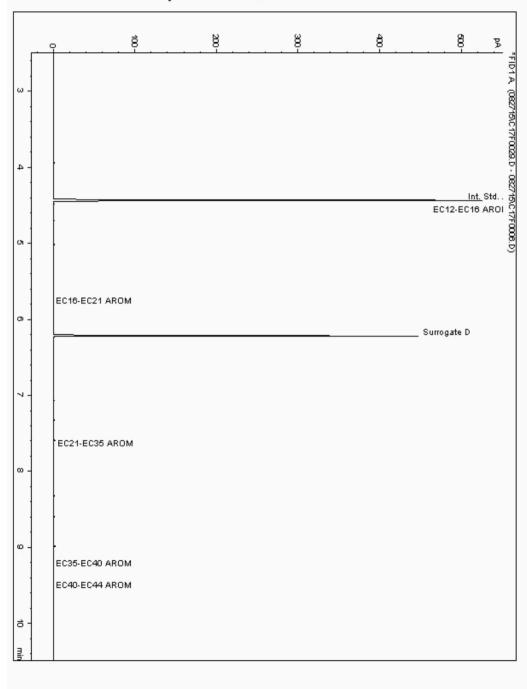
Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

11342132-27/08/2015 22:58:35 PM Sample Identity: Date Acquired :

Units ppb Dilution

CF 0.970 Multiplier



Validated

328751

150822-16 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention: Superseded Report:

Gary Marshall Chromatogram

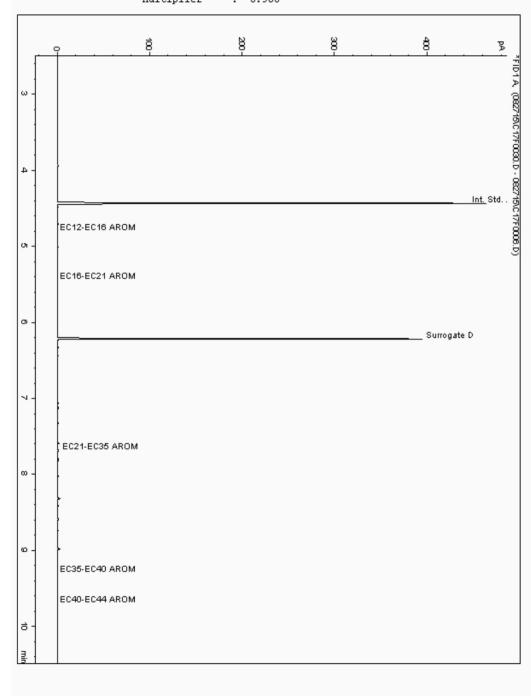
**Depth**: 1.10 Analysis: EPH CWG (Aromatic) GC (S) Sample No : 11956254

Sample ID : Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

11342168-27/08/2015 23:18:56 PM Sample Identity: Date Acquired :

Units ppb Dilution

CF 0.960 Multiplier



Validated

150822-16 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference:

Attention: Gary Marshall Superseded Report:

328751

Chromatogram

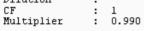
Analysis: EPH CWG (Aromatic) GC (S) Sample No : **Depth**: 2.50 11956372 Sample ID :

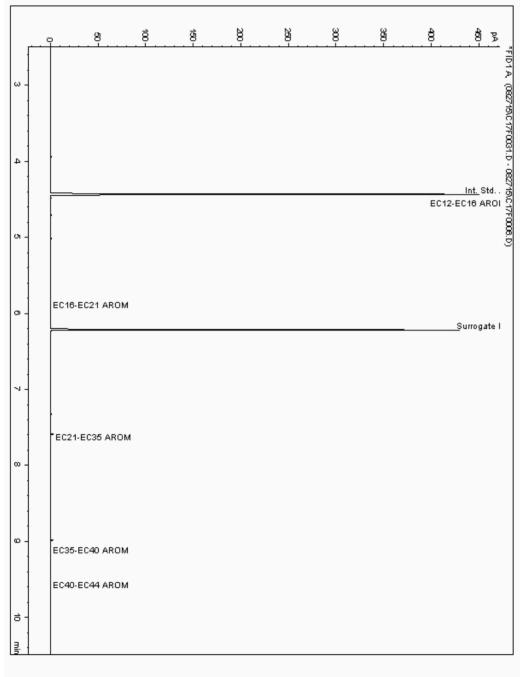
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

Sample Identity:

11342159-27/08/2015 23:39:01 PM Date Acquired :

Units ppb Dilution





Chromatogram

Validated

**SDG:** 150822-16 **Job:** H\_URS\_WIM-273

Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Client Reference:

Analysis: EPH CWG (Aromatic) GC (S) Sample No :

 Sample No :
 11959414

 Sample ID :
 BH203A

**Depth**: 0.50

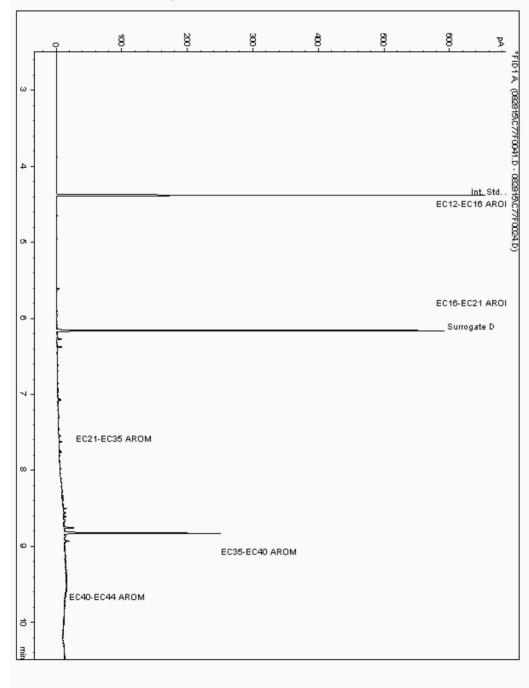
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity: 11342123-

Date Accoursed : 01/09/2015 07:58:50 PM

Units : ppb

CF : 1 Multiplier : 1.040



Validated

150822-16 SDG: Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth**: 1.00 Sample No : 11959467 Sample ID :

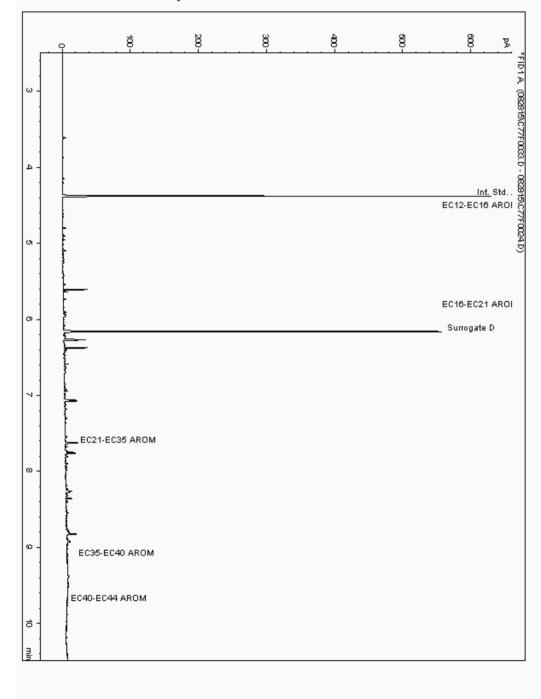
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

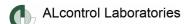
11342150-

Sample Identity: Date Acquired : 29/08/2015 02:23:16 PM

Units ppb Dilution

CF 1.040 Multiplier





Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273

Analysis: GRO by GC-FID (S)

Client Reference:

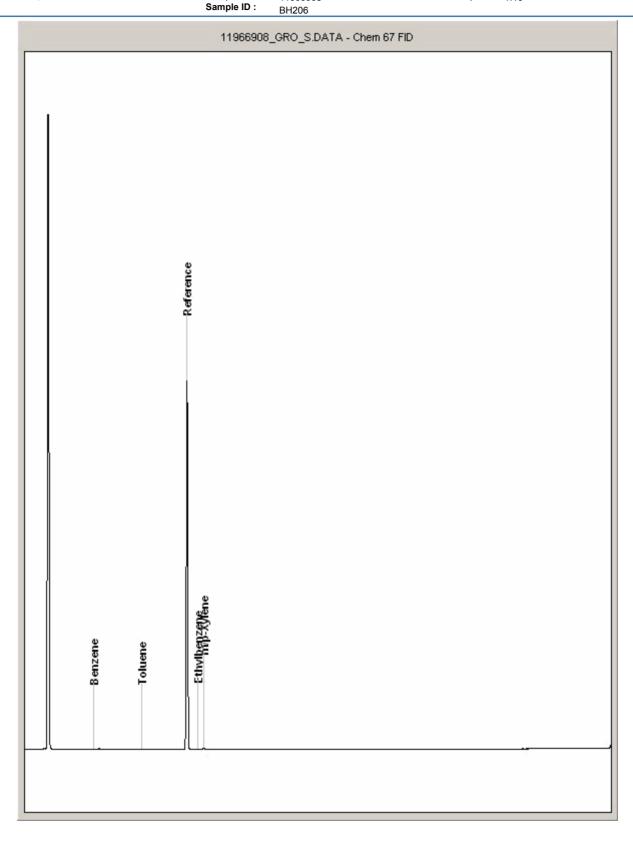
Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

328751

Chromatogram

**Sample No:** 11966908 **Depth:** 1.10





Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273 Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

328751

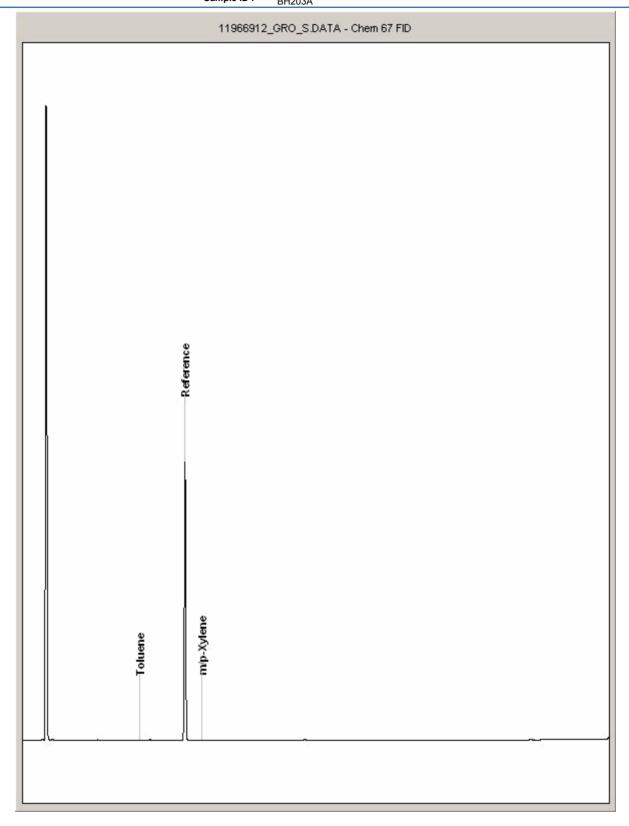
Chromatogram

**Analysis:** GRO by GC-FID (S)

Client Reference:

**Sample No**: 11966912 **Sample ID**: BH203A

**Depth**: 0.50





Analysis: GRO by GC-FID (S)

Client Reference:

## **CERTIFICATE OF ANALYSIS**

Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273 Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

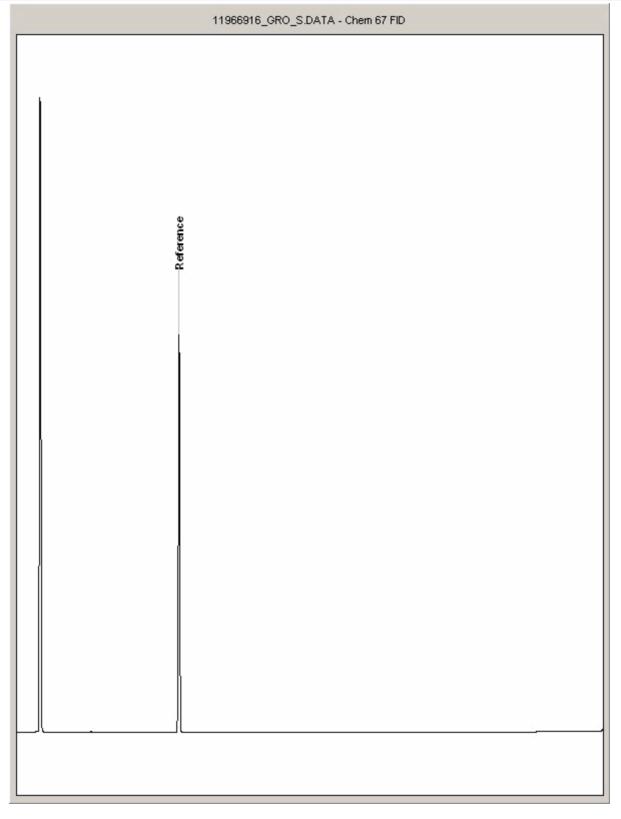
328751

y Warshall Superseded in

Chromatogram

**Sample No**: 11966916 **Depth**: 2.50

Sample ID : BH205



Validated

**SDG**: 150822-16 **Job**: H\_URS\_WIM-273 Location: Customer: Attention: Order Number: Report Number: Superseded Report:

328751

Client Reference:

H\_URS\_WIM-27

Chromatogram

Stag Brewery

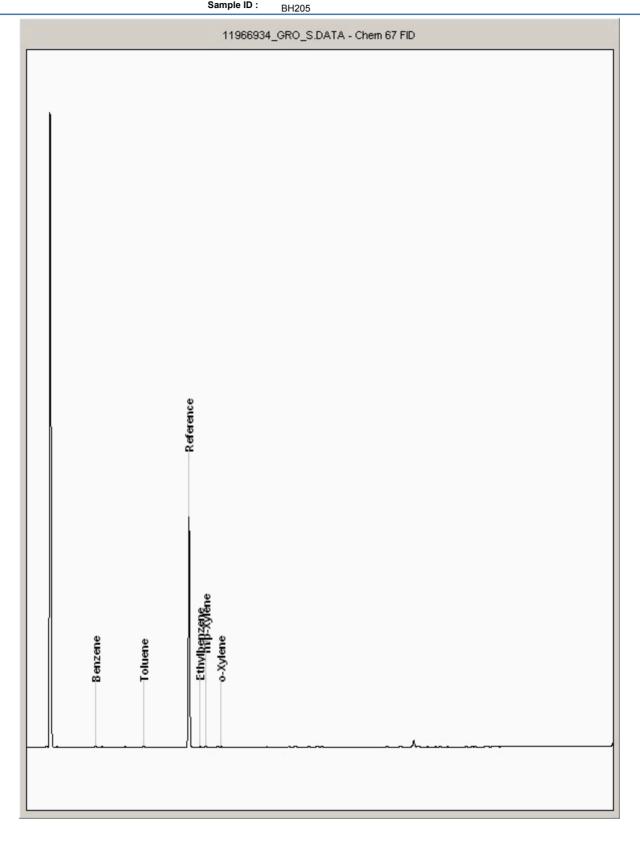
Gary Marshall

AECOM

 Analysis:
 GRO by GC-FID (S)
 Sample No :
 11

 Sample ID :
 BI

ple No: 11966934 Depth: 1.00





Analysis: GRO by GC-FID (S)

Client Reference:

## **CERTIFICATE OF ANALYSIS**

Validated

150822-16 SDG: Job:

H\_URS\_WIM-273

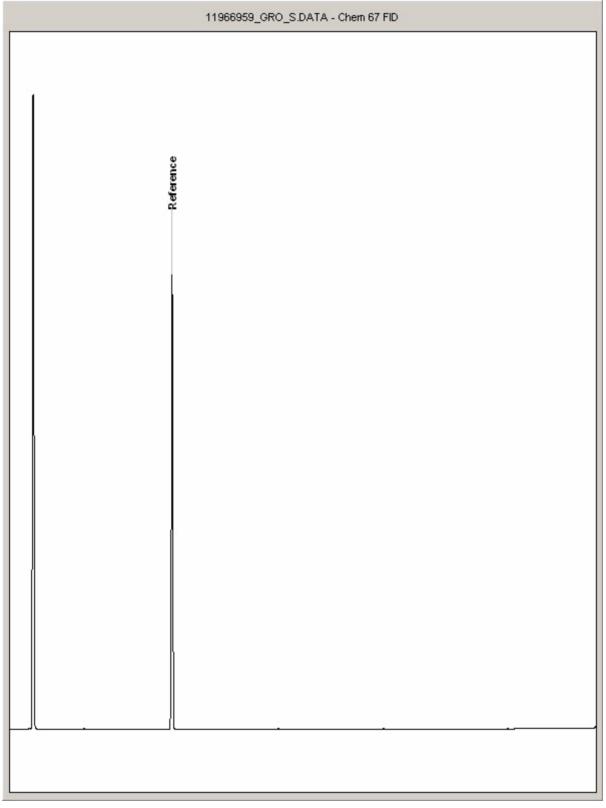
Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

328751

Chromatogram

**Depth**: 3.30 Sample No : 11966959

Sample ID : BH204





Validated

SDG: 150822-16 Location: Stag Brewery H\_URS\_WIM-273 Job:

Client Reference: Attention:

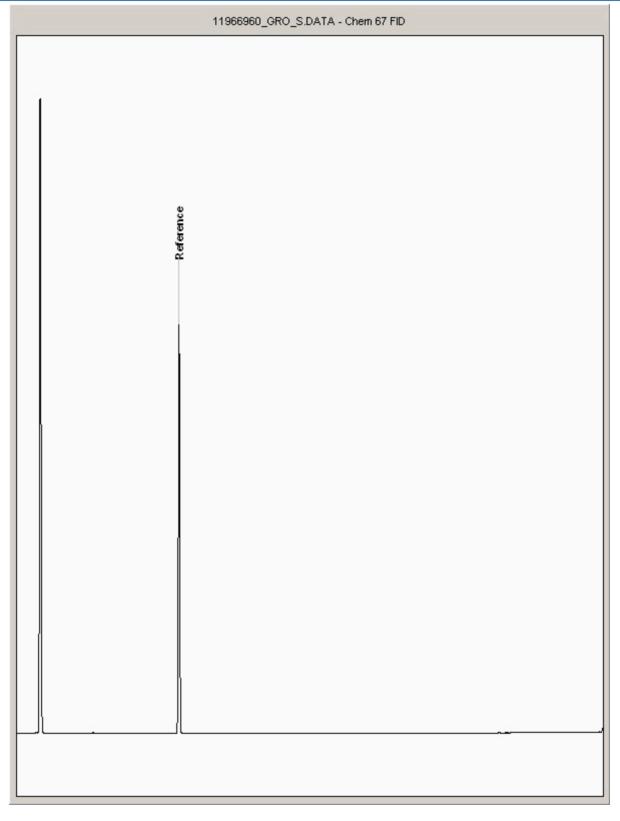
AECOM **Customer:** Gary Marshall Order Number: Superseded Report:

328751

Chromatogram

Analysis: GRO by GC-FID (S) **Depth**: 1.30 Sample No : 11966960

Sample ID : BH204



# **ALcontrol Laboratories**

#### **CERTIFICATE OF ANALYSIS**

150822-16 Location: Stag Brewery Order Number: H URS WIM-273 **AECOM Customer:** Report Number: Attention: Gary Marshall Superseded Report:

Job: Client Reference:

SDG

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 quaranteed 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
- . 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.
- monohydric by HPLC include phenol, cresols (2-Methylphenol, bl) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 3-Methylphenol 4-Methylphenol) 2.5 Dimethylphenol. Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).
- 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

SOLID MATRICES EXTRACTION SUMMARY

328751

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GCEZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
MNERALOIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
SVCC	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (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

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed 'Screening of during the soils Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) (Hawarden) method of transmitted/polarised light microscopy and central dispersion staining, based on HSG 248 (2005)

Asbestos Type	Common Name
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Crodddite	Blue Asbestos
Fibrous Adindite	=
Fibrous Anthophylite	=
Fibrous Trentalite	-

#### 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.

# ALcontrol Laboratories

#### **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:

## Appendix General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 month 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 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 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
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Orodobite	Blue Asbestos
Fibrous Adinoite	-
Fibrous Anhaphylite	-
Fibrous Tremdile	-

#### 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

Location:

# **ALcontrol Laboratories Analytical Services**

SDG: Job: Client Reference:

150826-58 H\_URS\_WIM-273

**Stag Brewery** 

Customer: Attention: Order No.: AECOM Gary Marshall

**Report No:** 

## **Asbestos Identification**

		Date of Analysis	Analysed By	Comments	Amosite (Brown)	Chrysotile (White)	Crocidolite (Blue)	Fibrous Actinolite	Fibrous	Fibrous Tremolite	Non-Asbestos Fibre
					Asbestos	Asbestos	Asbestos		Anthophyllite		
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved Sof 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
	20004440	2/0/45									
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved Date Receieved Original Sample Method Number	BH201A NS Z 1.90 - 2.00 SOLID 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

Preliminary

# **ALcontrol Laboratories Analytical Services**

150826-58 H\_URS\_WIM-273 SDG: Job: Client Reference:

Location: **Stag Brewery**  Customer: Attention: Order No.: AECOM Gary Marshall

**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 119631.77 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



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

Report No:

## PRELIMINARY/INTERIM REPORT

Date:	09 September 2015
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	150828-41
Your Reference:	
Location:	Stag Brewery

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.

329009

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:









Preliminary

**SDG:** 150828-41 **Job:** H\_URS\_WIM-273 **Client Reference:**  Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329009

## **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	ВН7А		0.70	27/08/2015
11977604	внта		2.50 - 3.00	27/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

Preliminary

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150828-41 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273 Customer: AECOM Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

Client Reference:		Attention	_	00	ary	IVIC	11 31	all				_
SOLID				_			_		_		_	_
Results Legend	Lab Sample I		11977605			11977606		11977603		11877004	107	
	·		7605			7606		7603		9	7007	
X Test												
No Determination												
Possible	0	_										
	Custome			BH4A			RH4A		ВН7А			D C
	Sample Refe	rence		4A		:	4 A		ZA		3	7>
			L									
	AGS Refere	nce										
			Т		T							,
				0		è	3 50 - 4 00		0		2.30 - 3.00	אל ה
	Depth (m	1)		0.90		;	4		0.70		0	S C
							-					
			250	400	250	400	2 2	400	60	250	400	8
			g Ar	7 S	g Ar	۵ . تا		)g Tı	0	q Ar	_	Ś
	Containe	r	250g Amber Jar (AL	E G	nber	ر ج م	2 2	d) qr	Ö P	nber	5 G	5
			Jar	LE2	Jar		<u>ا</u> ا	E	LE2	Jar i		П 3
			Æ.	400g Tub (ALE214)	Æ.	4	5 2	14	15)	₽.	4	7
Ammonium Soil by Titration	All	NDPs: 0	П				T	T				1
		Tests: 4	H	X		X	+	X			X	+
Ashartan ID in Callid Carreller	All	NDD 2	Н		$\vdash$	^	4			H		4
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2										
				X				X				
Asbestos Quant Waste Limit	All	NDPs: 0	H		$\forall$	_		+			+	
		Tests: 1	Н		Н	+	+	+		Н	+	-
				X						Ш		
Easily Liberated Sulphide	All	NDPs: 0										
		Tests: 4		X	П	X		X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0	H			-	+	+		H	_	+
		Tests: 4	Ц	4	Ш	_	4	_			4	-
			X		X		)	(		X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0	П					T		П		
		Tests: 4	X	+	X	1	)			X	$^{+}$	1
GRO by GC-FID (S)	All	NDD-: 0	H	_	H	+	_	1		-	+	-
GRO by GC-I ID (G)	All	NDPs: 0 Tests: 4	Ц		Ш			1		Ш		
				X			X		X		)	K
Hexavalent Chromium (s)	All	NDPs: 0	П					T		П	Ť	
		Tests: 4	Н	X	Н	X	+	X			X	
Metals in solid complex by OFC	All	NDD 2	H		H	*	+			H		4
Metals in solid samples by OES	All All	NDPs: 0 Tests: 4	Ц		Ш		1	L				1
			X		X		)	(		X		
PAH by GCMS	All	NDPs: 0	П	+	П		Ť	+	H	Ħ	+	1
		Tests: 4	X	+	X		,	<b>(</b>		X	+	+
	All		^	_	^	_	,	1		_	_	4
pH	All	NDPs: 0 Tests: 4										
		. 3013. 4		X		X	T	X			X	1
Sample description	All	NDPs: 0	H		$\forall$		+	f		H	+	$\forall$
		Tests: 4	U	+		-	-		H	30	+	+
			X		X		)	_		X		
Total Organic Carbon	All	NDPs: 0										
		Tests: 4	X		x		)	2	П	X	$\top$	1
Total Sulphate	All	NDPs: 0	F	+		+	+	+			+	$\dashv$
		Tests: 4	Ц	+				+		Ц	4	4
			X		X		)	[		X		
TPH CWG GC (S)	All	NDPs: 0	П				T	T				1
		Tests: 4	X	+	X		)	(		X	+	1
			Ĺ									_



Preliminary

 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	Lab Sample No(s)			1000	11077605		11977606		11977603			11977604
No Determination Possible	Customer Sample Reference			9			BH4A		BH/A			BH7A
	AGS Refere	nce										
	Depth (m	)		0			3.50 - 4.00		0.70			2.50 - 3.00
	Containe	r	250g Amber Jar (AL	400g Tub (ALE214)	250g Amber Jar (AL	400g Tub (ALE214)	60a VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
VOC MS (S)	All	NDPs: 0 Tests: 4		2	<b>(</b>		X		×			X

Preliminary

150828-41 Job:

H\_URS\_WIM-273

Location: **Customer:** 

Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number:

329009

Superseded Report:

## **Sample Descriptions**

#### **Grain Sizes**

Client Reference:

very fine	<0.0	63mm	fine	0.063mm - 0.1mm	medium	0.1mm	- 2mm	coarse	2mm - 1	0mm	very coars	e >10mm
Lab Sample	No(s)	Custom	er Sample R	ef. Depth (m)	Co	lour	Description	n (	Grain size	Inclu	sions	Inclusions 2
119776	05		BH4A	0.90	Dark	Brown	Sand	0	.1 - 2 mm	Br	ick C	Concrete/Aggre gate
119776	06	BH4A		3.50 - 4.00	Light	Brown	Sand	0	.1 - 2 mm	Sto	nes	None
119776	03		ВН7А	0.70	Dark	Brown	Sandy Clay Loam	/ 0	.1 - 2 mm	Br	ick	Stones
119776	04		ВН7А	2.50 - 3.00	Light	Brown	Sand	0	.1 - 2 mm	Sto	nes	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

150828-41 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273 Customer: AECOM

329009 Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

Results Legend # ISO17025 accredited.	(	Customer Sample R	BH4A	BH4A	BH7A	BH7A	
M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.90	3.50 - 4.00	0.70	2.50 - 3.00	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
* Subcontracted test.  ** % recovery of the surrogate standa	urd to	Date Sampled	27/08/2015 00:00:00	27/08/2015	27/08/2015	27/08/2015	
check the efficiency of the method.	The	Sampled Time Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds with samples aren't corrected for the re-		SDG Ref	150828-41	150828-41	150828-41	150828-41	
(F) Trigger breach confirmed	,	Lab Sample No.(s)	11977605	11977606	11977603	11977604	
1-5&+§@ Sample deviation (see appendix)		AGS Reference					
Component	LOD/Units						
Moisture Content Ratio (%	%	PM024	7.1	4.4	28	4.8	
of as received sample)							
Exchangeable Ammonia	<15	TM024	23.8	<15	35.3	15.8	
as NH4	mg/kg		M	М	M	M	
Organic Carbon, Total	<0.2 %	TM132	2.08	<0.2	3.51	<0.2	
			M	M	M	M	
рH	1 pH	TM133	7.92	8.01	7.67	8.01	
	Units		M	М	M	M	
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	<0.6	<0.6	
	mg/kg		#	#	#	#	
Sulphide, Easily liberated	<15	TM180	<15	<15	<15	<15	
	mg/kg		<b>♦</b> #	<b>*</b> #	<b>♦</b> #	<b>♦</b> #	
Arsenic	<0.6	TM181	14.2	21.4	94	16.4	
	mg/kg	4	M	М	M	M	
Cadmium	<0.02	TM181	0.603	0.385	2.03	0.325	
	mg/kg		M	М	M	M	
Chromium	<0.9	TM181	16.9	21.5	28.7	16.5	
	mg/kg		M	М	M	М	
Copper	<1.4	TM181	31.4	6.36	82.3	4.42	
	mg/kg		M	M	M	М	
Lead	<0.7	TM181	309	8.03	468	5.77	
	mg/kg		M	М	M	М	
Mercury	<0.14	TM181	<0.14	<0.14	0.702	<0.14	
	mg/kg		M	М	M	М	
Nickel	<0.2	TM181	15.6	24.2	36	19.4	
	mg/kg		M	М	M	М	
Selenium	<1 mg/k	g TM181	<1	<1	<1	<1	
			#	#	#	#	
Zinc	<1.9	TM181	217	28.5	1640	20.8	
	mg/kg		M	М	M	М	
Sulphate, Total	<48	TM221	841	63.9	601	74.7	
	mg/kg		M	М	M	М	
		1					
		_					
		_					
		_					
		_					



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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:

PAH by GCMS	_	1					
Results Legend # ISO17025 accredited.		Customer Sample R	BH4A	BH4A	BH7A	BH7A	
M mCERTS accredited.  aq Aqueous / settled sample.		Donth (m)	0.00	2.50. 4.00	0.70	2.50. 2.00	
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	0.90 Soil/Solid	3.50 - 4.00 Soil/Solid	0.70 Soil/Solid	2.50 - 3.00 Soil/Solid	
* Subcontracted test.		Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015	
check the efficiency of the method.	The	Sampled Time Date Received	00:00:00 28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds wi samples aren't corrected for the rec		SDG Ref	150828-41	150828-41	150828-41	150828-41	
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s)	11977605	11977606	11977603	11977604	
Component	LOD/Unit	AGS Reference s Method					
Naphthalene-d8 %	%	TM218	97.2	92.6	104	92.3	
recovery**	,,,		· · · <u>-</u>	02.0		02.0	
Acenaphthene-d10 %	%	TM218	98.5	92.1	104	91.4	
recovery**							
Phenanthrene-d10 %	%	TM218	99	89.7	104	89.4	
recovery**							
Chrysene-d12 %	%	TM218	93.5	79.4	94.8	80.1	
recovery**							
Perylene-d12 %	%	TM218	102	86.9	101	88.5	
recovery** Naphthalene	<9 µg/k	g TM218	56	<9	69.9	<9	
Марпиналене	~9 μg/κ	9 1101216	56 M	M	69.9 M	N N	
Acenaphthylene	<12	TM218	83	<12	84.3	<12	
	μg/kg		M	M	M	м.	
Acenaphthene	<8 μg/k	g TM218	41.8	<8	11.5	<8	
			M	М	М	М	
Fluorene	<10	TM218	48.2	<10	<10	<10	
	μg/kg		M	M	M	М	
Phenanthrene	<15	TM218	1190	<15	307	<15	
Authorson	μg/kg	TN4040	M	M	M	M	
Anthracene	<16 µg/kg	TM218	317	<16	107	<16	
Fluoranthene	μg/kg <17	TM218	2500	M <17	967	<17	
ridorantiferie	μg/kg	1101210	2300 M	117 M	м	М М	
Pyrene	<15	TM218	2090	<15	971	<15	
,	μg/kg		M	М	М	М	
Benz(a)anthracene	<14	TM218	1320	<14	630	<14	
	μg/kg		M	М	M	M	
Chrysene	<10	TM218	1060	<10	684	<10	
5 4 15 4	μg/kg	T14040	M	M	M	M	
Benzo(b)fluoranthene	<15	TM218	1700	<15	1930	<15	
Benzo(k)fluoranthene	μg/kg <14	TM218	609	M <14	724	<14	
Benzo(k)ndoranthene	μg/kg	11/12/10	M	M	, 24 M	М	
Benzo(a)pyrene	<15	TM218	1470	<15	1050	<15	
	μg/kg		M	М	М	М	
Indeno(1,2,3-cd)pyrene	<18	TM218	787	<18	975	<18	
	μg/kg		M	M	M	M	
Dibenzo(a,h)anthracene	<23	TM218	216	<23	269	<23	
Danna (a. h. i) a and a na	μg/kg <24	TM040	967	M <24	1160	<24	
Benzo(g,h,i)perylene	×24 μg/kg	TM218	967 M	~24 M	1160 M	M	
PAH, Total Detected	<118	TM218	14500	<118	9950	<118	
USEPA 16	μg/kg						
		+					
		+ +					
		+					
		+					



Preliminary

Job: Client Reference:

SDG:

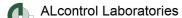
150828-41 Location: H\_URS\_WIM-273 Customer: Attention:

Stag Brewery AECOM Gary Marshall

Order Number: 329009 Report Number:

Superseded Report:

TPH CWG (S)											
Results Legend # ISO17025 accredited.		Customer Sample R	BH4A	BH4A		BH7A		BH7A			
M mCERTS accredited.											
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.90	3.50 - 4.00		0.70		2.50 - 3.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Sample Type Date Sampled	Soil/Solid 27/08/2015	Soil/Solid 27/08/2015		Soil/Solid 27/08/2015		Soil/Solid 7/08/2015			
** % recovery of the surrogate standa check the efficiency of the method		Sampled Time	00:00:00								
results of individual compounds w	ithin	Date Received SDG Ref	28/08/2015 150828-41	28/08/2015 150828-41		28/08/2015 150828-41		8/08/2015 50828-41			
samples aren't corrected for the re (F) Trigger breach confirmed	covery	Lab Sample No.(s)	11977605	11977606		11977603		11977604			
1-5&+§@ Sample deviation (see appendix)		AGS Reference									
Component	LOD/Unit										
GRO Surrogate %	%	TM089	74	117		28		129			
recovery**	.44	T14000	-44	.44		-44		-44			
GRO TOT (Moisture Corrected)	<44	TM089	<44	<44		<44		<44			
Methyl tertiary butyl ether	μg/kg <5 μg/k	g TM089	M <5	<5	М	<5	М	<5	M		
(MTBE)	-5 μg/k	ig Tivioos	M		М		М	~5	М		
Benzene	<10	TM089	<10	<10	IVI	<10	IVI	<10	IVI		
Benzene	μg/kg	11000	М		М		М	110	М		
Toluene	<2 μg/k	g TM089	<2	<2		<2		<2			
	-  -3				М		М		М		
Ethylbenzene	<3 µg/k	g TM089	<3	<3		<3		<3			
·			М		М		М		М		
m,p-Xylene	<6 µg/k	g TM089	<6	<6		<6		<6			
			M		М		М		М		
o-Xylene	<3 µg/k	g TM089	<3	<3		<3		<3			
			М		М		М		М	<u> </u>	<del></del>
sum of detected mpo	<9 µg/k	g TM089	<9	<9		<9		<9			
xylene by GC						- :					
sum of detected BTEX by	<24	TM089	<24	<24		<24		<24			
GC	μg/kg	TMOOO	-10	-110		-10		-110			
Aliphatics >C5-C6	<10	TM089	<10	<10		<10		<10			
Aliphatics >C6-C8	μg/kg <10	TM089	<10	<10		<10	_	<10			
Aliphatics >00-00	μg/kg	11009	~10	10		~10		<b>~10</b>			
Aliphatics >C8-C10	<10	TM089	<10	<10		<10		<10			
, inpriduce - de d'id	μg/kg	1111000	-10			110		110			
Aliphatics >C10-C12	<10	TM089	<10	<10		<10		<10			
	μg/kg										
Aliphatics >C12-C16	<100	TM173	<100	<100		<100		<100			
	μg/kg										
Aliphatics >C16-C21	<100	TM173	1680	<100		<100		<100			
	μg/kg										
Aliphatics >C21-C35	<100	TM173	54500	<100		21900		<100			
	μg/kg	=111=2		100							
Aliphatics >C35-C44	<100	TM173	32400	<100		5130		<100			
Tatal Allahadaa 2040 044	μg/kg	T14470	20522	.400		07000		:400			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	88500	<100		27000		<100			
Aromatics >EC5-EC7	μg/kg <10	TM089	<10	<10	$\dashv$	<10		<10			
Albinatics >LC5-LC1	μg/kg	11009	~10	10		~10		<b>~10</b>			
Aromatics >EC7-EC8	<10	TM089	<10	<10		<10		<10			
7	μg/kg										
Aromatics >EC8-EC10	<10	TM089	<10	<10		<10		<10			
	μg/kg										<u>                                     </u>
Aromatics >EC10-EC12	<10	TM089	<10	<10		<10		<10			
	μg/kg										
Aromatics >EC12-EC16	<100	TM173	1610	<100		1920		<100			
	μg/kg										
Aromatics >EC16-EC21	<100	TM173	17100	<100		8470		<100			
Aremetics > FOO4 FOOF	μg/kg	Th4470	74700	-400		70000	_	<b>~100</b>			<del>                                     </del>
Aromatics >EC21-EC35	<100 µg/kg	TM173	74700	<100		70000		<100			
Aromatics >EC35-EC44	μg/kg <100	TM173	37300	<100		28500	_	<100			<del>                                     </del>
, a omation > Loop-Lo44	μg/kg	1101173	37300	100		20000		-100			
Aromatics >EC40-EC44	<100	TM173	14200	<100		10500		<100			<del>                                     </del>
	μg/kg		1.200	1,00		10000		.00			
Total Aromatics	<100	TM173	131000	<100		109000		<100			
>EC12-EC44	μg/kg		1								
Total Aliphatics &	<100	TM173	219000	<100		136000		<100			
Aromatics >C5-C44	μg/kg										
											<del> </del>
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Preliminary

150828-41 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

AECOM **Customer:** Attention: Gary Marshall

Report Number: Superseded Report:

329009

Client Reference:			Attention:	Ga	ry Marshall			Superseded Re	JUIL.	
VOC MS (S)										
Results Legend		Customer Sample R	BH4A		BH4A		BH7A	BH7A		
# ISO17025 accredited.  M mCERTS accredited.										
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.90		3.50 - 4.00		0.70	2.50 - 3.00		
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid		Soil/Solid		Soil/Solid	Soil/Solid		
* Subcontracted test.  ** % recovery of the surrogate standa	ard to	Date Sampled Sampled Time	27/08/2015 00:00:00		27/08/2015		27/08/2015	27/08/2015		
check the efficiency of the method results of individual compounds w		Date Received	28/08/2015		28/08/2015		28/08/2015	28/08/2015		
samples aren't corrected for the re		SDG Ref	150828-41		150828-41		150828-41	150828-41		
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11977605		11977606		11977603	11977604		
Component	LOD/Unit									
Dibromofluoromethane**	%	TM116	120		103		112	124		
Bistomondoromondiano	/0	"""	120		100		· · · -			
Toluene-d8**	%	TM116	98.1		103		99.5	110		
4-Bromofluorobenzene**	%	TM116	69.9		94.2		74.1	106		
Dichlorodifluoromethane	<6 µg/k	kg TM116	<6		<6		<60	<6		
		<u> </u>		М		М	М	N	Л	
Chloromethane	<7 µg/k	kg TM116	<7		<7		<70	<7		
		<u> </u>		#		#	#		#	
Vinyl Chloride	<6 µg/k	kg TM116	<6		<6		<60	<6		
_		·		М		М	М	N	Л	
Bromomethane	<10	TM116	<10		<10		<100	<10		
	μg/kg			М		М	M	N	Λ	
Chloroethane	<10	TM116	<10		<10		<100	<10		
	μg/kg			М		М	M	N	Л	
Trichlorofluorormethane	<6 µg/k	kg TM116	<6		<6		<60	<6		
				М		М	M	N	Л	
1,1-Dichloroethene	<10	TM116	<10		<10		<100	<10		
	μg/kg			#		#	#		#	
Carbon Disulphide	<7 µg/k	kg TM116	<7		<7		<70	<7		
				М		М	M		Л	
Dichloromethane	<10	TM116	<10		<10		<100	<10		
	μg/kg			#		#	#		#	
Methyl Tertiary Butyl Ether	<10	TM116	<10		<10		<100	<10		
	μg/kg			М		M	M		Л	
trans-1,2-Dichloroethene	<10	TM116	<10		<10		<100	<10		
	μg/kg	_		М		M	M		Л	
1,1-Dichloroethane	<8 µg/k	kg TM116	<8		<8		<80	<8		
: 10 B: 11 #		T1440		М		M	M		Л	
cis-1,2-Dichloroethene	<6 µg/k	kg TM116	<6		<6		<60	<6		
2.2 Dishlararara	-110	TM44C	-10	М	-110	M	M		Л	
2,2-Dichloropropane	<10 µg/kg	TM116	<10		<10	N 4	<100	<10	4	
Bromochloromethane	μg/kg <10	TM116	<10	M	<10	M	<100	<10	1	
Biomodiloromethane	μg/kg	1101110	110	М	110	М	M		л <b>Г</b>	
Chloroform	<8 μg/k	kg TM116	<8	IVI	<8	IVI	<80	<8	//	
Chlorolomi	-σ μg/r	S I INITIO	-0	М	٠,	М	M		4	
1,1,1-Trichloroethane	<7 μg/k	kg TM116	<7		<7		<70	<7		
.,.,.			-	М	·	М	M		Л	
1,1-Dichloropropene	<10	TM116	<10		<10		<100	<10		
, , , , , , , , , , , , , , , , , , , ,	μg/kg			М		М	M		<b>Λ</b>	
Carbontetrachloride	<10	TM116	<10		<10		<100	<10		
	μg/kg			М		М	М	N	Л	
1,2-Dichloroethane	<5 µg/k	kg TM116	<5		<5		<50	<5		
		·		М		М	М	N	Л	
Benzene	<9 µg/k	kg TM116	<9		<9		<90	<9		
				М		М	M	N	Л	
Trichloroethene	<9 µg/k	kg TM116	<9		<9		<90	<9		
				#		#	#	;	#	
1,2-Dichloropropane	<10	TM116	<10		<10		<100	<10		
	μg/kg			М		М	M		Л	
Dibromomethane	<9 µg/k	kg TM116	<9		<9		<90	<9		
				М		M	M		1	
Bromodichloromethane	<7 µg/k	kg TM116	<7		<7		<70	<7		
				М		M	M		Л	
cis-1,3-Dichloropropene	<10	TM116	<10		<10		<100	<10	.1	
Toluono	μg/kg		<7	М	<7	M	<70	<7	1	<del>                                     </del>
Toluene	<7 μg/k	kg TM116	</td <td>R 4</td> <td><!--</td--><td>N 4</td><td></td><td></td><td>4</td><td></td></td>	R 4	</td <td>N 4</td> <td></td> <td></td> <td>4</td> <td></td>	N 4			4	
trans-1,3-Dichloropropene	<10	TM116	<10	M	<10	M	<100	<10	Λ <u> </u>	<del>                                     </del>
aans-1,5-Dichioroproperie	μg/kg		~10		10		100	710		
1,1,2-Trichloroethane	μg/kg <10	TM116	<10		<10		<100	<10		<del>                                     </del>
1,1,2 Thornoroemane	µg/kg	1101110	~10	М	10	М	_ 100 M		<u>,                                    </u>	

µg/kg

М

М

М



Preliminary

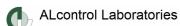
SDG: 150828-41 Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Customer: AECOM
Client Reference: Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

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VOC MS (S)							
Results Legend # ISO17025 accredited.		Customer Sample R	BH4A	BH4A	BH7A	BH7A	
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test.		Depth (m) Sample Type Date Sampled	0.90 Soil/Solid 27/08/2015	3.50 - 4.00 Soil/Solid 27/08/2015	0.70 Soil/Solid 27/08/2015	2.50 - 3.00 Soil/Solid 27/08/2015	
** % recovery of the surrogate standa check the efficiency of the method	. The	Sampled Time Date Received	00:00:00 28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds w samples aren't corrected for the re		SDG Ref	150828-41	150828-41	150828-41	150828-41	
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11977605	11977606	11977603	11977604	
Component	LOD/Unit	s Method					
1,3-Dichloropropane	<7 μg/k	g TM116	<7	<7	<70	<7	
Tetrachloroethene	<5 μg/k	g 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/k	g 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/k		<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/k		<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/k		<9 M	<9 M	<90 M	<9 M	
1,3,5-Trimethylbenzene	<8 µg/k		<8 M	<8 M	<80 M	<8 M	
4-Chlorotoluene	<10 µg/kg	TM116	<10 M		<100 M	<10 M	
tert-Butylbenzene	<14 µg/kg	TM116	<14 M		<140 M	<14 M	
1,2,4-Trimethylbenzene	<9 μg/k		<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/k		<8 M	<8 M	<80 M	<8 M	
1,4-Dichlorobenzene	<5 μg/k		<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-chloroprop ane	<14 µg/kg	TM116	<14 M	<14 M	<140 M	<14 M	
Tert-amyl methyl ether	<10 µg/kg	TM116	<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	



Gary Marshall

Preliminary

Superseded Report:

Stag Brewery 150828-41 Location: SDG: Order Number: H\_URS\_WIM-273 329009 Job: **Customer:** AECOM Report Number:

Attention:

Client Reference:

VOC MS (S) Customer Sample R BH4A BH4A BH7A BH7A Results Legend
ISO17025 accredited.
mCERTS accredited.
Aqueous / settled sample.
Dissolved / filtered sample.
Total / unfiltered sample. aq diss.filt tot.unfilt Depth (m) 3.50 - 4.00 2.50 - 3.00 0.90 0.70 Sample Type Soil/Solid 27/08/2015 Soil/Solid 27/08/2015 Soil/Solid 27/08/2015 Soil/Solid 27/08/2015 tot.unfit 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 Trigger breach confirmed

1-58+\$@ Sample deviation (see appendix) Date Sampled Sampled Time 00:00:00 28/08/2015 28/08/2015 28/08/2015 28/08/2015 Date Received 150828-41 11977604 150828-41 150828-41 150828-41 SDG Ref b Sample No.(s) AGS Reference 11977605 11977606 11977603 LOD/Units Component Method 1,2,3-Trichlorobenzene TM116 <20 <20 <200 <20 <20 μg/kg



Preliminary

329009

SDG: 150828-41 Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 AECOM **Customer:** Report Number: 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

Preliminary

 SDG:
 150828-41

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 H\_URS\_WIM-273

 Client Reference:

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

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**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	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		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



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 SDG:
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 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

AECOM Report Number:

Report Number:

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
Туре	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
	-			

SDG:

Job:

Client Reference:

### PRELIMINARY/INTERIM REPORT

Preliminary

329009

 150828-41
 Location:
 Stag Brewery
 Order Number:

 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Attention: Gary Marshall Superseded Report:

# **ASSOCIATED AQC DATA**

### Ammonium Soil by Titration

Component	Method Code	QC 1292	QC 1205
Exchangeable Ammonium as NH4	TM024	<b>86.07</b> 79.30 : 104.61	<b>98.01</b> 79.30 : 104.61

## Easily Liberated Sulphide

Component	Method Code	QC 1219	QC 1231
Easily Liberated Sulphide	TM180	<b>93.21</b> 49.14 : 123.89	<b>94.71</b> 49.14 : 123.89

## EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aliphatics >C12-C35	TM173	<b>85.21</b> 62.50 : 112.50	<b>87.08</b> 70.80 : 111.51

## EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aromatics >EC12-EC35	TM173	<b>82.67</b> 60.62 : 126.95	<b>82.67</b> 65.21 : 121.32

## GRO by GC-FID (S)

Component	Method Code	QC 1173	QC 1290
Benzene by GC	TM089	<b>95.0</b>	<b>100.0</b>
(Moisture Corrected)		76.33 : 121.87	76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>99.0</b> 75.73 : 123.83	<b>100.5</b> 73.32 : 122.02
m & p Xylene by GC	TM089	<b>97.5</b>	<b>100.75</b>
(Moisture Corrected)		75.52 : 120.32	72.90 : 122.64
MTBE GC-FID (Moisture	TM089	<b>94.0</b>	<b>101.0</b>
Corrected)		77.89 : 119.70	72.17 : 124.81
o Xylene by GC (Moisture	TM089	<b>93.5</b>	<b>100.5</b>
Corrected)		74.15 : 124.59	71.65 : 124.40
QC	TM089	<b>99.2</b> 62.31 : 122.61	<b>105.5</b> 55.00 : 145.00
Toluene by GC (Moisture	TM089	<b>93.5</b>	<b>100.5</b>
Corrected)		77.91 : 122.33	74.60 : 120.38

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Client Reference: Attention: Gary Marshall

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## Hexavalent Chromium (s)

Component	Method Code	QC 1285
Hexavalent Chromium	TM151	<b>102.0</b> 92.20 : 106.60

## Metals in solid samples by OES

Component	Method Code	QC 1206	QC 1292
Aluminium	TM181	<b>99.23</b> 86.49 : 129.71	<b>108.46</b> 86.49 : 129.71
Antimony	TM181	<b>94.27</b> 77.50 : 122.50	<b>95.34</b> 77.50 : 122.50
Arsenic	TM181	<b>92.92</b> 82.63 : 117.37	<b>92.92</b> 82.63 : 117.37
Barium	TM181	<b>96.24</b> 79.45 : 120.55	<b>99.25</b> 79.45 : 120.55
Beryllium	TM181	<b>98.91</b> 85.92 : 121.27	<b>100.31</b> 85.92 : 121.27
Boron	TM181	<b>105.34</b> 77.41 : 143.83	<b>109.92</b> 77.41 : 143.83
Cadmium	TM181	<b>95.8</b> 81.95 : 118.05	<b>95.63</b> 81.95 : 118.05
Chromium	TM181	<b>93.33</b> 81.29 : 118.71	<b>96.47</b> 81.29 : 118.71
Cobalt	TM181	<b>95.83</b> 83.86 : 116.14	<b>96.67</b> 83.86 : 116.14
Copper	TM181	<b>97.7</b> 78.57 : 121.43	<b>98.51</b> 78.57 : 121.43
Iron	TM181	<b>95.86</b> 87.50 : 122.82	<b>101.38</b> 87.50 : 122.82
Lead	TM181	<b>93.7</b> 74.18 : 117.25	<b>92.91</b> 74.18 : 117.25
Manganese	TM181	<b>100.0</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09
Mercury	TM181	<b>94.3</b> 81.99 : 118.01	<b>93.47</b> 81.99 : 118.01
Molybdenum	TM181	<b>92.2</b> 81.45 : 118.55	<b>92.36</b> 81.45 : 118.55
Nickel	TM181	<b>95.93</b> 79.64 : 120.36	<b>97.67</b> 79.64 : 120.36
Phosphorus	TM181	<b>97.76</b> 81.03 : 118.97	<b>97.32</b> 81.03 : 118.97
Selenium	TM181	<b>105.3</b> 87.05 : 121.93	<b>105.47</b> 87.05 : 121.93
Strontium	TM181	<b>98.08</b> 83.64 : 116.36	<b>98.47</b> 83.64 : 116.36
Thallium	TM181	<b>87.56</b> 77.50 : 122.50	<b>91.38</b> 77.50 : 122.50
Tin	TM181	<b>92.03</b> 78.30 : 113.98	<b>92.69</b> 78.30 : 113.98
Titanium	TM181	<b>103.91</b> 71.02 : 128.98	<b>103.13</b> 71.02 : 128.98

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150828-41 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 Job:

AECOM **Customer:** Attention: Gary Marshall

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Client Reference:

Metals in solid samples by OES

	,	QC 1206	QC 1292
Vanadium	TM181	<b>93.53</b> 86.61 : 113.39	<b>95.0</b> 86.61 : 113.39
Zinc	TM181	<b>97.73</b> 89.82 : 114.54	<b>98.05</b> 89.82 : 114.54

## PAH by GCMS

Component	Method Code	QC 1122	QC 1106
Acenaphthene	TM218	<b>88.5</b> 78.75 : 116.25	<b>91.5</b> 78.84 : 114.36
Acenaphthylene	TM218	<b>85.0</b> 76.45 : 110.05	<b>85.5</b> 65.50 : 119.50
Anthracene	TM218	<b>87.5</b> 67.15 : 124.45	<b>91.0</b> 75.54 : 110.88
Benz(a)anthracene	TM218	<b>95.5</b> 82.00 : 127.00	<b>97.5</b> 78.02 : 127.38
Benzo(a)pyrene	TM218	<b>97.5</b> 75.60 : 124.20	<b>99.5</b> 79.21 : 128.01
Benzo(b)fluoranthene	TM218	<b>97.5</b> 81.20 : 121.77	<b>96.0</b> 86.21 : 131.42
Benzo(ghi)perylene	TM218	<b>96.5</b> 77.49 : 119.12	<b>95.0</b> 80.11 : 120.52
Benzo(k)fluoranthene	TM218	<b>94.5</b> 83.50 : 116.50	<b>97.0</b> 78.77 : 120.72
Chrysene	TM218	<b>93.0</b> 78.35 : 114.42	<b>94.5</b> 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	<b>94.0</b> 77.15 : 122.45	<b>93.5</b> 76.39 : 122.63
Fluoranthene	TM218	<b>91.0</b> 79.08 : 114.40	<b>95.0</b> 77.25 : 117.75
Fluorene	TM218	<b>90.5</b> 79.03 : 113.38	<b>95.5</b> 79.28 : 117.35
Indeno(123cd)pyrene	TM218	<b>96.0</b> 75.65 : 125.15	<b>93.0</b> 78.87 : 122.50
Naphthalene	TM218	<b>92.0</b> 77.25 : 112.60	<b>93.0</b> 74.75 : 118.25
Phenanthrene	TM218	<b>90.5</b> 78.25 : 115.44	<b>95.0</b> 78.61 : 113.98
Pyrene	TM218	<b>90.0</b> 78.07 : 114.06	<b>94.0</b> 76.15 : 115.26

## рΗ

Component	Method Code	QC 1218	QC 1227
рН	TM133	100.25	100.5
		97.19 : 102.81	97.19 : 102.81

## **Total Organic Carbon**

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SDG: 150828-41 Job:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

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Total Organic Carbon

Client Reference:

Component	Method Code	QC 1254	QC 1297
Total Organic Carbon	TM132	100.46	97.72
		88.82 : 111.18	89.40 : 103.09

## Total Sulphate

Component	Method Code	QC 1235	QC 1273
Total Sulphate	TM221	<b>102.27</b> 78.49 : 121.51	<b>103.79</b> 78.49 : 121.51

# VOC MS (S)

Component	Method Code	QC 1128	QC 1175	QC 1164
1,1,1,2-tetrachloroethane	TM116	<b>95.6</b> 83.24 : 124.28	<b>102.6</b> 83.24 : 124.28	<b>105.6</b> 76.60 : 121.00
1,1,1-Trichloroethane	TM116	<b>100.8</b> 81.77 : 121.07	<b>102.4</b> 81.77 : 121.07	<b>101.0</b> 77.80 : 123.40
1,1,2-Trichloroethane	TM116	<b>100.4</b> 79.24 : 112.23	<b>94.2</b> 79.24 : 112.23	<b>92.6</b> 75.40 : 119.80
1,1-Dichloroethane	TM116	<b>103.0</b> 72.58 : 116.06	<b>106.6</b> 72.58 : 116.06	<b>106.8</b> 80.84 : 124.49
1,2-Dichloroethane	TM116	<b>118.8</b> 77.50 : 122.50	<b>112.0</b> 77.50 : 122.50	<b>108.2</b> 91.00 : 135.67
1,4-Dichlorobenzene	TM116	<b>96.2</b> 73.23 : 116.39	<b>95.4</b> 73.23 : 116.39	<b>102.4</b> 80.88 : 114.60
2-Chlorotoluene	TM116	<b>85.6</b> 69.22 : 110.64	<b>86.6</b> 69.22 : 110.64	<b>97.2</b> 74.00 : 117.20
4-Chlorotoluene	TM116	<b>89.0</b> 68.57 : 106.26	<b>87.4</b> 68.57 : 106.26	<b>93.4</b> 71.20 : 113.20
Benzene	TM116	<b>103.2</b> 84.33 : 124.27	<b>106.0</b> 84.33 : 124.27	<b>99.6</b> 79.60 : 125.20
Carbon Disulphide	TM116	<b>110.4</b> 77.20 : 122.80	<b>107.4</b> 77.20 : 122.80	<b>101.4</b> 74.91 : 122.14
Carbontetrachloride	TM116	<b>98.2</b> 84.20 : 119.90	<b>102.8</b> 84.20 : 119.90	<b>101.0</b> 76.80 : 121.20
Chlorobenzene	TM116	<b>102.4</b> 85.28 : 129.96	<b>103.2</b> 85.28 : 129.96	<b>102.4</b> 83.47 : 116.82
Chloroform	TM116	<b>108.2</b> 82.73 : 119.72	<b>106.6</b> 82.73 : 119.72	<b>107.0</b> 82.00 : 128.80
Chloromethane	TM116	<b>123.4</b> 55.16 : 145.46	<b>117.2</b> 55.16 : 145.46	<b>129.8</b> 74.62 : 135.86
Cis-1,2-Dichloroethene	TM116	<b>108.4</b> 73.56 : 118.93	<b>108.4</b> 73.56 : 118.93	<b>109.8</b> 81.20 : 128.00
Dibromomethane	TM116	<b>104.4</b> 73.40 : 116.60	<b>98.0</b> 73.40 : 116.60	<b>90.8</b> 73.40 : 116.60
Dichloromethane	TM116	<b>113.2</b> 76.16 : 121.98	<b>108.2</b> 76.16 : 121.98	<b>109.2</b> 86.60 : 137.00

Preliminary

**SDG:** 150828-41 **Job:** H\_URS\_WIM-273 Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329009

VOC MS (S)

Client Reference:

	,	QC 1128	QC 1175	QC 1164
Ethylbenzene	TM116	<b>94.0</b> 80.07 : 125.98	<b>99.2</b> 80.07 : 125.98	<b>95.4</b> 73.60 : 115.60
Hexachlorobutadiene	TM116	<b>69.0</b> 30.92 : 132.28	<b>89.2</b> 30.92 : 132.28	<b>70.2</b> 33.65 : 130.56
Isopropylbenzene	TM116	<b>82.6</b> 69.27 : 125.32	<b>92.6</b> 69.27 : 125.32	<b>93.4</b> 72.52 : 117.52
Naphthalene	TM116	<b>110.0</b> 79.15 : 121.98	<b>107.4</b> 79.15 : 121.98	<b>104.4</b> 83.23 : 126.48
o-Xylene	TM116	<b>77.6</b> 75.46 : 111.52	<b>84.8</b> 75.46 : 111.52	<b>93.4</b> 69.60 : 110.40
p/m-Xylene	TM116	<b>90.2</b> 76.97 : 121.75	<b>96.6</b> 76.97 : 121.75	<b>91.4</b> 71.30 : 112.70
Sec-Butylbenzene	TM116	<b>69.6</b> 49.27 : 129.90	<b>85.8</b> 49.27 : 129.90	<b>93.2</b> 59.20 : 125.20
Tetrachloroethene	TM116	<b>102.2</b> 87.96 : 133.65	<b>110.6</b> 87.96 : 133.65	<b>105.2</b> 85.92 : 127.92
Toluene	TM116	<b>99.0</b> 79.23 : 114.58	<b>100.6</b> 79.23 : 114.58	<b>89.6</b> 76.08 : 110.17
Trichloroethene	TM116	<b>94.6</b> 84.09 : 114.24	<b>98.4</b> 84.09 : 114.24	<b>98.6</b> 78.17 : 121.37
Trichlorofluoromethane	TM116	<b>107.4</b> 76.22 : 114.82	<b>104.4</b> 76.22 : 114.82	<b>109.6</b> 83.78 : 132.82
Vinyl Chloride	TM116	<b>98.2</b> 59.68 : 118.68	<b>100.8</b> 59.68 : 118.68	<b>104.0</b> 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

329009

 SDG:
 150828-41
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

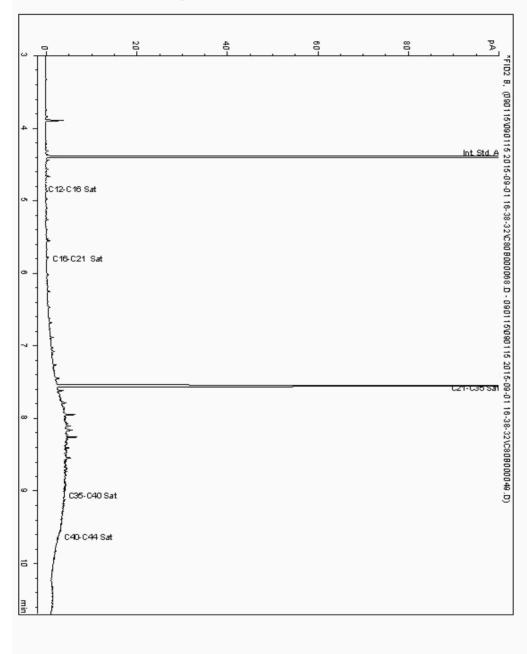
Chromatogram

> 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



Preliminary

 SDG:
 150828-41

 Job:
 H\_URS\_WIM-273

 Client Reference:

Location: Sta Customer: AE Attention: Ga

Stag Brewery AECOM Gary Marshall

Order Number: Report Number: Superseded Report:

329009

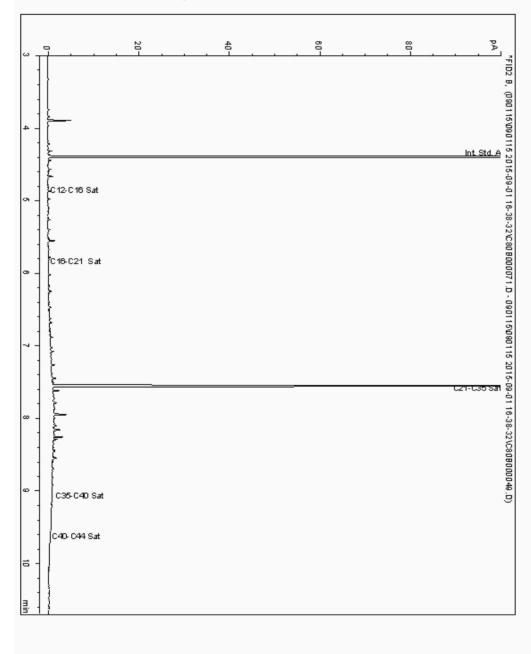
Chromatogram

> 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



Preliminary

329009

Stag Brewery SDG: 150828-41 Location: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

Chromatogram

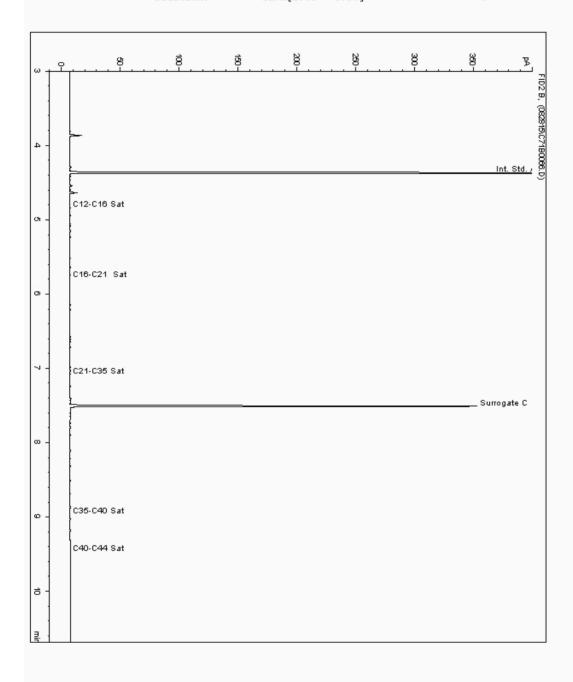
Analysis: EPH CWG (Aliphatic) GC (S) **Depth:** 2.50 - 3.00 Sample No : 11983540

Sample ID : BH7A

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

11364157-02/09/2015 09:01:53 PM Sample Identity: Date Acquired : Units :

ppb BH7A[2.50 - 3.00] Dilution: ->



Chromatogram

Preliminary

SDG: 150828-41 Job: H\_URS\_WIM-273

Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329009

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 11983599 Sample ID :

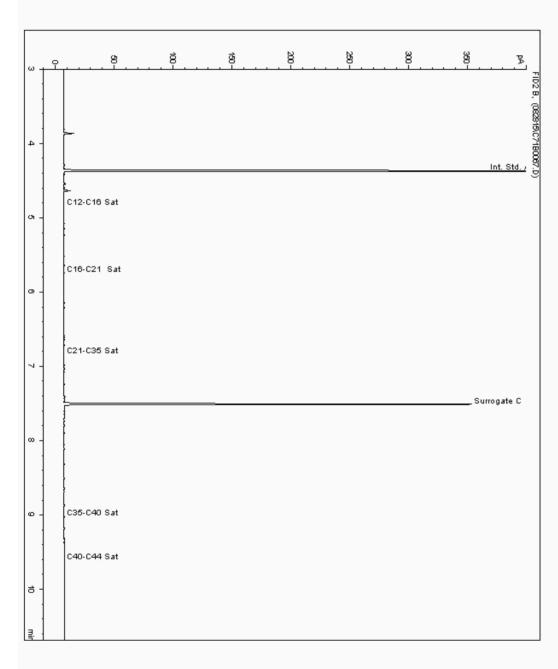
Depth: 3.50 - 4.00

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

11364180-02/09/2015 09:21:45 PM Sample Identity: Date Acquired : Units :

ppb BH4A[3.50 - 4.00] Dilution:





Preliminary

329009

 SDG:
 150828-41
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

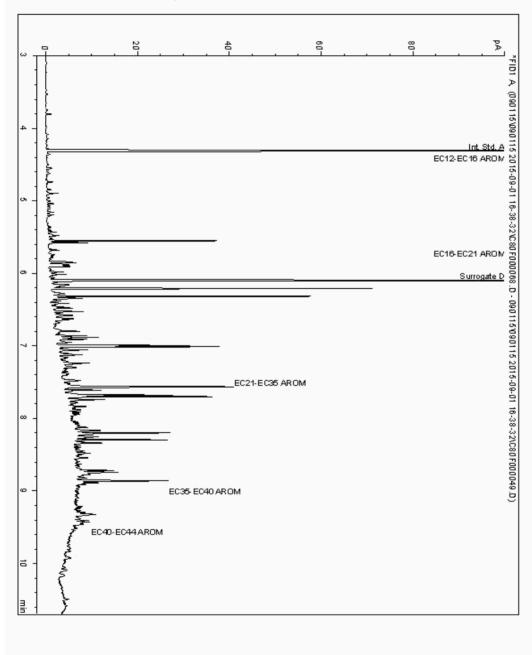
Chromatogram

> 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



Preliminary

Stag Brewery SDG: 150828-41 Location: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention: Gary Marshall

Superseded Report:

329009

Chromatogram

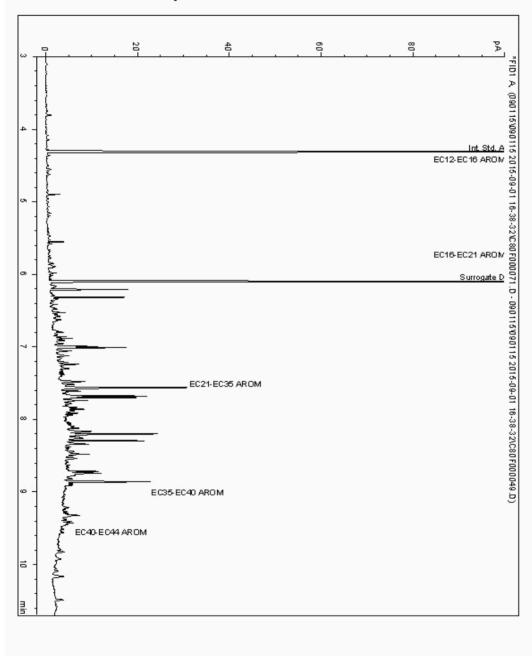
Analysis: EPH CWG (Aromatic) GC (S) Sample No : **Depth**: 0.70 11981802 Sample ID : BH7A

> Alcontrol/Geochem Analytical Services Speciated TPH - AROMS ( C12 - C44)

Sample Identity: 11364145-

02/09/15 12:32:00 Date Acquired :

Units ppb Dilution CFMultiplier : 0.980



Preliminary

329009

Stag Brewery 150828-41 Location: SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference:

Attention: Gary Marshall Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth:** 2.50 - 3.00 Sample No : 11983540 Sample ID : BH7A

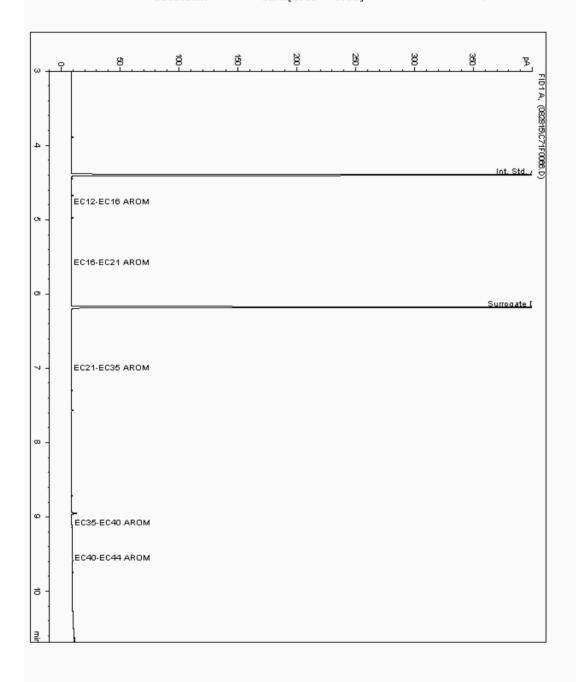
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364158-02/09/2015 09:01:53 PM Date Acquired : Units :

ppb

BH7A[2.50 - 3.00] Dilution: ->



Preliminary

Stag Brewery 150828-41 Location: SDG: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Client Reference:

Attention: Gary Marshall Report Number: Superseded Report:

329009

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) Sample No : **Depth:** 3.50 - 4.00 11983599 Sample ID :

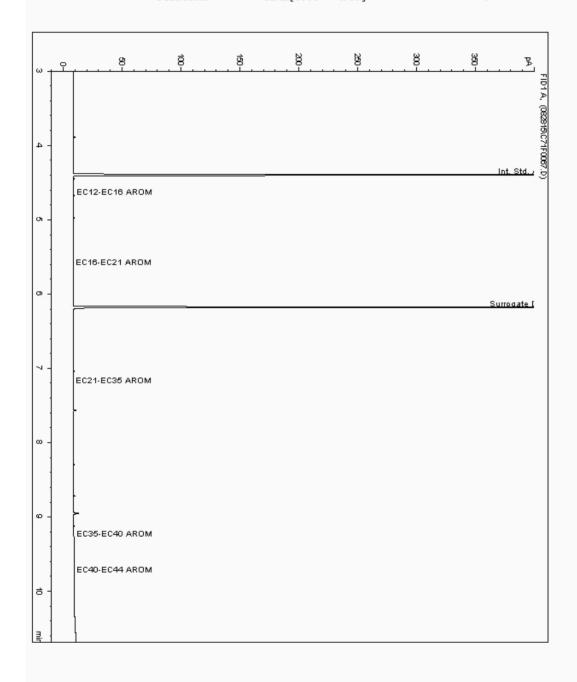
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364181-02/09/2015 09:21:45 PM

Date Acquired : Units : ppb

BH4A[3.50 - 4.00] Dilution:





Preliminary

**SDG:** 150828-41 **Job:** H\_URS\_WIM

Client Reference:

H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number:

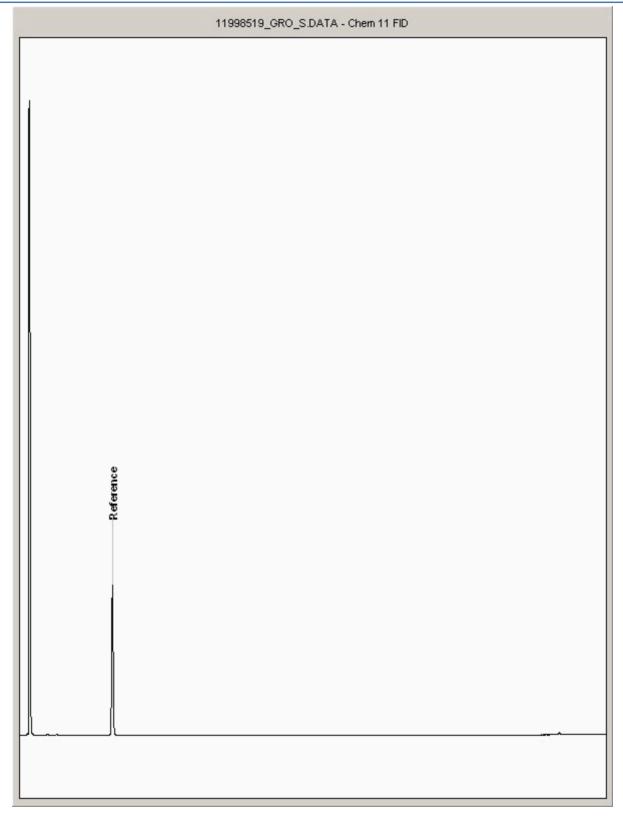
329009

Superseded Report:

Chromatogram

 Analysis:
 GRO by GC-FID (S)
 Sample No : 11998519
 Depth : 0.70

Sample ID : BH7A





Preliminary

**SDG**: 150828-41 **Job**: H\_URS\_WIM-273

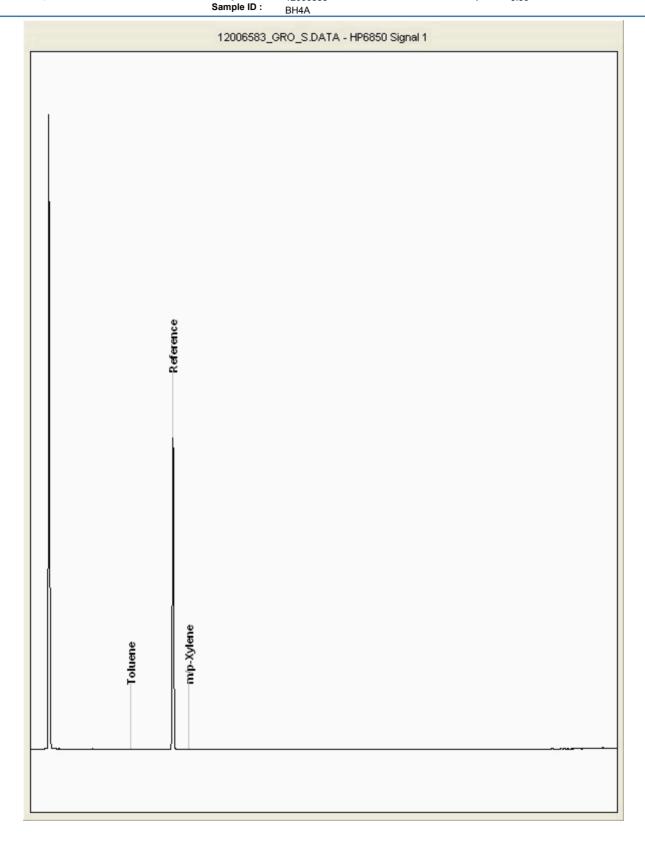
Client Reference:

Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329009

Chromatogram

 Analysis:
 GRO by GC-FID (S)
 Sample No: 12006583
 12006583
 Depth: 0.90





Preliminary

**SDG**: 150828-41 **Job**: H\_URS\_WIM-273

Client Reference:

Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329009

Chromatogram

 Analysis:
 GRO by GC-FID (S)
 Sample No : 3.006588
 12006588
 Depth : 2.50 - 3.00

 Sample ID : 8H7A
 BH7A

12006588\_GRO\_S.DATA - HP6850 Signal 1



Preliminary

**SDG**: 150828-41 **Job**: H\_URS\_WIM-273

Analysis: GRO by GC-FID (S)

Client Reference:

Location: 1-273 Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

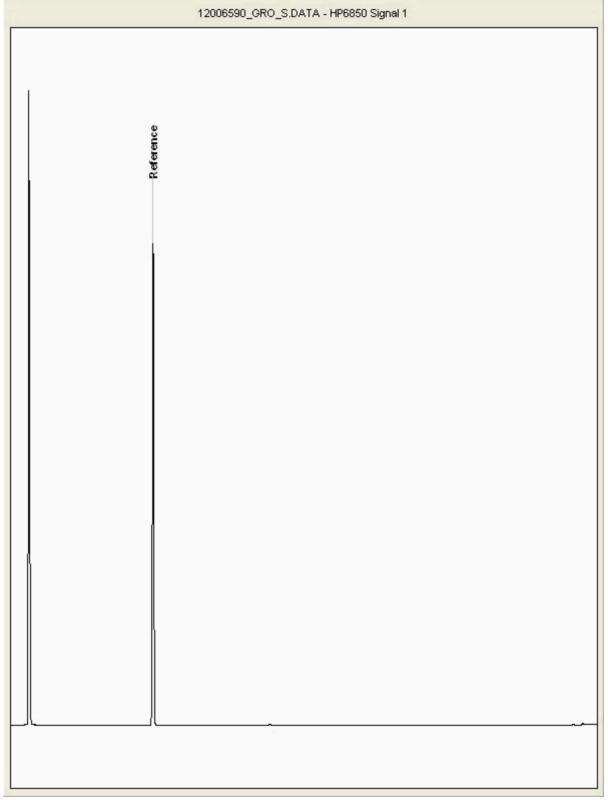
329009

Chromatogram

 Sample No :
 12006590
 Depth :
 3.50 - 4.00

 Sample ID :
 BH4A

ample ID: BH4A



150828-41 Stag Brewerv SDG Location: Order Number: H URS WIM-273 **AECOM** Job: **Customer:** Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

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 quaranteed 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
- 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
- monohydric by HPLC include phenol, cresols (2-Methylphenol, bl) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 3-Methylphenol 4-Methylphenol) 2.5 Dimethylphenol. Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
- 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

SOLID MATRICES EXTRACTION SUMMARY

329009

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAVMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTIHERM	GRAVMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFD
EPH CWG BYGC	D&C	HEXANEACETONE	END OVER END	GCFD
POBITOT / POBICON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GCFZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	extraction Method	ANALYSS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	€ FID
EPHCWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	€CFID
MINERALOIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TRH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT NJECTION	GCMS

Identification of Asbestos in Bulk

The results for asbestos identification soil samples are obtained from possible Asbestos Containing Material, removed 'Screening of during the soils Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) (Hawarden) method of transmitted/polarised light microscopy and central dispersion staining, based on HSG 248 (2005)

Asbestos Type	Common Name
Orrysofile	WhiteAsbestos
Amoste	BrownAsbestos
Crodddite	Blue Asbestos
Fibrous Adindite	=
Fibrous Anthophylite	-
Fibrous Trendite	-

#### 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.

# ALcontrol Laboratories

### 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:

## Appendix General

1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 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 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
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Orodolite	Blue Asbestos
Fibrous Adinoite	-
Fibrous Anhaphylite	-
Fibrous Tremdile	-

### 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.



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

Report No:

## PRELIMINARY/INTERIM REPORT

Date:	09 September 2015
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	150828-44
Your Reference:	
Location:	Stag Brewery
Report No:	329060

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:









Preliminary

**SDG:** 150828-44 **Job:** H\_URS\_WIM-273 **Client Reference:**  Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329060

# **Received Sample Overview**

11977692	BH210		
11977092	DUSIA	0.80	26/08/2015
11977693	BH210	2.20 - 2.80	26/08/2015
11977694	BH211	0.70	26/08/2015
11977695	BH211	2.20	26/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

Preliminary

 SDG:
 150828-44
 Location:

 Job:
 H\_URS\_WIM-273
 Customer:

Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

329060

Client Reference:		Attention	: Gary Marshall			
SOLID						
Results Legend	Lab Sample I	No(s)	11977692	11977693	11977694	11977695
X Test	·	7692	7693	7694	7695	
No Determination						
Possible	Custome Sample Refer	BH210	BH210	BH211	BH211	
	AGS Refere	nce				
	Depth (m		0.80	.80	0.70	2.20
	Containe	r	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL
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
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4	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
рН	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

 SDG:
 150828-44
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329060

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

SOLID Results Legend X Test	Lab Sample I	No(s)		11977692		11977693		11977694		11977695
No Determination Possible	Customer Sample Reference  AGS Reference  Depth (m)  Container			BH210		BH210		BH211		BH211
				0.80		2.20 - 2.80		0.70		2.20
			250g Amber Jar (AL	60g VOC (ALE215)	400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215)	400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215)	250g Amber Jar (AL	60g VOC (ALE215)
VOC MS (S)	All	NDPs: 0 Tests: 4		X		X		X		x

Preliminary

150828-44 Job:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM

Attention:

Order Number: Report Number: Superseded Report:

329060

**Sample Descriptions** 

Gary Marshall

### **Grain Sizes**

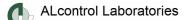
Client Reference:

very fine	<0.063mm	fine	0.063mm - 0.1mm	nedium 0.1m	m - 2mm cc	parse 2mm - 1	10mm very co	arse >10mr
Lab Sample	No(s) Cu	ıstomer Sample R	ef. Depth (m)	Depth (m) Colour		Grain size	Inclusions	Inclusions 2
1197769	92	BH210	0.80	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	None
1197769	93	BH210	2.20 - 2.80	Light Brown	Loamy Sand	0.1 - 2 mm	Vegetation	Stones
1197769	94	BH211	0.70	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Vegetation
1197769	95	BH211	2.20	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Vegetation

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

150828-44 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

Customer: AECOM Attention: Gary Marshall

Report Number: Superseded Report: 329060

Results Legend	C	ustomer Sample R	BH210	BH210	BH211	BH211	
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample.		Depth (m)	0.80	2.20 - 2.80	0.70	2.20	
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
* Subcontracted test.		Date Sampled	26/08/2015	26/08/2015	26/08/2015	26/08/2015	
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds w		SDG Ref	150828-44	150828-44	150828-44	150828-44	
samples aren't corrected for the re-		Lab Sample No.(s)	11977692	11977693	11977694	11977695	
1-5&+§@ Sample deviation (see appendix)		AGS Reference					
Component	LOD/Units	Method					
Moisture Content Ratio (%	%	PM024	13	6.9	12	8.9	
of as received sample)							
Exchangeable Ammonia	<15	TM024	45.6	<15	<15	<15	
as NH4	mg/kg		M	М	M	М	
Organic Carbon, Total	<0.2 %	TM132	0.358	<0.2	<0.2	<0.2	
			М	М	M	М	
рН	1 pH	TM133	9.67	8.35	10.3	8.66	
F	Units		М	М	М	М	
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	<0.6	<0.6	
omorniam, noxavaione	mg/kg	1111101	#	#	#	#	
Sulphide, Easily liberated	<15	TM180	<15	<15	<15	<15	
Calpinac, Lasily liberated	mg/kg	1101100	<b>√</b> 13	<b>\</b> 15	<b>↓</b> #	<b>↓</b> #	
Arsenic	<0.6	TM181	23.6	20.2	11.8	19.5	
,	mg/kg	1101101	23.0 M	20.2 M	11.8 M	19.5 M	
Cadmium	<0.02	TM181	0.449	0.341	0.347	0.391	
Caumum	<0.02 mg/kg	1 101 10 1		I I			
Chromium	<0.9	TM181	M	16.6	17	M 24.1	
Chromium		1 (11 10)	25.9	I I			
Conner	mg/kg <1.4	TM181	31.2	5.29	9.01	6.47	
Copper		1101181		I I			
Land	mg/kg	T14404	M	M 5.70	M	M	
Lead	<0.7	TM181	32.7	5.73	44.5	7.8	
	mg/kg		M	M	M	M	
Mercury	<0.14	TM181	<0.14	<0.14	0.152	<0.14	
	mg/kg		M	M	M	M	
Nickel	<0.2	TM181	24.5	21.2	16.5	22.6	
	mg/kg		M	М	M	M	
Selenium	<1 mg/k@	g TM181	<1	<1	<1	<1	
			#	#	#	#	
Zinc	<1.9	TM181	43.4	21.9	41.3	28.4	
	mg/kg		M	M	M	M	
Sulphate, Total	<48	TM221	481	<48	545	88.2	
	mg/kg		M	M	M	M	
		1					
		1					
		1					
		1					
		1					
		1					



Preliminary

150828-44 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

AECOM **Customer:** Attention: Gary Marshall

Report Number: Superseded Report: 329060

Cilen	t Reference:			Attention:	Gar	y Marshall			Superseded R	eport:	
PAH b	y GCMS										
	Results Legend	(	Customer Sample R	BH210		BH210		BH211	BH211		
	ISO17025 accredited.  mCERTS accredited.										
aq	Aqueous / settled sample.		Depth (m)	0.80		2.20 - 2.80		0.70	2.20		
	Dissolved / filtered sample. Total / unfiltered sample.		Sample Type	Soil/Solid		Soil/Solid		Soil/Solid	Soil/Solid		
*	Subcontracted test.		Date Sampled	26/08/2015		26/08/2015		26/08/2015	26/08/2015		
**	% recovery of the surrogate standa check the efficiency of the method.	rd to	Sampled Time	· · · · · · · · · · · · · · · · · · ·							
	results of individual compounds wi	thin	Date Received SDG Ref	28/08/2015 150828-44		28/08/2015 150828-44		28/08/2015 150828-44	28/08/2015 150828-44		
	samples aren't corrected for the red Trigger breach confirmed	covery	Lab Sample No.(s)	11977692		11977693		11977694	11977695		
	Sample deviation (see appendix)		AGS Reference								
Compor	nent	LOD/Units									
	alene-d8 %	%	TM218	103	_	102		97.1	95.7		
recove		,,,	1.0.2.10	100		102		07.1	00.7		
	ohthene-d10 %	%	TM218	98.9		94.5	$\overline{}$	95.1	96.4		
recove		/0	1101210	90.9		34.3		93.1	30.4		
	•	0.1	=		-		$\rightarrow$				
	nthrene-d10 %	%	TM218	95.9		94.2		92.9	96.8		
recove	•						_				
	ne-d12 %	%	TM218	92.5		78.5		92	88.1		
recove	ry**										
Peryler	ne-d12 %	%	TM218	94.6		86.2		97	95.7		
recove											
Naphth	•	<9 µg/kg	g TM218	<9	_	<9		53.8	<9		
	· -	- 12,10	~   ·····= ·	ū	М		М	M		м	
Δοοοο	ohthylene	<12	TM218	<12	IVI	<12	IVI	14.8	<12	IVI	
Acena	nunyiene		1 IVI∠ I Ö	<b>~1</b> Z	.,	<b>~1</b> Z	, ,		<u> </u>		
_	1.0	μg/kg			М		М	M	_	М	
Acena	ohthene	<8 µg/k	g TM218	<8		<8		48.1	<8		
					М		М	M		М	
Fluorer	ne	<10	TM218	<10		<10		48.6	<10		
		μg/kg			М		М	М		М	
Phenai	nthrene	<15	TM218	27.7	$\neg$	<15		352	<15		
		μg/kg			М		М	M		М	
Anthra	oono	<16	TM218	<16	IVI	<16	IVI	78.8	<16	IVI	
Anuna	cene		1 1012 10	<10		<10					
		μg/kg	=		М		М	M		М	
Fluorar	nthene	<17	TM218	47		<17		389	<17		
		μg/kg			М		М	M		M	
Pyrene	<b>)</b>	<15	TM218	43.6		<15		317	<15		
		μg/kg			М		М	М		M	
Benz(a	)anthracene	<14	TM218	48.1		<14		174	<14		
`	,	μg/kg			М		М	М		М	
Chryse	ne	<10	TM218	28.5		<10	***	151	<10		
Omyou		μg/kg	1.0.2.10	20.0	М	110	М	M		м	
Ponzo/	(b)fluoranthene	<15	TM218	38.8	IVI	<15	IVI	199	<15	IVI	
Delizo(	Dilluorariulerie		1101210	30.0		<b>~13</b>			<b>\15</b>		
	71.75 d	μg/kg	T14040	10.1	М		М	M	.4.4	М	
Benzo(	(k)fluoranthene	<14	TM218	18.1		<14		90.7	<14		
		μg/kg			М		М	M		M	
Benzo(	(a)pyrene	<15	TM218	30		<15		147	<15		
		μg/kg			М		М	M		М	
Indeno	(1,2,3-cd)pyrene	<18	TM218	<18		<18		77.5	<18		
		μg/kg			М		М	М		М	
Dibenz	o(a,h)anthracene	<23	TM218	<23		<23		<23	<23		
	. , ,	μg/kg			М		М	M		м	
Benzo/	(g,h,i)perylene	<24	TM218	28.6	191	<24	.41	105	<24		
201120(	3,. 1,1/POI YIOIIO	ν24 μg/kg	1101210	20.0	М		М	103 M		м	
DALI T	otal Detected	μg/kg <118	TM218	311	IVI	<118	IVI	2250	<118	IVI	
USEPA			1 IVI∠ I Ö	311		<118		2230	\$118		
USEPA	1 10	μg/kg	+		$\rightarrow$		_				
			T								
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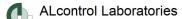


Preliminary

Stag Brewery AECOM 150828-44 SDG: Location: Order Number:

329060 Job: H\_URS\_WIM-273 Customer: Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

TPH CWG (S)								
Results Legend		Customer Sample R	BH210	BH210	BH211	BH211		
# ISO17025 accredited.  M mCERTS accredited.		·						
aq Aqueous / settled sample.		Depth (m)	0.80	2.20 - 2.80	0.70	2.20		
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
* Subcontracted test.  ** % recovery of the surrogate standa	ard to	Date Sampled Sampled Time	26/08/2015	26/08/2015	26/08/2015	26/08/2015		
check the efficiency of the method.	The	Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
results of individual compounds wi samples aren't corrected for the red		SDG Ref	150828-44	150828-44	150828-44	150828-44		
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)	.	Lab Sample No.(s)	11977692	11977693	11977694	11977695		
Component	LOD/Units	AGS Reference Method						
· ·			405	440	109	440		
GRO Surrogate % recovery**	%	TM089	105	119	109	110		
	.44	T14000	-44	.44	F100	-44		
GRO TOT (Moisture	<44	TM089	<44	<44	5160	<44		
Corrected)	μg/kg		M	M	M	M		
Methyl tertiary butyl ether	<5 μg/kg	g TM089	<5	<5	<5	<5		
(MTBE)			M	M	M	M		
Benzene	<10	TM089	<10	<10	<10	<10		
	μg/kg		M	M	M	M		
Toluene	<2 µg/k	g TM089	<2	<2	<2	<2		
			M	M	M	M		
Ethylbenzene	<3 μg/k	g TM089	<3	<3	<3	<3		
			M	M	M	M		
m,p-Xylene	<6 µg/k	g TM089	<6	<6	<6	<6		
			M	M	M	M		
o-Xylene	<3 µg/k	g TM089	<3	<3	<3	<3		
			M	M	M	M		
sum of detected mpo	<9 µg/k	g TM089	<9	<9	<9	<9		
xylene by GC								
sum of detected BTEX by	<24	TM089	<24	<24	<24	<24		
GC	μg/kg							
Aliphatics >C5-C6	<10	TM089	<10	<10	<10	<10		
·	μg/kg							
Aliphatics >C6-C8	<10	TM089	<10	<10	34.2	<10		
,	μg/kg					-		
Aliphatics >C8-C10	<10	TM089	<10	<10	1010	13.1		
	μg/kg							
Aliphatics >C10-C12	<10	TM089	<10	<10	2060	<10		
7.iipiidaioo * 0 10 0 12	μg/kg	1111000	-10	-10	2000	10		
Aliphatics >C12-C16	<100	TM173	<100	<100	15100	<100		
7 dipridues 7 0 12 0 10	μg/kg	1111170	1100	1100	10100	1100		
Aliphatics >C16-C21	<100	TM173	3150	<100	23200	<100		
Aliphatics >C10-C21	μg/kg	TIVITA	3130	<100	23200	100		
Aliphatics >C21-C35	μg/kg <100	TM173	18600	<100	57300	<100		
Aliphatics >C21-C55		TIVITA	16000	<b>~100</b>	37300	<b>~100</b>		
Aliabatics > C2F C44	μg/kg	TM472	1020	z100	10000	z100		
Aliphatics >C35-C44	<100	TM173	1920	<100	10600	<100		
T + 1 A II + II + 040 044	μg/kg	T14470	00700	.100	100000			
Total Aliphatics >C12-C44	<100	TM173	23700	<100	106000	<100		
Assessation : EQS EQS	μg/kg	T14000	.40	.40	.40	-40		
Aromatics >EC5-EC7	<10	TM089	<10	<10	<10	<10		
	μg/kg							
Aromatics >EC7-EC8	<10	TM089	<10	<10	<10	<10		
	μg/kg				:			
Aromatics >EC8-EC10	<10	TM089	<10	<10	671	<10		
	μg/kg							
Aromatics >EC10-EC12	<10	TM089	<10	<10	1380	<10		
	μg/kg							
Aromatics >EC12-EC16	<100	TM173	<100	<100	4150	<100		
	μg/kg							
Aromatics >EC16-EC21	<100	TM173	<100	<100	10500	<100		
	μg/kg						<u> </u>	
Aromatics >EC21-EC35	<100	TM173	4960	<100	26600	<100		
	μg/kg							
Aromatics >EC35-EC44	<100	TM173	1400	<100	10500	<100		
	μg/kg							
Aromatics >EC40-EC44	<100	TM173	<100	<100	3890	<100		
	μg/kg							
Total Aromatics	<100	TM173	6360	<100	51900	<100		
>EC12-EC44	μg/kg	710173	0000	1100	31000	100		
Total Aliphatics &	μg/kg <100	TM173	30000	<100	163000	<100		
Aromatics >C5-C44	µg/kg	1101173	30000	<b>~100</b>	103000	100		
7 TOTTIGUOS 7 00-044	μg/Ng	+						
		+						



Preliminary

150828-44 SDG: Location: Stag Brewery Job: H\_URS\_WIM-273

Customer: AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329060

Client Reference:

VOC MS (S)				-			
Results Legend		Customer Sample R	BH210	BH210	BH211	BH211	
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.80	2.20 - 2.80	0.70	2.20	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
* Subcontracted test.     ** % recovery of the surrogate standar	urd to	Date Sampled	26/08/2015	26/08/2015	26/08/2015	26/08/2015	
check the efficiency of the method.	The	Sampled Time Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds wi samples aren't corrected for the re-		SDG Ref	150828-44	150828-44	150828-44	150828-44	
(F) Trigger breach confirmed		Lab Sample No.(s)	11977692	11977693	11977694	11977695	
1-5&+§@ Sample deviation (see appendix)	LOD/Unit	AGS Reference s Method					
Component	LOD/Unit		400	110	400	400	<del></del>
Dibromofluoromethane**	%	TM116	130	119	128	123	
	0.1	=======================================					
Toluene-d8**	%	TM116	102	111	103	111	
4-Bromofluorobenzene**	%	TM116	89.8	102	94.5	102	
Dichlorodifluoromethane	<6 µg/k	g TM116	<6	<6	<6	<6	
			M	M	M	M	
Chloromethane	<7 μg/k	g TM116	<7	<7	<7	<7	
			#	#	#	#	
Vinyl Chloride	<6 µg/k	g TM116	<6	<6	<6	<6	
			M	M	M	M	
Bromomethane	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	М	M	M	
Chloroethane	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	М	M	М	
Trichlorofluorormethane	<6 µg/k	g TM116	<6	<6	<6	<6	
			М	М	М	М	
1,1-Dichloroethene	<10	TM116	<10	<10	<10	<10	
	μg/kg		#	#	#	#	
Carbon Disulphide	<7 µg/k	g TM116	<7	<7	<7	<7	
i i			М	М	M	М	
Dichloromethane	<10	TM116	<10	<10	<10	<10	
	μg/kg		#	#	#	#	
Methyl Tertiary Butyl Ether	<10	TM116	<10	<10	<10	<10	
,,,,	μg/kg		M	М	М	М	
trans-1,2-Dichloroethene	<10	TM116	<10	<10	<10	<10	
,	μg/kg		M	М	М	М	
1,1-Dichloroethane	<8 μg/k	g TM116	<8	<8	<8	<8	
i, i diemeroanano	o µg/	9	М	М	М	М	
cis-1,2-Dichloroethene	<6 µg/k	g TM116	<6	<6	<6	<6	
0.0 1,2 2.00100010	o µg/	9	М	М	М	М	
2,2-Dichloropropane	<10	TM116	<10	<10	<10	<10	
2,2 3.66.6p.6pa.16	μg/kg		M	. б	M	М	
Bromochloromethane	<10	TM116	<10	<10	<10	<10	
Bromodilioration	μg/kg	1111110	М	M	M	М	
Chloroform	<8 µg/k	g TM116	<8	<8	<8	<8	
Chicionii	το μg/it	9 1111110	М	м	M	М	
1,1,1-Trichloroethane	<7 µg/k	g TM116	<7	<7	<7	<7	
., i, i i i i i i i i i i i i i i i i i	-, μg/N	9   1111110		_, M	M	M	
1,1-Dichloropropene	<10	TM116	<10	<10	<10	<10	<del>                                     </del>
., i Biomoropiopolie	μg/kg	1101110	M	M	~10 M	M	
Carbontetrachloride	γg/kg <10	TM116	<10	<10	<10	<10	<del>                                     </del>
Sarbontottaomonae	μg/kg	1101110	M	M	~10 M	M	
1,2-Dichloroethane	49/kg <5 μg/k	g TM116	<5	<5	<5	<5	<del>                                     </del>
1,4-DIGHIGHOEHIAHE	-υ μg/K	9 1101110	M	V5 M	<5 M	\ \ \ M	
Benzene	<9 µg/k	g TM116	<9	<9	<9	<9	<del>                                     </del>
DELIZERE	√9 μg/K	9   11/11/10			-	· ·	
Triphloroothono	Z0"	G TM440	M	M	M	M	<del>                                     </del>
Trichloroethene	<9 µg/k	g TM116	<9	<9	<9	<9	
4.0 Diablement :	.40	TN4440	#	#	#	#	<del>                                     </del>
1,2-Dichloropropane	<10	TM116	<10	<10	<10	<10	
Dibana and a the area	μg/kg	T14440	M	M	M	M	<del>                                     </del>
Dibromomethane	<9 µg/k	g TM116	<9	<9	<9	<9	
D 1111 6			M	M	M	M	<del>                                     </del>
Bromodichloromethane	<7 µg/k	g TM116	<7	<7	<7	<7	
		=	M	M	M	M	<del>                                     </del>
cis-1,3-Dichloropropene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	<del></del>
Toluene	<7 µg/k	g TM116	<7	<7	<7	<7	
			M	М	M	М	
trans-1,3-Dichloropropene	<10	TM116	<10	<10	<10	<10	
	μg/kg						
1,1,2-Trichloroethane	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	М	M	М	



Preliminary

329060

150828-44 Stag Brewery SDG Location: Order Number: Job: H\_URS\_WIM-273 **Customer: AECOM** Report Number:

Client Reference:

Attention: Gary Marshall Superseded Report: VOC MS (S) Customer Sample R BH210 BH210 BH211 BH211 ISO17025 accredited.

mCERTS accredited.

Aqueous / settled sampl
Dissolved / filtered sampl aq diss.filt Depth (m) 2.20 - 2.80 0.70 2.20 0.80 Sample Type Soil/Solid 26/08/2015 Soil/Solid 26/08/2015 tot.unfilt Total / unfiltered sample 26/08/2015 26/08/2015 Subcontracted test Date Sampled % 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 28/08/2015 28/08/2015 28/08/2015 28/08/2015 Date Received 150828-44 150828-44 150828-44 SDG Ref 11977692 11977693 11977694 11977695 nple No.(s) (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix) AGS Reference Component LOD/Units Method TM116 1,3-Dichloropropane <7 µg/kg <7 <7 <7 <7 M M M M Tetrachloroethene <5 µg/kg TM116 <5 <5 <5 <5 М M M M Dibromochloromethane <10 TM116 <10 <10 <10 <10 µg/kg Μ M M M 1,2-Dibromoethane <10 TM116 <10 <10 <10 <10 μg/kg Μ Μ Μ Μ <5 Chlorobenzene <5 µg/kg TM116 <5 <5 <5 Μ M Μ М 1,1,1,2-Tetrachloroethane <10 TM116 <10 <10 <10 <10 μg/kg Μ Μ Μ Ethylbenzene TM116 <4 <4 <4 <4 <4 µg/kg Μ Μ Μ Μ TM116 <10 <10 <10 p/m-Xylene <10 <10 µg/kg # # # # o-Xylene <10 TM116 <10 <10 <10 <10 µg/kg М М Μ M Styrene <10 TM116 <10 <10 <10 <10 μg/kg # Bromoform <10 TM116 <10 <10 <10 <10 μg/kg M M M M Isopropylbenzene TM116 <5 <5 <5 <5 <5 µg/kg # # # # 1,1,2,2-Tetrachloroethane <10 TM116 <10 <10 <10 <10 μg/kg Μ М Μ М 1,2,3-Trichloropropane <16 TM116 <16 <16 <16 <16 μg/kg Μ Μ Μ М TM116 <10 <10 <10 <10 Bromobenzene <10 µg/kg Μ М Μ М <10 <10 Propylbenzene TM116 <10 <10 <10 μg/kg Μ Μ М Μ 2-Chlorotoluene TM116 <9 <9 <9 <9 <9 µg/kg М М М M 1,3,5-Trimethylbenzene <8 µg/kg TM116 <8 <8 <8 <8 Μ Μ M M 4-Chlorotoluene <10 TM116 <10 <10 <10 <10 μg/kg Μ M M M tert-Butylbenzene <14 TM116 <14 <14 <14 <14 µg/kg М M Μ M 1,2,4-Trimethylbenzene TM116 <9 <9 <9 <9 <9 µg/kg # # # # TM116 <10 <10 <10 <10 sec-Butylbenzene <10 μg/kg Μ Μ Μ М <10 TM116 <10 <10 <10 <10 4-Isopropyltoluene µg/kg M Μ M М TM116 <8 <8 1.3-Dichlorobenzene <8 <8 <8 µg/kg Μ Μ Μ Μ 1,4-Dichlorobenzene TM116 <5 <5 <5 <5 µg/kg <5 Μ M Μ Μ n-Butylbenzene TM116 <11 <11 <11 <11 <11 µg/kg 1,2-Dichlorobenzene <10 TM116 <10 <10 <10 <10 μg/kg Μ M Μ M 1,2-Dibromo-3-chloroprop <14 TM116 <14 <14 <14 <14 μg/kg ane M M M M Tert-amyl methyl ether TM116 <10 <10 <10 <10 <10 µg/kg # # # # 1,2,4-Trichlorobenzene TM116 <20 <20 <20 <20 <20 µg/kg Hexachlorobutadiene <20 TM116 <20 <20 <20 <20 µg/kg Naphthalene <13 TM116 <13 <13 <13 <13 μg/kg Μ Μ Μ



Gary Marshall

Preliminary

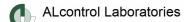
329060

Superseded Report:

150828-44 SDG: Location: Stag Brewery Order Number: Job: AECOM Report Number:

H\_URS\_WIM-273 **Customer:** Client Reference: Attention:

/OC MS (S)									
Results Legend	C	Customer Sample R	BH210	BH210	BH211	BH211			
# ISO17025 accredited.  M mCERTS accredited.									
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.80	2.20 - 2.80	0.70	2.20			
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid			
* Subcontracted test.  ** % recovery of the surrogate stand	ard to	Date Sampled Sampled Time	26/08/2015	26/08/2015	26/08/2015	26/08/2015			
check the efficiency of the method	. The	Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015			
results of individual compounds w samples aren't corrected for the re		SDG Ref	150828-44	150828-44	150828-44	150828-44			
(F) Trigger breach confirmed 1-5&+\$@ Sample deviation (see appendix)	·	Lab Sample No.(s)	11977692	11977693	11977694	11977695			
Component	LOD/Units	AGS Reference Method							
1,2,3-Trichlorobenzene	<20	TM116	<20	<20	<20	<20			
1,2,3-THCHIOLODEHZEHE	μg/kg	1101110	<b>~20</b>	~20 #	-20 #	~20 #			
	Parka		π	#	#	#			
		1			1				



Preliminary

SDG: 150828-44 Location: Stag Brewery Order Number:

H\_URS\_WIM-273 AECOM 329060 Job: **Customer:** Report Number: Client Reference: Superseded Report:

Attention: Gary Marshall

# **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	BH210 0.80 SOLID 26/08/2015 00:00:00 29/08/2015 10:30:50 150828-44 11977692 TM048	03/09/2015	Rebecca Rawlings	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	BH211 0.70 SOLID 26/08/2015 00:00:00 29/08/2015 10:17:28 150828-44 11977694 TM048	03/09/2015	Rebecca Rawlings	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected



Preliminary

 SDG:
 150828-44

 Job:
 H\_URS\_WIM-273

 Client Reference:

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

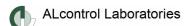
Order Number:
Report Number: 33
Superseded Report:

329060

**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	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		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



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 SDG:
 150828-44
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

# **Test Completion Dates**

				-
Lab Sample No(s)	11977692	11977693	11977694	11977695
Customer Sample Ref.	BH210	BH210	BH211	BH211
•				
AGS Ref.				
Depth	0.80	2.20 - 2.80	0.70	2.20
Туре	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	09-Sep-2015	08-Sep-2015	09-Sep-2015	08-Sep-2015
Asbestos ID in Solid Samples	03-Sep-2015		03-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	02-Sep-2015	07-Sep-2015	02-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	29-Aug-2015	28-Aug-2015	29-Aug-2015	28-Aug-2015
Total Organic Carbon	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015
Total Sulphate	08-Sep-2015	04-Sep-2015	07-Sep-2015	04-Sep-2015
TPH CWG GC (S)	04-Sep-2015	03-Sep-2015	07-Sep-2015	03-Sep-2015
VOC MS (S)	02-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015
	02 00p 2010	02 00p 2010	52 COP 2010	32 OOP 2010

Preliminary

SDG: 150828-44 Job:

Client Reference:

H\_URS\_WIM-273

Stag Brewery Location: **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329060

# **ASSOCIATED AQC DATA**

### Ammonium Soil by Titration

Component	Method Code	QC 1292	QC 1205
Exchangeable Ammonium as NH4	TM024	<b>86.07</b> 79.30 : 104.61	<b>98.01</b> 79.30 : 104.61

## Easily Liberated Sulphide

Component	Method Code	QC 1219	QC 1231
Easily Liberated Sulphide	TM180	<b>93.21</b> 49.14 : 123.89	<b>94.71</b> 49.14 : 123.89

## EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1165	QC 1197
Total Aliphatics >C12-C35	TM173	<b>97.92</b> 69.19 : 111.75	<b>92.08</b> 71.67 : 116.67

## EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1197
Total Aromatics >EC12-EC35	TM173	<b>85.33</b> 59.92 : 107.95

## GRO by GC-FID (S)

Component	Method Code	QC 1100	QC 1290	QC 1294
Benzene by GC (Moisture Corrected)	TM089	<b>110.0</b> 82.67 : 117.96	<b>100.0</b> 76.23 : 120.71	<b>101.5</b> 79.00 : 121.00
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>110.5</b> 80.45 : 118.61	<b>100.5</b> 73.32 : 122.02	<b>104.0</b> 79.00 : 121.00
m & p Xylene by GC (Moisture Corrected)	TM089	<b>110.0</b> 79.25 : 119.43	<b>100.75</b> 72.90 : 122.64	<b>104.25</b> 79.00 : 121.00
MTBE GC-FID (Moisture Corrected)	TM089	<b>114.5</b> 79.10 : 122.51	<b>101.0</b> 72.17 : 124.81	<b>106.5</b> 74.48 : 125.29
o Xylene by GC (Moisture Corrected)	TM089	<b>111.5</b> 80.03 : 117.19	<b>100.5</b> 71.65 : 124.40	<b>104.5</b> 79.00 : 121.00
QC	TM089	<b>102.79</b> 75.74 : 124.65	<b>105.5</b> 55.00 : 145.00	<b>98.6</b> 73.70 : 123.60
Toluene by GC (Moisture Corrected)	TM089	<b>110.5</b> 82.06 : 117.54	<b>100.5</b> 74.60 : 120.38	<b>102.5</b> 79.00 : 121.00

Preliminary

SDG: 150828-44 Job:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** 

Gary Marshall

Attention:

Order Number: Report Number: Superseded Report:

329060

Hexavalent Chromium (s)

Client Reference:

Component	Method Code	QC 1299	QC 1285
Hexavalent Chromium	TM151	100.0	102.0
		92.20 : 106.60	92.20 : 106.60

## Metals in solid samples by OES

Component	Method Code	QC 1206	QC 1292
Aluminium	TM181	<b>99.23</b> 86.49 : 129.71	<b>108.46</b> 86.49 : 129.71
Antimony	TM181	<b>94.27</b> 77.50 : 122.50	<b>95.34</b> 77.50 : 122.50
Arsenic	TM181	<b>92.92</b> 82.63 : 117.37	<b>92.92</b> 82.63 : 117.37
Barium	TM181	<b>96.24</b> 79.45 : 120.55	<b>99.25</b> 79.45 : 120.55
Beryllium	TM181	<b>98.91</b> 85.92 : 121.27	<b>100.31</b> 85.92 : 121.27
Boron	TM181	<b>105.34</b> 77.41 : 143.83	<b>109.92</b> 77.41 : 143.83
Cadmium	TM181	<b>95.8</b> 81.95 : 118.05	<b>95.63</b> 81.95 : 118.05
Chromium	TM181	<b>93.33</b> 81.29 : 118.71	<b>96.47</b> 81.29 : 118.71
Cobalt	TM181	<b>95.83</b> 83.86 : 116.14	<b>96.67</b> 83.86 : 116.14
Copper	TM181	<b>97.7</b> 78.57 : 121.43	<b>98.51</b> 78.57 : 121.43
Iron	TM181	<b>95.86</b> 87.50 : 122.82	<b>101.38</b> 87.50 : 122.82
Lead	TM181	<b>93.7</b> 74.18 : 117.25	<b>92.91</b> 74.18 : 117.25
Manganese	TM181	<b>100.0</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09
Mercury	TM181	<b>94.3</b> 81.99 : 118.01	<b>93.47</b> 81.99 : 118.01
Molybdenum	TM181	<b>92.2</b> 81.45 : 118.55	<b>92.36</b> 81.45 : 118.55
Nickel	TM181	<b>95.93</b> 79.64 : 120.36	<b>97.67</b> 79.64 : 120.36
Phosphorus	TM181	<b>97.76</b> 81.03 : 118.97	<b>97.32</b> 81.03 : 118.97
Selenium	TM181	<b>105.3</b> 87.05 : 121.93	<b>105.47</b> 87.05 : 121.93
Strontium	TM181	<b>98.08</b> 83.64 : 116.36	<b>98.47</b> 83.64 : 116.36
Thallium	TM181	<b>87.56</b> 77.50 : 122.50	<b>91.38</b> 77.50 : 122.50
Tin	TM181	<b>92.03</b> 78.30 : 113.98	<b>92.69</b> 78.30 : 113.98
Titanium	TM181	<b>103.91</b> 71.02 : 128.98	<b>103.13</b> 71.02 : 128.98

Preliminary

150828-44 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 Job:

AECOM **Customer:** Attention: Gary Marshall

329060 Report Number: Superseded Report:

Metals in solid samples by OES

		QC 1206	QC 1292
Vanadium	TM181	<b>93.53</b> 86.61 : 113.39	<b>95.0</b> 86.61 : 113.39
Zinc	TM181	<b>97.73</b> 89.82 : 114.54	<b>98.05</b> 89.82 : 114.54

# PAH by GCMS

Client Reference:

Component	Method Code	QC 1134	QC 1154	QC 1106
Acenaphthene	TM218	<b>88.5</b> 78.41 : 114.87	<b>92.0</b> 77.34 : 118.20	<b>91.5</b> 78.84 : 114.36
Acenaphthylene	TM218	<b>80.5</b> 72.38 : 111.60	<b>86.5</b> 62.65 : 116.35	<b>85.5</b> 65.50 : 119.50
Anthracene	TM218	<b>89.5</b> 72.78 : 117.53	<b>89.5</b> 73.54 : 114.21	<b>91.0</b> 75.54 : 110.88
Benz(a)anthracene	TM218	<b>88.0</b> 79.50 : 130.50	<b>102.5</b> 74.99 : 132.24	<b>97.5</b> 78.02 : 127.38
Benzo(a)pyrene	TM218	<b>91.0</b> 79.50 : 130.50	<b>102.0</b> 80.75 : 127.25	<b>99.5</b> 79.21 : 128.01
Benzo(b)fluoranthene	TM218	<b>87.5</b> 78.10 : 127.57	<b>99.5</b> 75.84 : 127.12	<b>96.0</b> 86.21 : 131.42
Benzo(ghi)perylene	TM218	<b>95.0</b> 81.67 : 122.61	<b>97.0</b> 74.74 : 124.03	<b>95.0</b> 80.11 : 120.52
Benzo(k)fluoranthene	TM218	<b>97.0</b> 81.20 : 118.10	<b>98.0</b> 80.00 : 125.00	<b>97.0</b> 78.77 : 120.72
Chrysene	TM218	<b>94.5</b> 80.60 : 117.80	<b>98.0</b> 77.24 : 120.84	<b>94.5</b> 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	<b>104.0</b> 77.93 : 124.42	<b>96.5</b> 76.00 : 122.50	<b>93.5</b> 76.39 : 122.63
Fluoranthene	TM218	<b>91.5</b> 80.39 : 114.39	<b>92.5</b> 78.51 : 118.75	<b>95.0</b> 77.25 : 117.75
Fluorene	TM218	<b>92.0</b> 79.50 : 118.50	<b>93.0</b> 76.95 : 117.18	<b>95.5</b> 79.28 : 117.35
Indeno(123cd)pyrene	TM218	<b>100.0</b> 80.30 : 128.30	<b>98.5</b> 75.34 : 127.46	<b>93.0</b> 78.87 : 122.50
Naphthalene	TM218	<b>97.5</b> 82.25 : 118.25	<b>95.0</b> 76.24 : 112.91	<b>93.0</b> 74.75 : 118.25
Phenanthrene	TM218	<b>95.5</b> 71.53 : 114.48	<b>93.5</b> 76.49 : 119.30	<b>95.0</b> 78.61 : 113.98
Pyrene	TM218	<b>91.5</b> 79.12 : 114.39	<b>91.0</b> 78.25 : 118.17	<b>94.0</b> 76.15 : 115.26

рΗ

Component	Method Code	QC 1218	QC 1227
рН	TM133	<b>100.25</b> 97.19 : 102.81	<b>100.5</b> 97.19 : 102.81

### **Total Organic Carbon**

Preliminary

150828-44 SDG: Location: Stag Brewery Job: H\_URS\_WIM-273

AECOM **Customer:** Attention: Gary Marshall Order Number: 329060 Report Number: Superseded Report:

**Total Organic Carbon** 

Client Reference:

Component	Method Code	QC 1245	QC 1297
Total Organic Carbon	TM132	98.17	97.72
		89.40 : 103.09	89.40 : 103.09

# Total Sulphate

	Component	Method Code	QC 1235	QC 1273	QC 1292
	Total Sulphate	TM221	102.27	103.79	99.24
ш			78.49 : 121.51	78.49 : 121.51	78.49 : 121.51

# VOC MS (S)

Component	Method Code	QC 1172	QC 1128
1,1,1,2-tetrachloroethane	TM116	<b>101.0</b> 76.60 : 121.00	<b>95.6</b> 83.24 : 124.28
1,1,1-Trichloroethane	TM116	<b>96.2</b> 77.80 : 123.40	<b>100.8</b> 81.77 : 121.07
1,1,2-Trichloroethane	TM116	<b>90.6</b> 75.40 : 119.80	<b>100.4</b> 79.24 : 112.23
1,1-Dichloroethane	TM116	<b>99.8</b> 80.84 : 124.49	<b>103.0</b> 72.58 : 116.06
1,2-Dichloroethane	TM116	<b>104.8</b> 91.00 : 135.67	<b>118.8</b> 77.50 : 122.50
1,4-Dichlorobenzene	TM116	<b>105.6</b> 80.88 : 114.60	<b>96.2</b> 73.23 : 116.39
2-Chlorotoluene	TM116	<b>94.2</b> 74.00 : 117.20	<b>85.6</b> 69.22 : 110.64
4-Chlorotoluene	TM116	<b>90.2</b> 71.20 : 113.20	<b>89.0</b> 68.57 : 106.26
Benzene	TM116	<b>97.6</b> 79.60 : 125.20	<b>103.2</b> 84.33 : 124.27
Carbon Disulphide	TM116	<b>99.4</b> 74.91 : 122.14	<b>110.4</b> 77.20 : 122.80
Carbontetrachloride	TM116	<b>100.2</b> 76.80 : 121.20	<b>98.2</b> 84.20 : 119.90
Chlorobenzene	TM116	<b>102.0</b> 83.47 : 116.82	<b>102.4</b> 85.28 : 129.96
Chloroform	TM116	<b>98.4</b> 82.00 : 128.80	<b>108.2</b> 82.73 : 119.72
Chloromethane	TM116	<b>117.2</b> 74.62 : 135.86	<b>123.4</b> 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	<b>103.6</b> 81.20 : 128.00	<b>108.4</b> 73.56 : 118.93
Dibromomethane	TM116	<b>88.4</b> 73.40 : 116.60	<b>104.4</b> 73.40 : 116.60
Dichloromethane	TM116	<b>101.6</b> 86.60 : 137.00	<b>113.2</b> 76.16 : 121.98

Preliminary

SDG: 150828-44 Location: Stag Brewery Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM

 Client Reference:
 Attention:
 Gary Marshall

Report Number: Superseded Report: 329060

#### VOC MS (S)

	·	QC 1172	QC 1128
Ethylbenzene	TM116	96.6	94.0
		73.60 : 115.60	80.07 : 125.98
Hexachlorobutadiene	TM116	114.0	69.0
		33.65 : 130.56	30.92 : 132.28
Isopropylbenzene	TM116	92.0	82.6
		72.52 : 117.52	69.27 : 125.32
Naphthalene	TM116	107.0	110.0
		83.23 : 126.48	79.15 : 121.98
o-Xylene	TM116	92.4	77.6
		69.60 : 110.40	75.46 : 111.52
p/m-Xylene	TM116	94.1	90.2
		71.30 : 112.70	76.97 : 121.75
Sec-Butylbenzene	TM116	116.4	69.6
		59.20 : 125.20	49.27 : 129.90
Tetrachloroethene	TM116	104.6	102.2
		85.92 : 127.92	87.96 : 133.65
Toluene	TM116	90.2	99.0
		76.08 : 110.17	79.23 : 114.58
Trichloroethene	TM116	96.4	94.6
		78.17 : 121.37	84.09 : 114.24
Trichlorofluoromethane	TM116	102.2	107.4
		83.78 : 132.82	76.22 : 114.82
Vinyl Chloride	TM116	94.6	98.2
		66.81 : 138.46	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.

Analysis: EPH CWG (Aliphatic) GC (S)

#### PRELIMINARY/INTERIM REPORT

Preliminary

150828-44 Stag Brewery SDG: Location: Job: H\_URS\_WIM-273 **Customer:** AECOM Client Reference: Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

->

329060

Chromatogram

Sample No : **Depth:** 2.20 - 2.80 11980752 Sample ID : BH210

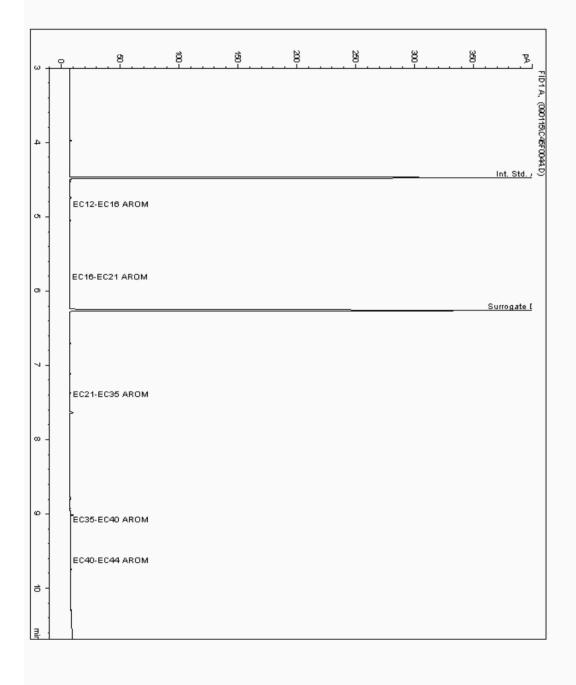
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364106-02/09/15 06:29:40 PM Date Acquired : Units :

ppb

BH210[2.20 - 2.80] Dilution:



Preliminary

SDG: 150828-44 Job:

Client Reference:

H\_URS\_WIM-273

Location: **Customer:** AECOM Attention:

Stag Brewery Order Number: Report Number: Gary Marshall

Superseded Report:

329060

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No : **Depth**: 2.20 11980788 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

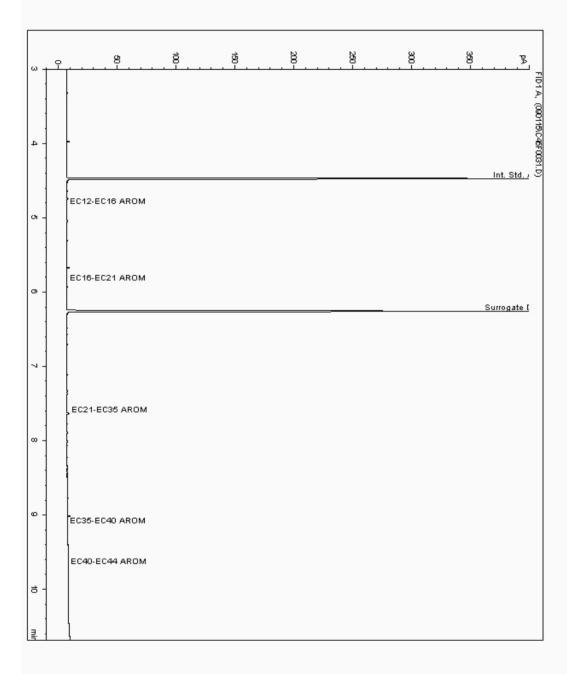
Sample Identity:

11364130-02/09/15 02:28:55 PM

Date Acquired : Units : ppb

Dilution: BH211[2.20]

->



Preliminary

SDG: 150828-44 Job:

Client Reference:

H\_URS\_WIM-273

Stag Brewery Location: **Customer:** AECOM Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

329060

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No : **Depth**: 0.80 11982958 Sample ID : BH210

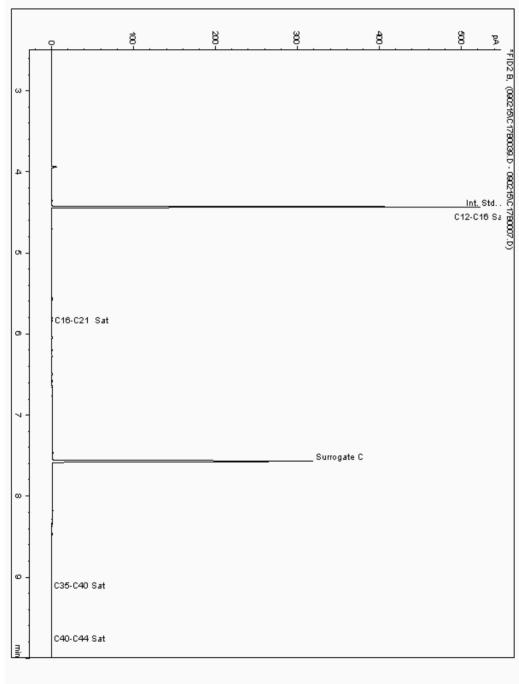
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364091-

Sample Identity: Date Acquired : 03/09/2015 00:07:46 PM

Units ppb Dilution

CF 0.980 Multiplier



Chromatogram

Preliminary

SDG: 150828-44 Job: H\_URS\_WIM-273 Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall

Order Number: Report Number: Superseded Report:

329060

Client Reference:

Analysis: EPH CWG (Aliphatic) GC (S)

Sample No : 11983028 Sample ID :

**Depth**: 0.70

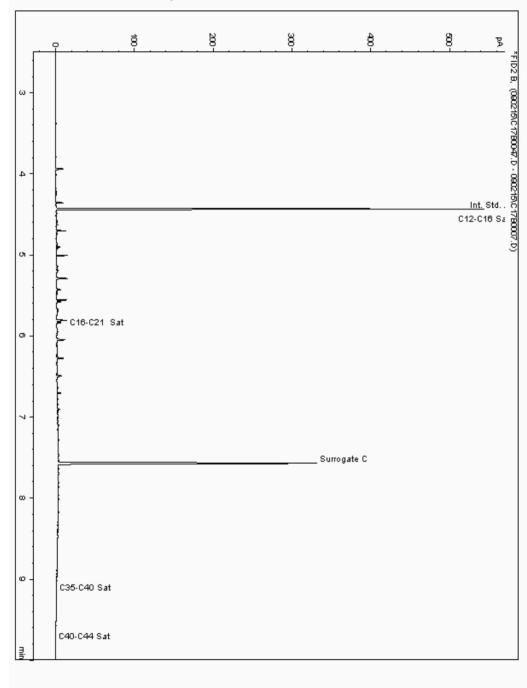
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364117-

Sample Identity: Date Acquired : 03/09/2015 02:19:12 PM

Units ppb Dilution

CF 0.960 Multiplier



Preliminary

329060

SDG: 150828-44 Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

Chromatogram

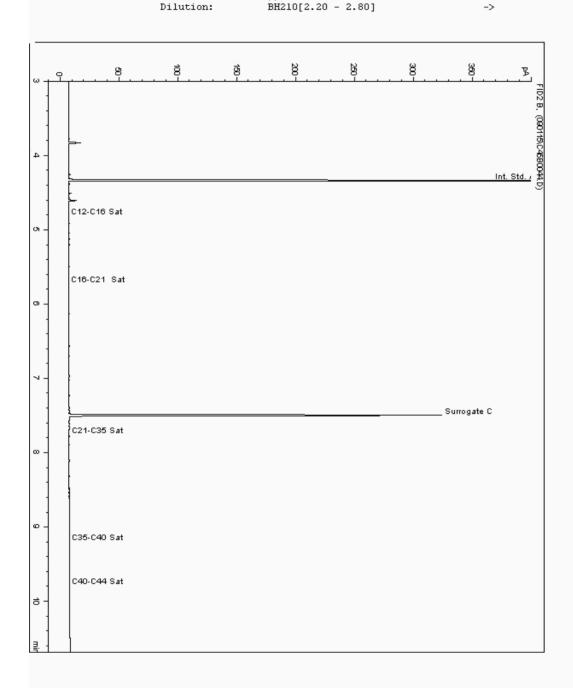
Analysis: EPH CWG (Aromatic) GC (S) **Depth:** 2.20 - 2.80 Sample No : 11980752

Sample ID : BH210

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

11364107-02/09/15 06:29:40 PM Sample Identity: Date Acquired : Units :

ppb BH210[2.20 - 2.80] Dilution:



Preliminary

SDG: 150828-44 H\_URS\_WIM-273 Job:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329060

Client Reference:

Analysis: EPH CWG (Aromatic) GC (S)

Chromatogram Sample No : 11980788

Sample ID :

**Depth**: 2.20

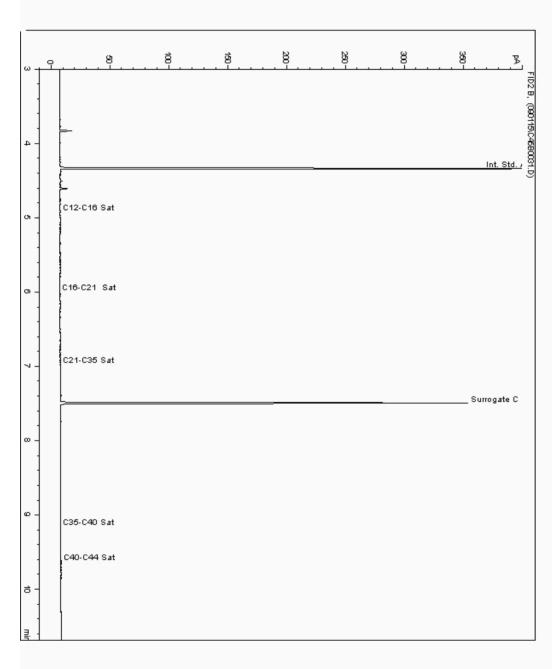
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364131-02/09/15 02:28:55 PM

Sample Identity: Date Acquired : Units :

ppb BH211[2.20] Dilution:

->



Preliminary

 SDG:
 150828-44
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number

Client Reference: Attention: Gary Marshall

Report Number: Superseded Report:

329060

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) Sample No : 11982958 Sample ID : 81982958 BH210

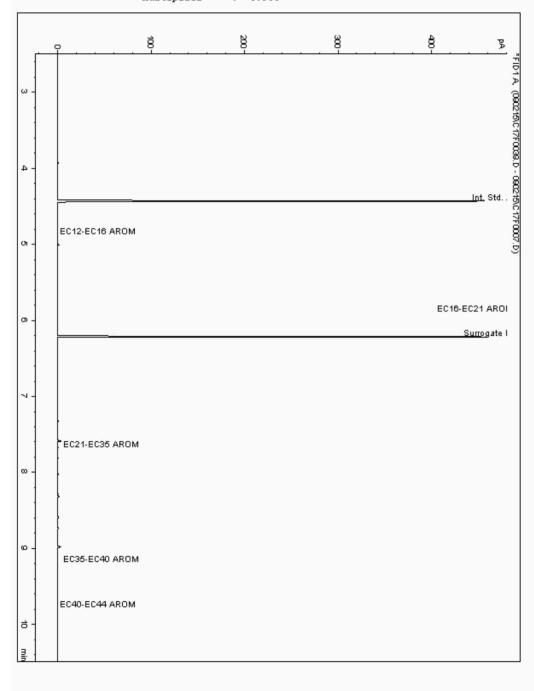
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity: 11364092-

Date Acquired : 03/09/2015 00:07:46 PM

Units : ppb Dilution :

CF : 1 Multiplier : 0.980



Preliminary

329060

150828-44 Stag Brewery SDG: Location: Order Number: Job: H\_URS\_WIM-273 **Customer:** AECOM Report Number: Client Reference: Attention:

Gary Marshall Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) Sample No : **Depth**: 0.70 11983028 Sample ID :

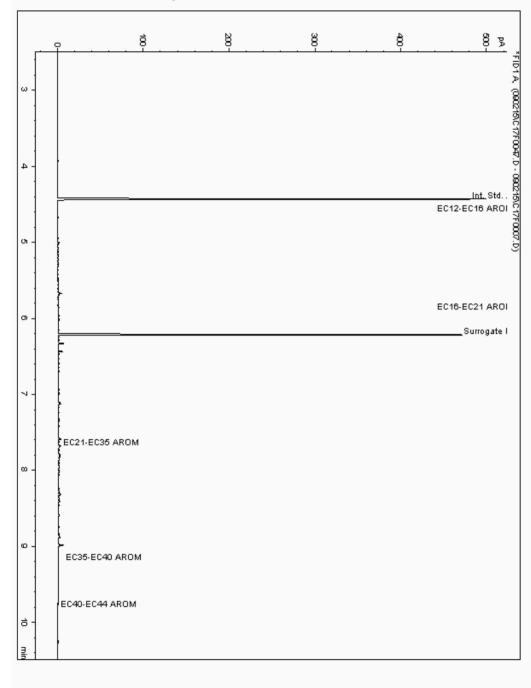
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

Sample Identity: 11364118-

Date Acquired : 03/09/2015 02:19:11 PM

Units ppb Dilution

CF 0.960 Multiplier





Preliminary

**SDG:** 150828-44 **Job:** H\_URS\_WIM-

Analysis: GRO by GC-FID (S)

Client Reference:

H\_URS\_WIM-273 Cu

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329060

Chromatogram

 Sample No :
 11991345
 Depth :
 2.20 - 2.80

 Sample ID :
 BH210

BH210 11991345\_GRO\_S.DATA - Chem 67 FID Reference



Preliminary

150828-44 SDG: Job:

Analysis: GRO by GC-FID (S)

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Superseded Report:

329060

Chromatogram

**Depth**: 2.20 Sample No : 11991356 Sample ID : BH211

11991356\_GRO\_S.DATA - Chem 67 FID



Preliminary

**SDG**: 150828-44 **Job**: H\_URS\_WII

Client Reference:

H\_URS\_WIM-273

Location: S Customer: A Attention: C

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329060

Chromatogram

Analysis: GRO by GC-FID (S) Sample No: 12006569 Sample ID: 12006569 BH210

12006569\_GRO\_S.DATA - HP6850 Signal 1

SDG:

Job:

Client Reference:

#### PRELIMINARY/INTERIM REPORT

Preliminary

150828-44 H\_URS\_WIM-273 Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

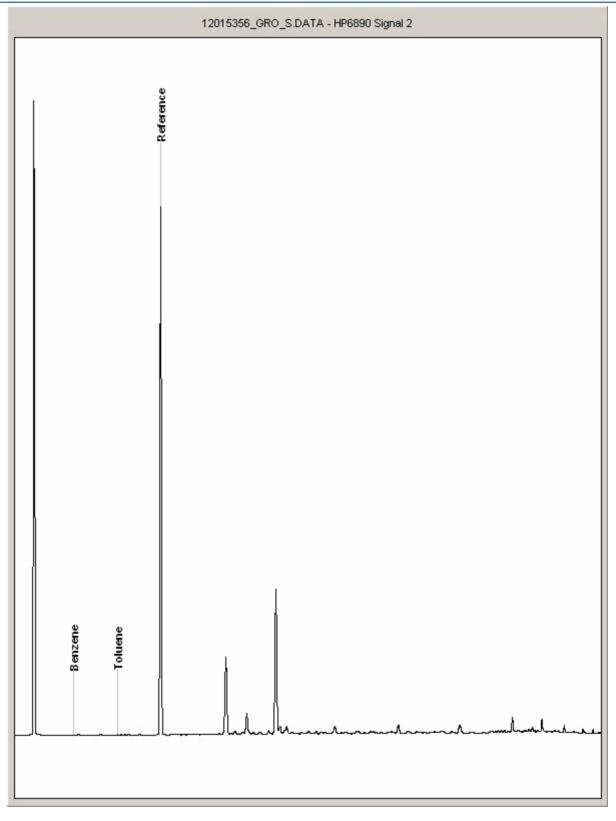
Order Number: Report Number: Superseded Report:

329060

Chromatogram

 Analysis:
 GRO by GC-FID (S)
 Sample No: 12015356
 12015356
 Depth: 0.70

Sample ID : BH211



 150828-44
 Location:
 Stag Brewery
 Order Number:

 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Attention:
 Gary Marshall
 Superseded Report:

Client Reference:

SDG

Job:

**Appendix** 

 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, 2,5 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-C-10 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

SOLID MATRICES EXTRACTION SUMMARY

329060

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	SEYLANA
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTIHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTALSULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	SHAVER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	SEYJANA
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	€ FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
MINERALOIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT NJECTION	GCMS

<u>Identification of Asbestos in Bulk</u> <u>Materials</u>

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	
Chrysofile	WhiteAsbestos	
Amoste	BrownAsbestos	
Oroádolite	Blue Asbestos	
Fibrous Adindite	-	
Fibrous Anthophylite	-	
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.

# ALcontrol Laboratories

#### PRELIMINARY/INTERIM REPORT

SDG: 150828-44 Location: Stag Brewery Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329060

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

# Appendix General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 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 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
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Orodobite	Blue Asbestos
Fibrous Adinoite	-
Fibrous Anthophylite	-
Fibrous Trendile	-

#### 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.

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:
 09 September 2015

 Customer:
 H\_URS\_WIM

 Sample Delivery Group (SDG):
 150828-48

Your Reference:

Location:Stag BreweryReport No:329008

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.

Approved By:

Sonia McWhan
Operations Manager









Validated

329008

SDG: 150828-48 Location: Stag Brewery Order Number: H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number: Client Reference:

Attention: Gary Marshall Superseded Report:

**Received Sample Overview** 

11977832     BH212     0.60     27/08/2015       11977833     BH212     1.80 - 2.50     27/08/2015       11977835     BH213     0.60     27/08/2015       11977837     BH213     1.70 - 2.00     27/08/2015	Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11977835 BH213 0.60 27/08/2015	11977832	BH212		0.60	27/08/2015
	11977833	BH212		1.80 - 2.50	27/08/2015
11977837 BH213 1.70 - 2.00 27/08/2015	11977835	BH213		0.60	27/08/2015
	11977837	BH213		1.70 - 2.00	27/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

06:10:17 09/09/2015

Validated

150828-48 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273 Customer: AECOM

329008 Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

Olient Kelerence.		Attention		ily iviais	,	
SOLID Results Legend X Test	Lab Sample I	No(s)	11977832	11977833	11977835	11977837
No Determination Possible	Custome Sample Refer		BH212	BH212	BH213	BH213
	AGS Refere	nce				
	Depth (m		0.60	.50	0.60	1.70 - 2.00
	Containe	r	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4	x	x	x	×
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	X		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	×
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4	x	×	x	x
Metals in solid samples by OES	All	NDPs: 0 Tests: 4	X	x	×	x
PAH by GCMS	All	NDPs: 0 Tests: 4	X	×	×	×
pH	All	NDPs: 0 Tests: 4	X	×	×	X
Sample description	All	NDPs: 0 Tests: 4	X	X	×	X
Total Organic Carbon	All	NDPs: 0 Tests: 4	X	x	×	x
Total Sulphate	All	NDPs: 0 Tests: 4	X	x	x	×
TPH CWG GC (S)	All	NDPs: 0 Tests: 4	X	X	X	x
VOC MS (S)	All	NDPs: 0 Tests: 4	×	x	x	×

Validated

**SDG:** 150828-48 **Job:** H\_URS\_WIM-273

Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number:

329008

Superseded Report:

# **Sample Descriptions**

#### **Grain Sizes**

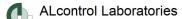
Client Reference:

very fine	<0.0	)63mm	fine	0.063mm - 0.1mm	medium	0.1mm	- 2mm	coarse	2mm - 1	0mm	very coars	e >10mr
Lab Sample	No(s)	Custom	er Sample R	ef. Depth (m)	Со	lour	Descriptio	on G	Grain size	Inclu	isions	Inclusions 2
119778	32		BH212	0.60	Dark	Brown	Sandy Loa	m 0	.1 - 2 mm	Sto	ones	None
119778	33		BH212	1.80 - 2.50	Light	Brown	Sand	0	.1 - 2 mm	Sto	ones	None
119778	35		BH213	0.60	Dark	Brown	Sandy Cla Loam	у 0	.1 - 2 mm	Sto	ones	Tile/Insulation Board
119778	37		BH213	1.70 - 2.00	Light	Brown	Sand	0	.1 - 2 mm	Sto	ones	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.



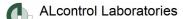
Validated

329008

150828-48 SDG: Location: Stag Brewery Order Number: Report Number:

Job: H\_URS\_WIM-273 Customer: AECOM Client Reference: Attention: Gary Marshall Superseded Report:

Results Legend # ISO17025 accredited.	•	Customer Sample R	BH212	BH212	BH213	BH213		
M mCERTS accredited.  aq Aqueous / settled sample.							l l	
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.60	1.80 - 2.50	0.60	1.70 - 2.00	l I	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
* Subcontracted test.  ** % recovery of the surrogate standa		Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015		
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time	00:00:00	00:00:00	00:00:00	00:00:00		
results of individual compounds wi		Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
samples aren't corrected for the rec		SDG Ref	150828-48	150828-48	150828-48	150828-48		
(F) Trigger breach confirmed		Lab Sample No.(s)	11977832	11977833	11977835	11977837		
1-5&+§@ Sample deviation (see appendix)		AGS Reference						
Component	LOD/Units	s Method						
Moisture Content Ratio (%	%	PM024	7	5.7	17	6.5		
of as received sample)	, ,		•		• •			
						. –		
Exchangeable Ammonia	<15	TM024	18.2	<15	<15	<15		
as NH4	mg/kg		M	M	M	M		
Organic Carbon, Total	<0.2 %	TM132	<0.2	<0.2	2.07	<0.2		
Organic Carbon, Total	VO.2 /0	1101102						
			M	М	M	M		
pH	1 pH	TM133	8.95	7.72	8.04	7.84		
	Units		М	М	М	М		
Chromium Hovovolont	<0.6	TM151	<0.6	<0.6	<0.6	<0.6		
Chromium, Hexavalent		TIVITOT						
	mg/kg		#	#	#	#		
Sulphide, Easily liberated	<15	TM180	<15	<15	<15	<15		
	mg/kg		♦#	<b>♦</b> #	<b>*</b> #	<b>+</b> #	<u> </u>	
Argonio		TN/404			19.1		<del>                                     </del>	
Arsenic	<0.6	TM181	19.2	18.8		19.1	<u> </u>	
	mg/kg		M	M	M	M		
Cadmium	<0.02	TM181	1.44	0.393	0.547	0.389		
I	mg/kg		М	М	М	М	<u> </u>	
Chromium		TN4404					<del>                                     </del>	
Chromium	<0.9	TM181	6.94	16.9	17.1	20.2	<u> </u>	
	mg/kg		M	М	М	M		
Copper	<1.4	TM181	13.9	4.3	29.6	6.42		
	mg/kg		М	М	М	М		
Lead	<0.7	TM181	271	5.92	2910	6.91		
	mg/kg		M	M	M	M		
Mercury	<0.14	TM181	<0.14	<0.14	<0.14	<0.14		
Morodry		1111101						
	mg/kg		M	M	M	M		
Nickel	<0.2	TM181	6.81	19.2	14.7	22		
	mg/kg		M	М	M	М		
Selenium	<1 mg/k	g TM181	<1	<1	<1	<1		
Geleriidiri	- i ilig/k	g iwiioi					l I	
			#		#	#		
Zinc	<1.9	TM181	276	23.4	906	26.2		
	mg/kg		M	М	M	М		
Sulphate, Total	<48	TM221	1090	49.6	7440	80.7		
	mg/kg		М	М	М	M	l I	
	mg/kg		IVI	IVI	IVI	IVI		
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Validated

150828-48 SDG: Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Client Reference:

Customer: AECOM Gary Marshall Attention:

Report Number:

329008 Superseded Report:

Client Reference:	_		Attention:	Ga	ry Marshall			Superseded	Repo	ort:	
PAH by GCMS											
# ISO17025 accredited.  # 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 stand.  check the efficiency of the method	ard to I. The	Depth (m) Sample Type Date Sampled Sampled Time Date Received	0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015		BH212 1.80 - 2.50 Soil/Solid 27/08/2015 00:00:00 28/08/2015		0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015	BH213 1.70 - 2.00 Soil/Solid 27/08/2015 00:00:00 28/08/2015			
results of individual compounds we samples aren't corrected for the re (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)  Component	covery	SDG Ref Lab Sample No.(s) AGS Reference Method	150828-48 11977832		150828-48 11977833		150828-48 11977835	150828-48 11977837			
Naphthalene-d8 %	%	TM218	97.6		94.5		98.6	96.2			
recovery**  Acenaphthene-d10 % recovery**	%	TM218	94.2		90.6		95	92.2			
Phenanthrene-d10 % recovery**	%	TM218	91.1		87.3		91.2	89.6			
Chrysene-d12 % recovery**	%	TM218	91.4		77.2		90.4	79			
Perylene-d12 % recovery**	%	TM218	97.3		78.4		95.7	80.7			
Naphthalene	<9 µg/kg	j TM218	<9	М	<9	М	27.4 M	<9	М		
Acenaphthylene	<12 µg/kg	TM218	20.5	М	<12	М	27.8 M	<12	М		
Acenaphthene	<8 μg/kg	TM218	<8	М	<8	М	15.9 M	<8	М		
Fluorene	<10 µg/kg	TM218	<10	М	<10	М	12.1 M	<10	М		
Phenanthrene	<15 µg/kg	TM218	218	М	<15	М	329 M	<15	М		
Anthracene	<16 µg/kg	TM218	85.9	М	<16	М	71.8 M	<16	М		
Fluoranthene	<17 µg/kg	TM218	1270	М	<17	М	820 M	<17	М		
Pyrene	<15 µg/kg	TM218	975	М	<15	М	729 M	<15	М		
Benz(a)anthracene	<14 µg/kg	TM218	927	М	<14	М	449 M	<14	М		
Chrysene	<10 µg/kg	TM218	908	М	<10	М	414 M	<10	М		
Benzo(b)fluoranthene	<15 µg/kg	TM218	1460	М	<15	М	588 M	<15	М		
Benzo(k)fluoranthene	<14 µg/kg	TM218	503	М	<14	М	255 M	<14	М		
Benzo(a)pyrene	<15 µg/kg	TM218	1050	М	<15	М	485 M	<15	М		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	668	М	<18	М	270 M	<18	М		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	195	М	<23	М	73.2 M	<23	М		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	755	М	<24	М	358 M	<24	М		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	9030		<118		4920	<118			

Validated

329008

150828-48 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

TPH CWG (S)							
Results Legend # ISO17025 accredited.		Customer Sample R	BH212	BH212	BH213	BH213	
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. * recovery of the surrogate standa check the efficiency of the method.	The	Depth (m) Sample Type Date Sampled Sampled Time Date Received	0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015	1.80 - 2.50 Soil/Solid 27/08/2015 00:00:00 28/08/2015	0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015	1.70 - 2.00 Soil/Solid 27/08/2015 00:00:00 28/08/2015	
results of individual compounds wi samples aren't corrected for the red (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)	covery	SDG Ref Lab Sample No.(s) AGS Reference	150828-48 11977832	150828-48 11977833	150828-48 11977835	150828-48 11977837	
Component GRO Surrogate %	LOD/Units	TM089	114	127	76	110	
recovery**	70	110009	114	127	76	110	
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	<44 M	<44 M	<44 M	
Methyl tertiary butyl ether (MTBE)	<5 μg/k	g 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	g TM089	<2 M	<2 M	<2 M	<2 M	
Ethylbenzene	<3 μg/kg		<3 M	<3 M	<3 M	<3 M	
m,p-Xylene	<6 µg/k		<6 M	<6 M	<6 M	<6 M	
o-Xylene	<3 μg/kg	g TM089	<3 M	<3 M	<3 M	<3 M	
sum of detected mpo xylene by GC	<9 μg/kg		<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	<100	<100	<100	<100	
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	6060	<100	
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	<100	<100	
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	<100	6060	<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	<100	<100	2150	<100	
Aromatics >EC16-EC21	<100 µg/kg	TM173	496	<100	10600	<100	
Aromatics >EC21-EC35	<100 µg/kg	TM173	4600	<100	31100	<100	
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	<100	10900	<100	
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	3970	<100	
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	5100	<100	54800	<100	
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	5100	<100	60900	<100	

Validated

SDG: 150828-48 Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273
Client Reference:

Customer: AECOM
Attention: Gary Marshall

Report Number: 329008

Superseded Report:

VOC MS (S)				•			
Results Legend		Customer Sample R	BH212	BH212	BH213	BH213	
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.fiit Dissolved filtered sample. tot.unflit Total / unflitered sample. * Subcontracted test. ** % recovery of the surrogate stands. check the efficiency of the method results of individual compounds w samples aren't corrected for the re Trigger breach confirmed 1-5&4\$@ Sample deviation (see appendix)	. The ithin	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015 150828-48 11977832	1.80 - 2.50 Soil/Solid 27/08/2015 00:00:00 28/08/2015 150828-48 11977833	0.60 Soil/Solid 27/08/2015 00:00:00 28/08/2015 150828-48 11977835	1.70 - 2.00 Soil/Solid 27/08/2015 00:00:00 28/08/2015 150828-48 11977837	
Component	LOD/Unit						
Dibromofluoromethane**	%	TM116	114	124	121	116	
Toluene-d8**	%	TM116	102	111	108	110	
4-Bromofluorobenzene**	%	TM116	94.1	105	85.4	104	
Dichlorodifluoromethane	<6 µg/k	g TM116	<6 M	<6 M	<6 M	<6 M	
Chloromethane	<7 μg/k	g TM116	<7 #	<7	<7 #	<7 #	
Vinyl Chloride	<6 µg/k	g TM116	<6 M	<6	<6 M	<6 M	
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	
Trichlorofluorormethane	<6 µg/k	g TM116	<6 M	<6 M	<6 M	<6 M	
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	
Carbon Disulphide	<7 μg/k	g TM116	<7 M	<7 M	<7 M	<7 M	
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	
1,1-Dichloroethane	<8 µg/k	g TM116	<8 M	<8 M	<8 M	<8 M	
cis-1,2-Dichloroethene	<6 µg/k	g TM116	<6 M	<6 M	<6 M	<6 M	
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	
Bromochloromethane	<10 µg/kg	TM116	<10 M		<10 M	<10 M	
Chloroform	<8 µg/k		<8 M		<8 M	<8 M	
1,1,1-Trichloroethane	<7 μg/k		<7 M		<7 M	<7 M	
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M		<10 M	<10 M	
Carbontetrachloride	<10 µg/kg	TM116	<10 M		<10 M	<10 M	
1,2-Dichloroethane	<5 μg/k		<5 M		<5 M	<5 M	
Benzene	<9 μg/k		<9 M		<9 M	<9 M	
Trichloroethene	<9 μg/k		<9 #		<9 #	<9 #	
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M		<10 M	<10 M	
Dibromomethane	<9 μg/k		<9 M		<9 M	<9 M	
Bromodichloromethane	<7 μg/k		<7 M		<7 M	<7 M	
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M		<10 M	<10 M	
Toluene	<7 μg/k		<7 M		<7 M	<7 M	
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	

Gary Marshall

Validated

Superseded Report:

329008

 SDG:
 150828-48
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Attention:

Client Reference:

VOC MS (S)							
Results Legend		Customer Sample R	BH212	BH212	BH213	BH213	
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.60	1.80 - 2.50	0.60	1.70 - 2.00	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
* Subcontracted test.  ** % recovery of the surrogate standa	rd to	Date Sampled Sampled Time	27/08/2015 00:00:00	27/08/2015 00:00:00	27/08/2015 00:00:00	27/08/2015 00:00:00	
check the efficiency of the method.	The	Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015	
results of individual compounds wi samples aren't corrected for the rec		SDG Ref	150828-48	150828-48	150828-48	150828-48	
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)	·	Lab Sample No.(s)	11977832	11977833	11977835	11977837	
Component	LOD/Unit	AGS Reference					
			<7	<7	<7	<7	
1,3-Dichloropropane	<7 μg/k	g IIVIII0					
Total ablancathous	45	TM440	M	M	M	M	
Tetrachloroethene	<5 µg/k	g TM116	<5	<5	<5	<5	
D'harana dalamana dhara	:40	T14440	M	M	M	M	
Dibromochloromethane	<10	TM116	<10	<10	<10	<10	
1.2.71	μg/kg		M	M	M	M	
1,2-Dibromoethane	<10	TM116	<10	<10	<10	<10	
	μg/kg	=11112	M	M	M	M	
Chlorobenzene	<5 µg/k	g TM116	<5	<5	<5	<5	
		=11112	M	M	M	M	
1,1,1,2-Tetrachloroethane	<10	TM116	<10	<10	<10	<10	
	μg/kg	=11112	M	M	M	M	
Ethylbenzene	<4 µg/k	g TM116	<4	<4	<4	<4	
		=	M	M	M	M	
p/m-Xylene	<10	TM116	<10	<10	<10	<10	
	μg/kg		#	#	#	#	
o-Xylene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
Styrene	<10	TM116	<10	<10	<10	<10	
	μg/kg		#	#	#	#	
Bromoform	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
Isopropylbenzene	<5 µg/k	g TM116	<5	<5	<5	<5	
			#	#	#	#	
1,1,2,2-Tetrachloroethane	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
1,2,3-Trichloropropane	<16	TM116	<16	<16	<16	<16	
	μg/kg		M	M	M	M	
Bromobenzene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
Propylbenzene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
2-Chlorotoluene	<9 µg/k	g TM116	<9	<9	<9	<9	
			M	M	M	M	
1,3,5-Trimethylbenzene	<8 µg/k	g TM116	<8	<8	<8	<8	
			M	M	M	M	
4-Chlorotoluene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
tert-Butylbenzene	<14	TM116	<14	<14	<14	<14	
	μg/kg		M	M	M	M	
1,2,4-Trimethylbenzene	<9 µg/k	g TM116	<9	<9	<9	<9	
			#	#	#	#	
sec-Butylbenzene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
4-Isopropyltoluene	<10	TM116	<10	<10	<10	<10	
	μg/kg		M	M	M	M	
1,3-Dichlorobenzene	<8 µg/k	g TM116	<8	<8	<8	<8	
			М	М	М	М	
1,4-Dichlorobenzene	<5 µg/k	g TM116	<5	<5	<5	<5	
			М	М	М	М	
n-Butylbenzene	<11	TM116	<11	<11	<11	<11	
	μg/kg						
1,2-Dichlorobenzene	<10	TM116	<10	<10	<10	<10	
	μg/kg		М	М	М	М	
1,2-Dibromo-3-chloroprop	<14	TM116	<14	<14	<14	<14	
ane	μg/kg		М	М	М	М	
Tert-amyl methyl ether	<10	TM116	<10	<10	<10	<10	
, , , , , , , , , , , , , , , , , , , ,	μg/kg		#	#	#	#	
1,2,4-Trichlorobenzene	<20	TM116	<20	<20	<20	<20	
.,_,	μg/kg		-20	-20			
Hexachlorobutadiene	<20	TM116	<20	<20	<20	<20	
	μg/kg		-20	-20			
Naphthalene	<13	TM116	<13	<13	<13	<13	
	μg/kg		M	М		М М	
<u> </u>	מייש		IVI	IVI	IVI	I IVI	



Validated

Superseded Report:

150828-48 SDG: Location: Stag Brewery Order Number: 329008 Job: H\_URS\_WIM-273 Customer: AECOM Report Number:

Gary Marshall

Attention:

Client Reference:

VOC MS (S)				.,			
Results Legend	С	ustomer Sample R	BH212	BH212	BH213	BH213	
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.60	1.80 - 2.50	0.60	1.70 - 2.00	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid 27/08/2015	
** % recovery of the surrogate standa	ard to	Date Sampled Sampled Time	27/08/2015 00:00:00	27/08/2015 00:00:00	27/08/2015 00:00:00	00:00:00	
check the efficiency of the method results of individual compounds w	. The	Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015	
samples aren't corrected for the re	covery	SDG Ref	150828-48 11977832	150828-48 11977833	150828-48 11977835	150828-48 11977837	
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11077002	11077000	11077000	11017001	
Component	LOD/Units						
1,2,3-Trichlorobenzene	<20	TM116	<20	<20	<20	<20	
	μg/kg		#	#	#	#	



150828-48

SDG:

**CERTIFICATE OF ANALYSIS** 

Validated

Order Number:

329008

H\_URS\_WIM-273 AECOM Job: **Customer:** Client Reference: Attention:

Report Number: Gary Marshall Superseded Report:

Stag Brewery

Location:

# **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	BH212 0.60 SOLID 27/08/2015 00:00:00 29/08/2015 13:54:20 150828-48 11977832 TM048	03/09/2015	Rebecca Rawlings	-	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	BH213 0.60 SOLID 27/08/2015 00:00:00 29/08/2015 13:59:40 150828-48 11977835 TM048	03/09/2015	Rebecca Rawlings	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

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Client Reference:

### **CERTIFICATE OF ANALYSIS**

Validated

**SDG:** 150828-48 **Job:** H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

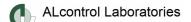
Order Number: Report Number: Superseded Report:

329008

**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	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		
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		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



Validated

329008

 SDG:
 150828-48
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

# **Test Completion Dates**

Lab Sample No(s)	11977832	11977833	11977835	11977837
Customer Sample Ref.	BH212	BH212	BH213	BH213
•				
AGS Ref.				
Depth	0.60	1.80 - 2.50	0.60	1.70 - 2.00
Туре	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	08-Sep-2015	08-Sep-2015	09-Sep-2015	08-Sep-2015
Asbestos ID in Solid Samples	03-Sep-2015		03-Sep-2015	
Easily Liberated Sulphide	08-Sep-2015	07-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	02-Sep-2015	02-Sep-2015	02-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	29-Aug-2015	28-Aug-2015	29-Aug-2015	28-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	03-Sep-2015	04-Sep-2015	03-Sep-2015
VOC MS (S)	02-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015

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**SDG:** 150828-48 **Job:** H\_URS\_WIM-273

Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329008

# **ASSOCIATED AQC DATA**

### Ammonium Soil by Titration

Client Reference:

Component	Method Code	QC 1292	QC 1205
Exchangeable Ammonium as NH4	TM024	<b>86.07</b> 79.30 : 104.61	<b>98.01</b> 79.30 : 104.61

# Easily Liberated Sulphide

Component	Method Code	QC 1262	QC 1219
Easily Liberated Sulphide	TM180	<b>88.38</b> 49.14 : 123.89	<b>93.21</b> 49.14 : 123.89

### EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1165	QC 1197
Total Aliphatics >C12-C35	TM173	<b>97.92</b> 69.19 : 111.75	<b>92.08</b> 71.67 : 116.67

### EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1197
Total Aromatics >EC12-EC35	TM173	<b>85.33</b> 59.92 : 107.95

### GRO by GC-FID (S)

Component	Method Code	QC 1100	QC 1232
Benzene by GC	TM089	<b>110.0</b>	<b>104.0</b>
(Moisture Corrected)		82.67 : 117.96	76.33 : 121.87
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>110.5</b> 80.45 : 118.61	<b>105.5</b> 75.73 : 123.83
m & p Xylene by GC (Moisture Corrected)	TM089	<b>110.0</b> 79.25 : 119.43	<b>104.5</b> 75.52 : 120.32
MTBE GC-FID (Moisture	TM089	<b>114.5</b>	<b>101.5</b>
Corrected)		79.10 : 122.51	77.89 : 119.70
o Xylene by GC (Moisture	TM089	<b>111.5</b>	<b>100.0</b>
Corrected)		80.03 : 117.19	74.15 : 124.59
QC	TM089	<b>102.79</b> 75.74 : 124.65	<b>101.18</b> 62.31 : 122.61
Toluene by GC (Moisture	TM089	<b>110.5</b>	<b>101.0</b>
Corrected)		82.06 : 117.54	77.91 : 122.33

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SDG: 150828-48 Location: Stag Brewery Job:

H\_URS\_WIM-273 AECOM **Customer:** Attention: Gary Marshall Report Number: Superseded Report: 329008

Order Number:

Hexavalent Chromium (s)

Client Reference:

Component	Method Code	QC 1299	QC 1285
Hexavalent Chromium	TM151	100.0	102.0
		92.20 : 106.60	92.20 : 106.60

# Metals in solid samples by OES

Component	Method Code	QC 1235	QC 1206
Aluminium	TM181	<b>98.46</b> 86.49 : 129.71	<b>99.23</b> 86.49 : 129.71
Antimony	TM181	<b>97.13</b> 77.50 : 122.50	<b>94.27</b> 77.50 : 122.50
Arsenic	TM181	<b>92.92</b> 82.63 : 117.37	<b>92.92</b> 82.63 : 117.37
Barium	TM181	<b>95.49</b> 79.45 : 120.55	<b>96.24</b> 79.45 : 120.55
Beryllium	TM181	<b>100.47</b> 85.92 : 121.27	<b>98.91</b> 85.92 : 121.27
Boron	TM181	<b>99.24</b> 77.41 : 143.83	<b>105.34</b> 77.41 : 143.83
Cadmium	TM181	<b>96.47</b> 81.95 : 118.05	<b>95.8</b> 81.95 : 118.05
Chromium	TM181	<b>93.73</b> 81.29 : 118.71	<b>93.33</b> 81.29 : 118.71
Cobalt	TM181	<b>96.5</b> 83.86 : 116.14	<b>95.83</b> 83.86 : 116.14
Copper	TM181	<b>99.46</b> 78.57 : 121.43	<b>97.7</b> 78.57 : 121.43
Iron	TM181	<b>97.24</b> 87.50 : 122.82	<b>95.86</b> 87.50 : 122.82
Lead	TM181	<b>94.09</b> 74.18 : 117.25	<b>93.7</b> 74.18 : 117.25
Manganese	TM181	<b>100.0</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09
Mercury	TM181	<b>92.46</b> 81.99 : 118.01	<b>94.3</b> 81.99 : 118.01
Molybdenum	TM181	<b>93.79</b> 81.45 : 118.55	<b>92.2</b> 81.45 : 118.55
Nickel	TM181	<b>95.93</b> 79.64 : 120.36	<b>95.93</b> 79.64 : 120.36
Phosphorus	TM181	<b>98.21</b> 81.03 : 118.97	<b>97.76</b> 81.03 : 118.97
Selenium	TM181	<b>108.21</b> 87.05 : 121.93	<b>105.3</b> 87.05 : 121.93
Strontium	TM181	<b>96.55</b> 83.64 : 116.36	<b>98.08</b> 83.64 : 116.36
Thallium	TM181	<b>88.72</b> 77.50 : 122.50	<b>87.56</b> 77.50 : 122.50
Tin	TM181	<b>92.69</b> 78.30 : 113.98	<b>92.03</b> 78.30 : 113.98
Titanium	TM181	<b>97.66</b> 71.02 : 128.98	<b>103.91</b> 71.02 : 128.98

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150828-48 SDG: Location: Stag Brewery H\_URS\_WIM-273 Job:

AECOM **Customer:** Attention: Gary Marshall

Report Number: Superseded Report:

Order Number:

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# Metals in solid samples by OES

		QC 1235	QC 1206
Vanadium	TM181	<b>93.53</b> 86.61 : 113.39	<b>93.53</b> 86.61 : 113.39
Zinc	TM181	<b>98.05</b> 89.82 : 114.54	<b>97.73</b> 89.82 : 114.54

# PAH by GCMS

Client Reference:

Component	Method Code	QC 1154	QC 1196
Acenaphthene	TM218	92.0	89.5
		77.34 : 118.20	78.75 : 116.25
Acenaphthylene	TM218	86.5	85.5
		62.65 : 116.35	76.45 : 110.05
Anthracene	TM218	89.5	89.0
Dane (a) and have a see	TN4040	73.54 : 114.21	67.15 : 124.45
Benz(a)anthracene	TM218	102.5	97.5
Benzo(a)pyrene	TM218	74.99 : 132.24	82.00 : 127.00
Denzo(a)pyrene	1101210	<b>102.0</b> 80.75 : 127.25	<b>99.5</b> 75.60 : 124.20
Benzo(b)fluoranthene	TM218	99.5	99.0
, ,		75.84 : 127.12	81.20 : 121.77
Benzo(ghi)perylene	TM218	97.0	96.0
		74.74 : 124.03	77.49 : 119.12
Benzo(k)fluoranthene	TM218	98.0	96.5
		80.00 : 125.00	83.50 : 116.50
Chrysene	TM218	98.0	95.5
		77.24 : 120.84	78.35 : 114.42
Dibenzo(ah)anthracene	TM218	96.5	95.0
Fluoranthene	TM218	76.00 : 122.50	77.15 : 122.45
Fluoranthene	1101218	<b>92.5</b> 78.51 : 118.75	<b>92.5</b> 79.08 : 114.40
Fluorene	TM218		
ridorene	1101210	<b>93.0</b> 76.95 : 117.18	<b>91.5</b> 79.03 : 113.38
Indeno(123cd)pyrene	TM218	98.5	96.5
		75.34 : 127.46	75.65 : 125.15
Naphthalene	TM218	95.0	92.5
		76.24 : 112.91	77.25 : 112.60
Phenanthrene	TM218	93.5	92.0
		76.49 : 119.30	78.25 : 115.44
Pyrene	TM218	91.0	91.0
		78.25 : 118.17	78.07 : 114.06

Component	Method Code	QC 1218	QC 1227
рН	TM133	<b>100.25</b> 97.19 : 102.81	<b>100.5</b> 97.19 : 102.81

### **Total Organic Carbon**

Validated

**SDG:** 150828-48 **Job:** H\_URS\_WIM-273

Location: Stag Brewery
Customer: AECOM

Attention:

 Stag Brewery
 Order Number:

 AECOM
 Report Number:
 329008

 Gary Marshall
 Superseded Report:

Client Reference:

### Total Organic Carbon

Component	Method Code	QC 1254	QC 1297
Total Organic Carbon	TM132	<b>100.46</b> 88.82 : 111.18	<b>97.72</b> 89.40 : 103.09

# Total Sulphate

Component	Method Code	QC 1235	QC 1273
Total Sulphate	TM221	<b>102.27</b> 78.49 : 121.51	<b>103.79</b> 78.49 : 121.51

# VOC MS (S)

Component	Method Code	QC 1172	QC 1128
1,1,1,2-tetrachloroethane	TM116	<b>101.0</b> 76.60 : 121.00	<b>95.6</b> 83.24 : 124.28
1,1,1-Trichloroethane	TM116	<b>96.2</b> 77.80 : 123.40	<b>100.8</b> 81.77 : 121.07
1,1,2-Trichloroethane	TM116	<b>90.6</b> 75.40 : 119.80	<b>100.4</b> 79.24 : 112.23
1,1-Dichloroethane	TM116	<b>99.8</b> 80.84 : 124.49	<b>103.0</b> 72.58 : 116.06
1,2-Dichloroethane	TM116	<b>104.8</b> 91.00 : 135.67	<b>118.8</b> 77.50 : 122.50
1,4-Dichlorobenzene	TM116	<b>105.6</b> 80.88 : 114.60	<b>96.2</b> 73.23 : 116.39
2-Chlorotoluene	TM116	<b>94.2</b> 74.00 : 117.20	<b>85.6</b> 69.22 : 110.64
4-Chlorotoluene	TM116	<b>90.2</b> 71.20 : 113.20	<b>89.0</b> 68.57 : 106.26
Benzene	TM116	<b>97.6</b> 79.60 : 125.20	<b>103.2</b> 84.33 : 124.27
Carbon Disulphide	TM116	<b>99.4</b> 74.91 : 122.14	<b>110.4</b> 77.20 : 122.80
Carbontetrachloride	TM116	<b>100.2</b> 76.80 : 121.20	<b>98.2</b> 84.20 : 119.90
Chlorobenzene	TM116	<b>102.0</b> 83.47 : 116.82	<b>102.4</b> 85.28 : 129.96
Chloroform	TM116	<b>98.4</b> 82.00 : 128.80	<b>108.2</b> 82.73 : 119.72
Chloromethane	TM116	<b>117.2</b> 74.62 : 135.86	<b>123.4</b> 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	<b>103.6</b> 81.20 : 128.00	<b>108.4</b> 73.56 : 118.93
Dibromomethane	TM116	<b>88.4</b> 73.40 : 116.60	<b>104.4</b> 73.40 : 116.60
Dichloromethane	TM116	<b>101.6</b> 86.60 : 137.00	<b>113.2</b> 76.16 : 121.98

Validated

329008

 SDG:
 150828-48
 Location:
 Stag Brewery

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM

Customer: AECOM Report Number:
Attention: Gary Marshall Superseded Report:

Order Number:

VOC MS (S)

Client Reference:

QC 1172         QC 1128           Ethylbenzene         TM116         96.6         94.0           73.60:115.60         80.07:125.98           Hexachlorobutadiene         TM116         444.0         60.0	
73.60 : 115.60 80.07 : 125.98	98
Harrist Land Table 1	98
Heyachlorobutadione TM116	
Hexachioroputadiene I M116   114.0   69.0	
33.65 : 130.56 30.92 : 132.28	28
Isopropylbenzene TM116 92.0 82.6	
72.52 : 117.52 69.27 : 125.32	32
Naphthalene TM116 107.0 110.0	
83.23 : 126.48 79.15 : 121.98	98
o-Xylene TM116 <b>92.4</b> 77.6	
69.60 : 110.40 75.46 : 111.52	52
p/m-Xylene TM116 <b>94.1 90.2</b>	
71.30 : 112.70 76.97 : 121.75	75
Sec-Butylbenzene TM116 <b>116.4 69.6</b>	
59.20 : 125.20 49.27 : 129.90	90
Tetrachloroethene TM116 104.6 102.2	
85.92 : 127.92 87.96 : 133.65	65
Toluene TM116 90.2 99.0	
76.08 : 110.17 79.23 : 114.58	58
Trichloroethene TM116 96.4 94.6	
78.17 : 121.37 84.09 : 114.2 <sup>4</sup>	24
Trichlorofluoromethane TM116 102.2 107.4	
83.78 : 132.82 76.22 : 114.82	82
Vinyl Chloride TM116 94.6 98.2	
66.81 : 138.46 59.68 : 118.68	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.

Validated

150828-48 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No : **Depth:** 1.80 - 2.50 11980853 Sample ID : BH212

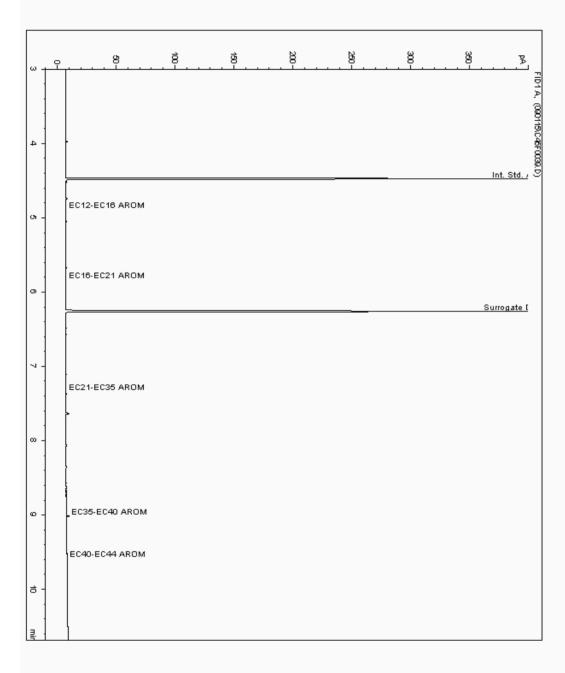
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364041-02/09/15 04:50:05 PM Date Acquired : Units :

ppb BH212[1.80 - 2.50] Dilution:





Validated

150828-48 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No : **Depth:** 1.70 - 2.00 11980893 Sample ID :

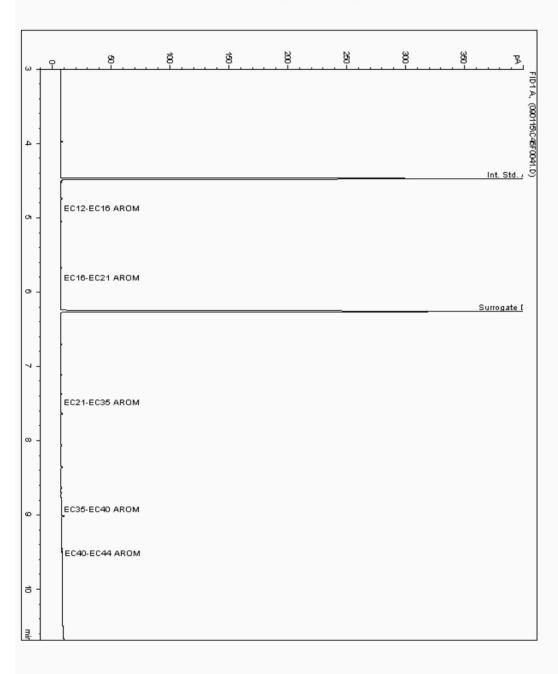
BH213

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

11364075-02/09/15 05:29:55 PM Sample Identity: Date Acquired : Units :

ppb BH213[1.70 - 2.00] Dilution:

->



Validated

SDG: 150828-48 Location: Stag Brewery Job: H\_URS\_WIM-273 **Customer:** AECOM Client Reference:

Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Depth**: 0.60 Sample No : 11984526 Sample ID : BH213

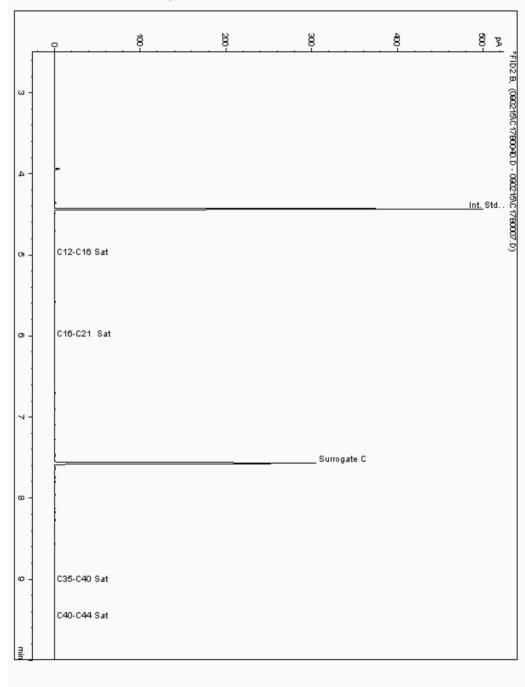
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364051-

Sample Identity: Date Acquired : 03/09/2015 00:27:38 PM

Units ppb Dilution

CF 0.970 Multiplier



Validated

150828-48 SDG: Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Depth**: 0.60 Sample No : 11984654 Sample ID : BH212

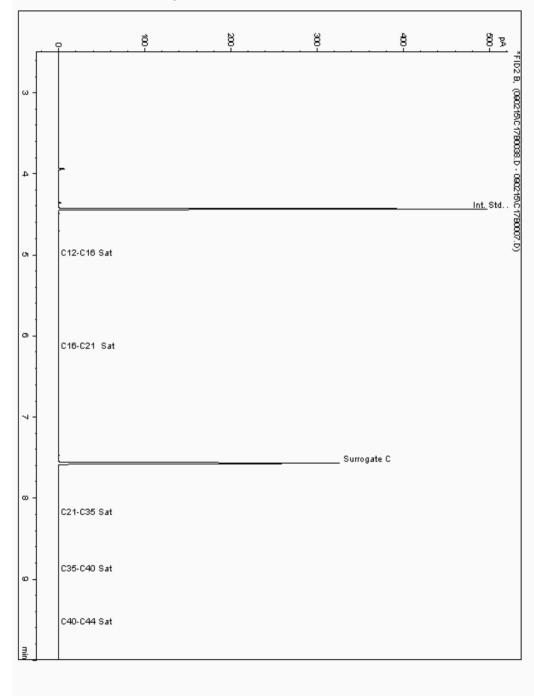
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364026-

Sample Identity: Date Acquired : 02/09/2015 23:47:52 PM

Units ppb Dilution

CF 0.980 Multiplier



Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

SDG: 150828-48 Job:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

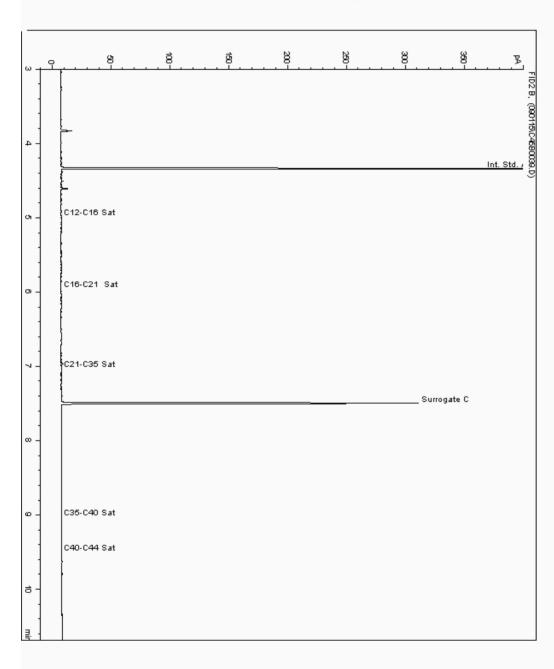
Analysis: EPH CWG (Aromatic) GC (S) **Depth**: 1.80 - 2.50 Sample No : 11980853 Sample ID :

BH212 Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364042-02/09/15 04:50:05 PM Sample Identity: Date Acquired : Units :

ppb BH212[1.80 - 2.50] Dilution:





Validated

SDG: 150828-48 Job: H\_URS\_WIM-273 Client Reference:

Analysis: EPH CWG (Aromatic) GC (S)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

**Depth:** 1.70 - 2.00

329008

Chromatogram

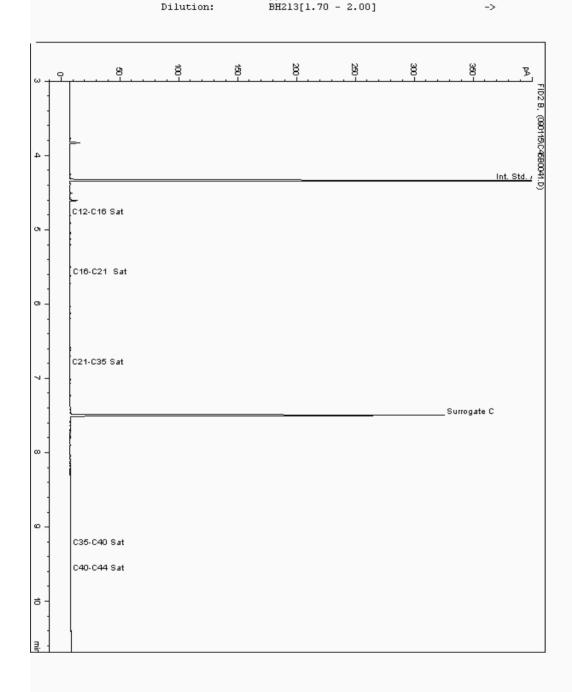
Sample No : 11980893

Sample ID : BH213

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

11364076-02/09/15 05:29:55 PM Sample Identity: Date Acquired : Units :

ppb BH213[1.70 - 2.00] Dilution:



Validated

150828-48 SDG: Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329008

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth**: 0.60 Sample No : 11984526 Sample ID : BH213

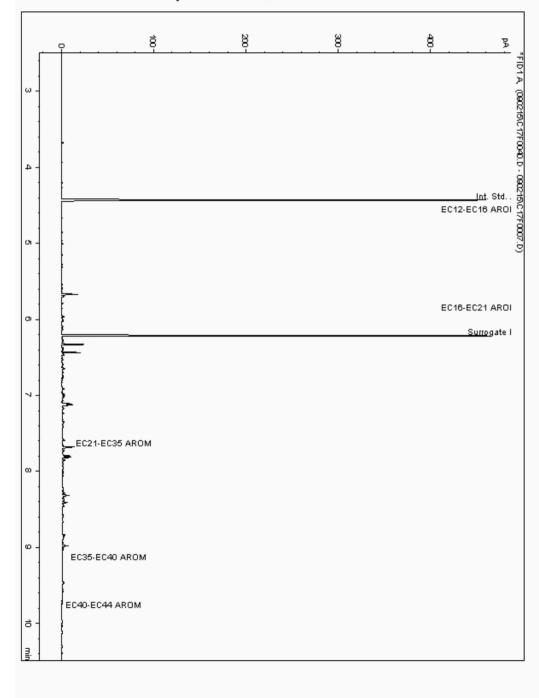
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

11364052-

Sample Identity: Date Acquired : 03/09/2015 00:27:38 PM

Units ppb Dilution

CF 0.970 Multiplier



Validated

329008

 SDG:
 150828-48
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) Sample No: 11984654 Depth: 0.60

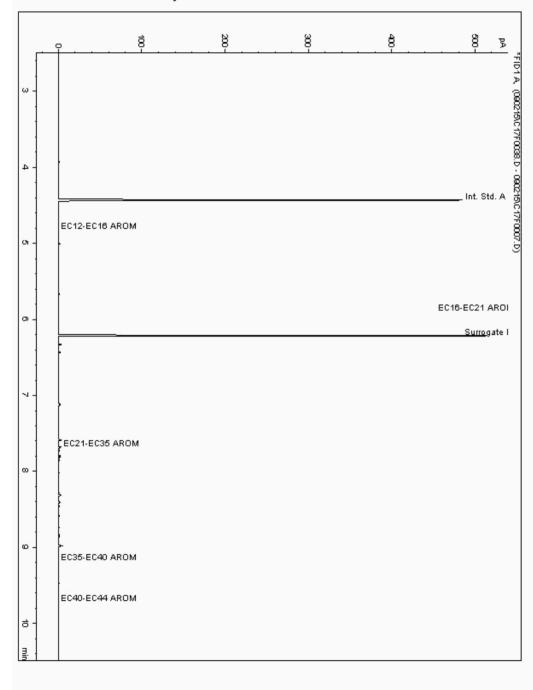
Sample ID : BH212

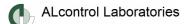
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity: 11364027-Date Accoursed : 02/09/2015 23:47:52 PM

Units : ppb

CF : 1 Multiplier : 0.980





Validated

 SDG:
 150828-48
 Location:
 Stag

 Job:
 H\_URS\_WIM-273
 Customer:
 AEC

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329008

Client Reference:

Chromatogram

Analysis: GRO by GC-FID (S) Sample No: 11991307 Depth: 0.60 Sample ID: 0.60

11991307\_GRO\_S.DATA - Chem 67 FID Benzene Toluene



Analysis: GRO by GC-FID (S)

Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

**SDG**: 150828-48 **Job**: H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

**Depth**: 1.80 - 2.50

329008

Chromatogram

Sample No : 11991314 Sample ID : BH212

BH212 11991314\_GRO\_S.DATA - Chem 67 FID



Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

329008

**SDG:** 150828-48 **Job:** H\_URS\_WIM-273

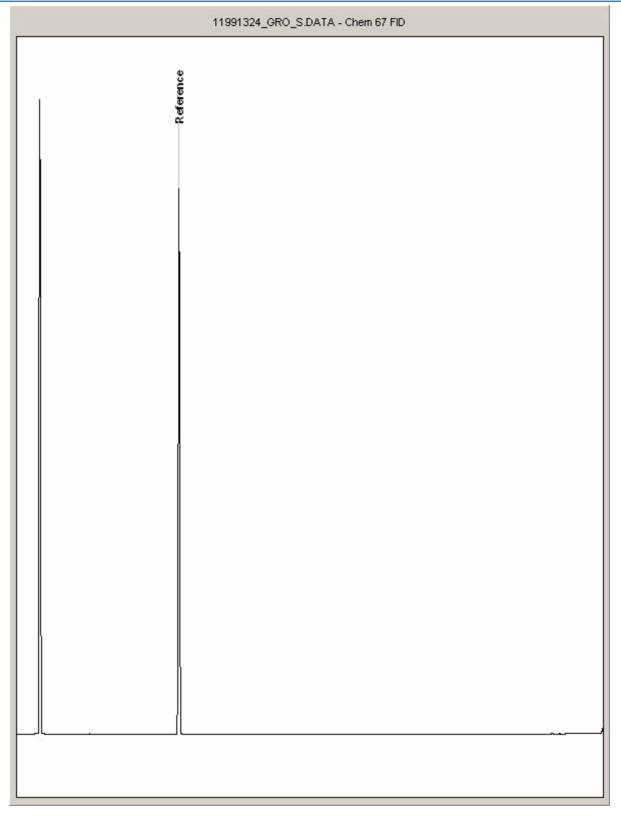
Location: Stag Bre
Customer: AECOM
Attention: Gary Ma

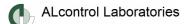
Stag Brewery Order Number:
AECOM Report Number:
Gary Marshall Superseded Report:

Chromatogram

**Analysis:** GRO by GC-FID (S) **Sample No:** 11991324 **Depth:** 1.70 - 2.00

Sample ID : BH213





Validated

SDG: 150828-48 Job:

Analysis: GRO by GC-FID (S)

Client Reference:

H\_URS\_WIM-273

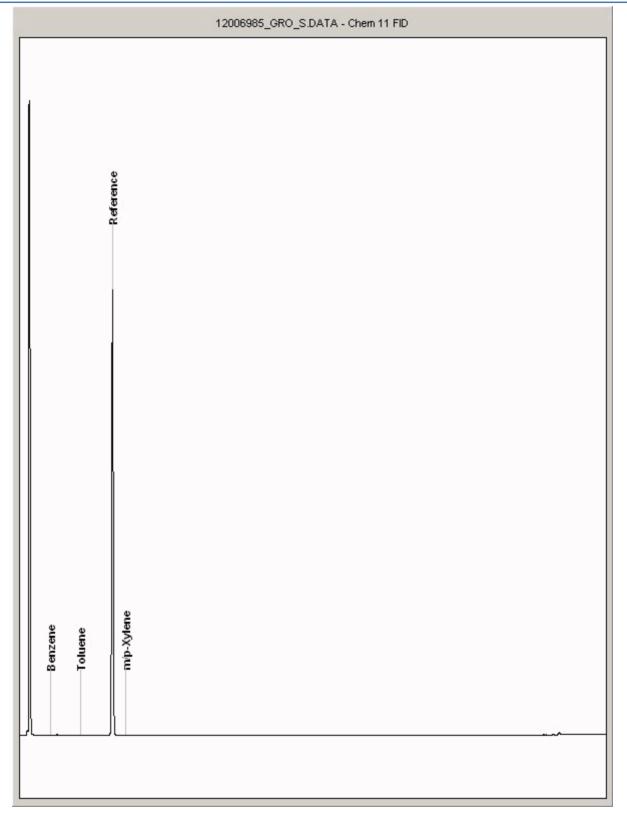
Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Superseded Report:

329008

Chromatogram

 $\textbf{Depth}: \quad 0.60$ Sample No : 12006985

Sample ID : BH212



 150828-48
 Location:
 Stag Brewery
 Order Number:

 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 nce:
 Attention:
 Gary Marshall
 Superseded Report:

Client Reference:

SDG

Job:

Appendix

 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 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

329008

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTALSULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOVIS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	Soxtherm	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID .
EPH (MNOL)	D&C	HEXANEACETONE	END OVEREND	GC:FID
EPH (OLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLA9H	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAFID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONCATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	extraction Method	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
MNERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OOP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT NJECTION	GCMS

<u>Identification of Asbestos in Bulk</u> <u>Materials</u>

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				
Chrysofile	White Asbestos				
Amoste	Brown Asbestos				
Crodobite	Blue Asbestos				
Fibrous Adjindite	-				
Fibrous Anthophylite	-				
Fibrous Trentille	-				

#### 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.

# **ALcontrol Laboratories**

#### **CERTIFICATE OF ANALYSIS**

150828-48 Location: SDG Stag Brewery Order Number: H URS WIM-273 **AECOM** 329008 **Customer:** Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

### **Appendix** General

1. Results are expressed on a dry weight basis (dried at 35°C) 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 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 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 (Hawarden) in-house method of transmitted/polarised Alcontrol Laboratories 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 transmitted/polarised microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Crodobite	Blue Asbestos
Fibrous Adindite	-
Fibrous Anthophylite	-
Fibrous Trendite	=

#### 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.

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:
 09 September 2015

 Customer:
 H\_URS\_WIM

 Sample Delivery Group (SDG):
 150828-57

Your Reference:

Location:Stag BreweryReport No:329023

We received 5 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.

Approved By:

Sonia McWhan
Operations Manager









Validated

 SDG:
 150828-57

 Job:
 H\_URS\_WIM-273

 Client Reference:

Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329023

### **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11978081	BH8A		0.50	26/08/2015
11978082	BH8A		0.90	26/08/2015
11978083	BH8A		3.00 - 3.50	26/08/2015
11978079	ВН9А		0.50	26/08/2015
11978080	ВН9А		2.20 - 3.30	26/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

150828-57 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery Customer: AECOM

Order Number: Report Number:

Superseded Report:

329023

Job: H_URS_V Client Reference:	VIM-273	Custome Attention		ECOM ary Mars	shall	
SOLID Results Legend  X Test	Lab Sample I	No(s)	1.808761.1	11978083	11978079	11978080
No Determination Possible	Custome Sample Refer	BH&A	BH8A	внэд	вн9А	
	AGS Refere	nce				
	Depth (m		0.50	.50	0.50	2.20 - 3.30
	Containe	r	400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4	x	X	x	x
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2	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	×
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
рН	All	NDPs: 0 Tests: 4	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
VOC MS (S)	All	NDPs: 0 Tests: 4	×	x	x	x

Validated

**SDG**: 150828-57 **Job**: H\_URS\_W

H\_URS\_WIM-273

Location: Stag Brewery
Customer: AECOM

Attention:

Order Number: Report Number: Superseded Report:

329023

Gary Marshall Superseded Rep

### **Sample Descriptions**

#### **Grain Sizes**

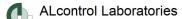
Client Reference:

very fine	<0.0	63mm	fine	0.063mm - 0.1mm	nedium	edium 0.1mm - 2mm		coarse 2mm - 10		· 10mm very coarse		se >10mr
Lab Sample	No(s)	Custom	er Sample R	ef. Depth (m)	Col	our	Descriptio	on (	Grain size	Incl	usions	Inclusions 2
119780	81		BH8A	0.50	Bla	ack	Sand	(	).1 - 2 mm	Sto	ones	None
119780	83		BH8A	3.00 - 3.50	Light	Brown	Sand	(	).1 - 2 mm	Sto	ones	None
119780	79		ВН9А	0.50	Light	Brown	Sand	(	).1 - 2 mm	Sto	ones	None
119780	80		ВН9А	2.20 - 3.30	Dark	Brown	Sandy Cla Loam	у (	).1 - 2 mm	Sto	ones	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.



Validated

150828-57 SDG: Location: Stag Brewery Order Number: Job:

Client Reference:

H\_URS\_WIM-273

Customer: AECOM Attention: Gary Marshall Report Number: Superseded Report:

329023

			Attention. Oa	iry iviai siraii		Ouperscaed Repo	<u> </u>
Results Legend	(	Customer Sample R	BH8A	BH8A	BH9A	BH9A	
# ISO17025 accredited.							
M mCERTS accredited.  aq Aqueous / settled sample.							
diss.filt Dissolved / filtered sample.		Depth (m)	0.50	3.00 - 3.50	0.50	2.20 - 3.30	
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
* Subcontracted test.  ** % recovery of the surrogate standa		Date Sampled	26/08/2015	26/08/2015	26/08/2015	26/08/2015	
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time					
results of individual compounds w		Date Received	28/08/2015 150828-57	28/08/2015	28/08/2015	28/08/2015	
samples aren't corrected for the re-	covery	SDG Ref	11978081	150828-57 11978083	150828-57 11978079	150828-57 11978080	1
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11070001	11070000	11010010	1.070000	
	LOD/Units						
Component							
Moisture Content Ratio (%	%	PM024	17	9.5	7.3	14	
of as received sample)							
Exchangeable Ammonia	<15	TM024	<15	18.4	<15	71.4	
		1101024					
as NH4	mg/kg		M	M	M	M	
Organic Carbon, Total	<0.2 %	TM132	19.1	<0.2	<0.2	0.443	
			М	М	М	М	
рН	1 pH	TM133	8.38	7.66	10.2	11.2	
рп		1101133					
	Units		M	М	M	M	
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	<0.6	<0.6	
,	mg/kg		#	#	#	#	
Outable E9-19		T14400					
Sulphide, Easily liberated	<15	TM180	40.4	<15	<15	252	1
	mg/kg		<b>♦</b> #	<b>♦</b> #	<b>♦</b> #	<b>♦</b> #	<u>                                       </u>
Arsenic	<0.6	TM181	13.7	14.7	16.5	15.5	
	mg/kg						1
			M	M	M	M	
Cadmium	<0.02	TM181	0.344	0.338	0.395	0.378	1
	mg/kg		М	М	М	М	1
Chromium	<0.9	TM181	13.9	19.1	18.9	21.1	
Gill Gill Gill		1 101 10 1					1
	mg/kg		M	М	M	M	
Copper	<1.4	TM181	80.7	5.98	8.36	12	
	mg/kg		М	М	M	М	
Land		TM404					
Lead	<0.7	TM181	41.4	6.89	12.4	23.7	
	mg/kg		M	M	M	M	
Mercury	<0.14	TM181	<0.14	<0.14	<0.14	<0.14	
,	mg/kg						
			M	M	M	M	
Nickel	<0.2	TM181	37.6	18.8	23.6	20.7	
	mg/kg		М	М	M	М	
Selenium	<1 mg/k	g TM181	<1	<1	<1	<1	
Geleriidiri	- i ilig/k	g ilwiioi					
			#	#	#	#	
Zinc	<1.9	TM181	24.4	25.5	34.5	62.4	
	mg/kg		М	М	М	М	
Sulphate, Total	<48	TM221	775	80.9	212	1040	
Sulphate, Total		1 10122 1					
	mg/kg		M	M	M	M	
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Validated

150828-57 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

Customer: AECOM Attention: Gary Marshall

329023 Report Number:

Superseded Report:

PAH by GCMS				•				
Results Legend # ISO17025 accredited.	•	Customer Sample R	BH8A	BH8A	BH9A	ВН9А		
M mCERTS accredited.  aq Aqueous / settled sample.								
diss.filt Dissolved / filtered sample.		Depth (m) Sample Type	0.50 Soil/Solid	3.00 - 3.50 Soil/Solid	0.50 Soil/Solid	2.20 - 3.30 Soil/Solid		
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Date Sampled	26/08/2015	26/08/2015	26/08/2015	26/08/2015		
** % recovery of the surrogate standa check the efficiency of the method.	. The	Sampled Time Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
results of individual compounds wi samples aren't corrected for the re-		SDG Ref	150828-57	150828-57	150828-57	150828-57		
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11978081	11978083	11978079	11978080		
Component	LOD/Units							
Naphthalene-d8 %	%	TM218	122	101	99	95.4		
recovery**								
Acenaphthene-d10 %	%	TM218	124	97.4	98.4	94.8		
recovery** Phenanthrene-d10 %	%	TM218	118	93.6	96.9	93.4		
recovery**	70	1101210	110	93.0	96.9	93.4		
Chrysene-d12 %	%	TM218	99.3	83.8	92.1	84.9		
recovery**								
Perylene-d12 %	%	TM218	96.2	83.6	99	91.4		
recovery**					-			
Naphthalene	<9 µg/k	g TM218	111	<9	<9	32.7		
Acenaphthylene	<12	TM218	M 16	<12	<12	15		
. Sonapharyiono	μg/kg	1101210	M		M	13 M		
Acenaphthene	<8 µg/kg	g TM218	<8	<8	<8	11		
			M		M	М		
Fluorene	<10	TM218	<10	<10	<10	54.6		
Dhananthara	μg/kg	TM040	M		M	M		
Phenanthrene	<15 µg/kg	TM218	215 M	<15 M	<15 M	360 M		
Anthracene	<16	TM218	33.2	<16	<16	105		
	μg/kg		M		М	М		
Fluoranthene	<17	TM218	237	<17	<17	400		
	μg/kg		M		M	M		
Pyrene	<15	TM218	186	<15	16.7	317		
Benz(a)anthracene	μg/kg <14	TM218	128	<14	24.7	M 283		
Deliz(a)antinacene	μg/kg	1101210	126 M		24.7 M	263 M		
Chrysene	<10	TM218	137	<10	<10	218		
·	μg/kg		М	М	М	М		
Benzo(b)fluoranthene	<15	TM218	193	<15	24.6	306		
Danie (IVII) and the are	μg/kg	TM040	M		M	M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	59.9 M	<14 M	<14 M	108 M		
Benzo(a)pyrene	<15	TM218	122	<15	18.2	259		
( // /	μg/kg		М		М	М		
Indeno(1,2,3-cd)pyrene	<18	TM218	76.6	<18	<18	121		
<b>5</b> 11 (1) (1	μg/kg		M		M	M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	40.4		
Benzo(g,h,i)perylene	μg/kg <24	TM218	M 108	M <24	M <24	M 144		
20.120(g,,./po. ).0.10	μg/kg		M		 M	м		
PAH, Total Detected	<118	TM218	1620	<118	<118	2780		
USEPA 16	μg/kg							
		+		1				
		+		+			-	
				-				
		+						
	I .	1		1			1	

Validated

150828-57 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273

Client Reference:

Customer: AECOM Attention: Gary Marshall

Report Number: Superseded Report:

329023

Olletti Neterence.			Attention.	ary Marshall		oupersoucu repe		
TPH CWG (S)								
Results Legend	Cu	ustomer Sample R	BH8A	BH8A	BH9A	BH9A		
# ISO17025 accredited.								
M mCERTS accredited.  aq Aqueous / settled sample.								
diss.filt Dissolved / filtered sample.		Depth (m)	0.50	3.00 - 3.50	0.50	2.20 - 3.30		
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
* Subcontracted test.  ** % recovery of the surrogate standa	and to	Date Sampled	26/08/2015	26/08/2015	26/08/2015	26/08/2015		
check the efficiency of the method		Sampled Time						
results of individual compounds w		Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
samples aren't corrected for the re	covery	SDG Ref	150828-57 11978081	150828-57 11978083	150828-57 11978079	150828-57 11978080		
(F) Trigger breach confirmed		Lab Sample No.(s)	11970001	11970003	11970079	11970000		
1-5&+§@ Sample deviation (see appendix)		AGS Reference						
Component	LOD/Units	Method						
GRO Surrogate %	%	TM089	72	107	113	97		
recovery**								
GRO TOT (Moisture	<44	TM089	<44	<44	178	106		
Corrected)	μg/kg		M	N	I M	M		
Methyl tertiary butyl ether	<5 μg/kg	TM089	<5	<5	<5	<5		
	√5 μg/kg	110009						
(MTBE)			M	IV	I M	M		
Benzene	<10	TM089	<10	<10	<10	<10		
	μg/kg		M	N	М	М		
Toluene	<2 µg/kg	TM089	2.42	<2	<2	<2		
			M	N	I M	M		
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3	<3		
Laryidenzene	-5 µg/kg	i ivious						
			M			M		
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6	<6		
	.5 5	1	M			М		
. W. Israe	.0 "	T14000						
o-Xylene	<3 µg/kg	TM089	<3	<3	<3	<3		
		1	M	N	I М	M		
sum of detected mpo	<9 µg/kg	TM089	<9	<9	<9	<9		
	<9 µg/kg	110009	<b>&lt;</b> 9	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \		
xylene by GC								
sum of detected BTEX by	<24	TM089	<24	<24	<24	<24		
GC	μg/kg							
Aliphatics >C5-C6	<10	TM089	<10	<10	<10	<10		
	μg/kg							
Aliabetics > C6 C9		TM089	14.5	<10	<10	19.7		
Aliphatics >C6-C8	<10	110089	14.5	<10	<10	19.7		
	μg/kg							
Aliphatics >C8-C10	<10	TM089	10.9	<10	11.9	22		
7 inprination * Co o 10		1111000	10.0	1	11.0			
	μg/kg							
Aliphatics >C10-C12	<10	TM089	<10	<10	87.4	25.5		
	μg/kg							
45 1 5 200 040		T14470		100	100	4000		
Aliphatics >C12-C16	<100	TM173	555	<100	<100	1290		
	μg/kg							
Aliphatics >C16-C21	<100	TM173	1230	<100	<100	3060		
Aliphatics >C10-C21		1101173	1230	100	100	3000		
	μg/kg							
Aliphatics >C21-C35	<100	TM173	5830	<100	<100	6690		
'	μg/kg							
				100				
Aliphatics >C35-C44	<100	TM173	567	<100	<100	<100		
	μg/kg							
Total Aliphatics >C12-C44	<100	TM173	8180	<100	<100	11000		
10tal Aliphatics /012-044		TIVIT/3	0100	<b>\100</b>	100	11000		
	μg/kg							
Aromatics >EC5-EC7	<10	TM089	<10	<10	<10	<10		
	μg/kg	1						
		T1105			1			
Aromatics >EC7-EC8	<10	TM089	<10	<10	<10	<10		
	μg/kg	1						
Aromatics >EC8-EC10	<10	TM089	<10	<10	<10	15.1		
/ 40matics / LOO-EO 10		1 IVIUOS	~10	10	1	13.1		
	μg/kg							
Aromatics >EC10-EC12	<10	TM089	<10	<10	58.3	17.4		
	μg/kg	"	-	1				
==::				18:	125			
Aromatics >EC12-EC16	<100	TM173	<100	<100	<100	2810		
	μg/kg	1						
Aromatics >EC16-EC21	<100	TM173	<100	<100	<100	19400		
AIUIIIalius >EU 10-EU21		1 IVI 1 / 3	< 100	<100	100	19400		
	μg/kg							
Aromatics >EC21-EC35	<100	TM173	<100	<100	<100	66300		
			100	1100				
	μg/kg	+						
Aromatics >EC35-EC44	<100	TM173	<100	<100	<100	16400		
	μg/kg	1						
Aramatics > FO40 FO44		TN 44 70	-100	-400	-400	5000	<del>                                     </del>	
Aromatics >EC40-EC44	<100	TM173	<100	<100	<100	5980		
	μg/kg							
Total Aromatics	<100	TM173	<100	<100	<100	105000		
		1101173	<b>~100</b>	100	100	103000		
>EC12-EC44	μg/kg							
Total Aliphatics &	<100	TM173	8220	<100	111	116000		
Aromatics >C5-C44	μg/kg	1						
	~9 <sup>,</sup> 1\9	+						
		1						
		1						
	l	1					[	

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329023

150828-57 Stag Brewery SDG: Location: Order Number: Job: H\_URS\_WIM-273

Client Reference:

Customer: Attention:

AECOM Report Number: Gary Marshall Superseded Report:

Ollent Reference.			Attention.	Oa	i y iviai si iaii			Ouperseuc	u itcpt	J1 C.	
VOC MS (S)											
Results Legend		Customer Sample R	BH8A		BH8A		BH9A	BH9A			
# ISO17025 accredited.  M mCERTS accredited.											
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50		3.00 - 3.50		0.50	2.20 - 3.3	80		
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid		Soil/Solid		Soil/Solid	Soil/Soli	d		
* Subcontracted test.  ** % recovery of the surrogate stand	lard to	Date Sampled Sampled Time	26/08/2015		26/08/2015		26/08/2015	26/08/20	15		
check the efficiency of the method results of individual compounds w		Date Received	28/08/2015		28/08/2015		28/08/2015	28/08/20			
samples aren't corrected for the re		SDG Ref Lab Sample No.(s)	150828-57 11978081		150828-57 11978083		150828-57 11978079	150828-5 1197808			
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		AGS Reference									
Component	LOD/Unit	s Method									
Dibromofluoromethane**	%	TM116	114		109		120	112			
				_							
Toluene-d8**	%	TM116	102		101		102	102			
				_							
4-Bromofluorobenzene**	%	TM116	88.1		95		96.1	92.2			
Dieblorediffueremethene	∠6α/le	g TM116	<60	$\dashv$	<6		<6	<6		<del>                                     </del>	
Dichlorodifluoromethane	<6 µg/k	g ilviilo		м	<0	М		M ~ ~ O	М		
Chloromethane	<7 μg/k	g TM116	<70	IVI	<7	IVI	<7	<7	IVI		
omerement of	l r pg/n	9   1111110		#	•	#		#	#		
Vinyl Chloride	<6 µg/k	g TM116	<60	"	<6		<6	<6			
1		~	1	М		М		и	М		
Bromomethane	<10	TM116	<100		<10		<10	<10			
	μg/kg		I	М		М		И	M		
Chloroethane	<10	TM116	<100		<10		<10	<10			
	μg/kg			М		М		И	M		
Trichlorofluorormethane	<6 µg/k	g TM116	<60		<6		<6	<6			
1.1 Diable as albana	-110	TM44C		М	-10	M		M	M	<del>                                     </del>	
1,1-Dichloroethene	<10 µg/kg	TM116	<100	_	<10	щ	<10	<b>~10</b>	ш		
Carbon Disulphide	49/kg <7 μg/k	g TM116	<70	#	<7	#	<7	# <7	#	<del>                                     </del>	
Carbon Bisaipinae	γ μg/K	9   1111110		м	-1	М		и ''	М		
Dichloromethane	<10	TM116	<100		<10		<10	<10			
	μg/kg			#		#		#	#		
Methyl Tertiary Butyl Ether	<10	TM116	<100		<10		<10	<10			
	μg/kg		l	М		М		И	M		
trans-1,2-Dichloroethene	<10	TM116	<100		<10		<10	<10			
	μg/kg			М		М		М	M		
1,1-Dichloroethane	<8 µg/k	g TM116	<80		<8		<8	<8			
cis-1,2-Dichloroethene	<6 µg/k	g TM116	<60	М	<6	М	<6	<6 <6	M	<del>                                     </del>	
dis 1,2 Didilioroctricite	io μg/it	9   1111110		м		М		И	М		
2,2-Dichloropropane	<10	TM116	<100		<10		<10	<10			
	μg/kg		J	М		М		м	М		
Bromochloromethane	<10	TM116	<100		<10		<10	<10			
	μg/kg			М		М		И	M		
Chloroform	<8 µg/k	g TM116	<80		<8		<8	<8			
1,1,1-Trichloroethane	<7 μg/k	g TM116	<70	М	<7	М	<7	√/ <7	M		
1, 1, 1-THCHIOTOETHANE	γ μg/k	g   TWITTO		м	~1	М		м - '	М		
1,1-Dichloropropene	<10	TM116	<100	IVI	<10	171	<10	<10	101		
' ' '	μg/kg		1	М		М		м	М		
Carbontetrachloride	<10	TM116	<100		<10		<10	<10			
	μg/kg			М		М		И	M		
1,2-Dichloroethane	<5 μg/k	g TM116	<50		<5		<5	<5			
Benzene	<9 µg/k	g TM116	<90	М	<9	М	<9	VI <9	M	-	
Belizerie	-9 μg/k	g HWITTO		м	<b>\9</b>	М		И	М		
Trichloroethene	<9 µg/k	g TM116	<90	IVI	<9	171	<9	<9	101		
		~		#		#		#	#		
1,2-Dichloropropane	<10	TM116	<100		<10		<10	<10			
	μg/kg			М		М		И	M		
Dibromomethane	<9 µg/k	g TM116	<90		<9		<9	<9			
	- "	=		М		М		М	M		
Bromodichloromethane	<7 μg/k	g TM116	<70		<7	N 4	<7	<7			
cis-1,3-Dichloropropene	<10	TM116	<100	М	<10	М	<10	VI <10	M	<del>                                     </del>	+
Gio-1,0-Dictilotoptopene	µg/kg	TIVITIO		м	~10	М		M ~10	М		
Toluene	<7 μg/k	g TM116	<70		<7		<7	<7	141	<u> </u>	<del>                                     </del>
				М		М		И	М	<u> </u>	<u> </u>
trans-1,3-Dichloropropene	<10	TM116	<100	7	<10		<10	<10			
	μg/kg			_						<del></del>	<del>                                     </del>
1,1,2-Trichloroethane	<10	TM116	<100		<10		<10	<10			

μg/kg

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Gary Marshall

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Superseded Report:

329023

150828-57 Stag Brewery SDG Location: Order Number: Job: H\_URS\_WIM-273 **Customer: AECOM** Report Number:

Client Reference: Attention:

VOC MS (S) Customer Sample R BH8A BH8A ВН9А BH9A ISO17025 accredited.

mCERTS accredited.

Aqueous / settled sampl
Dissolved / filtered sampl aq diss.filt Depth (m) 3.00 - 3.50 2.20 - 3.30 0.50 0.50 Sample Type Soil/Solid 26/08/2015 Soil/Solid 26/08/2015 tot.unfilt Total / unfiltered sample 26/08/2015 26/08/2015 Subcontracted test Date Sampled % 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 28/08/2015 28/08/2015 28/08/2015 28/08/2015 Date Received 150828-57 150828-57 150828-57 150828-57 SDG Ref 11978081 11978083 11978079 11978080 nple No.(s) (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix) AGS Reference Component LOD/Units Method TM116 1,3-Dichloropropane <7 µg/kg <70 <7 <7 <7 Μ M Μ M Tetrachloroethene <5 µg/kg TM116 <50 <5 <5 <5 М M M M Dibromochloromethane <10 TM116 <100 <10 <10 <10 µg/kg M M M M 1,2-Dibromoethane <10 TM116 <100 <10 <10 <10 µg/kg Μ Μ Μ Μ <5 Chlorobenzene <5 µg/kg TM116 <50 <5 <5 Μ Μ Μ Μ 1,1,1,2-Tetrachloroethane <10 TM116 <100 <10 <10 <10 μg/kg М Μ Μ Μ Ethylbenzene TM116 <40 <4 <4 <4 <4 µg/kg Μ Μ Μ Μ TM116 <100 <10 <10 <10 p/m-Xylene <10 µg/kg # # # # o-Xylene <10 TM116 <100 <10 <10 <10 µg/kg М М Μ M Styrene <10 TM116 <100 <10 <10 <10 μg/kg # Bromoform <10 TM116 <100 <10 <10 <10 μg/kg M M M M Isopropylbenzene TM116 <50 <5 <5 <5 <5 µg/kg # # # # 1,1,2,2-Tetrachloroethane TM116 <100 <10 <10 <10 <10 µg/kg Μ М Μ М 1,2,3-Trichloropropane <16 TM116 <160 <16 <16 <16 μg/kg Μ Μ Μ Μ TM116 <100 <10 <10 <10 Bromobenzene <10 µg/kg Μ М Μ Μ <100 <10 <10 Propylbenzene TM116 <10 <10 μg/kg Μ Μ Μ Μ 2-Chlorotoluene TM116 <90 <9 <9 <9 <9 µg/kg М М М M 1,3,5-Trimethylbenzene <8 µg/kg TM116 <80 <8 <8 <8 Μ M M M 4-Chlorotoluene <10 TM116 <100 <10 <10 <10 μg/kg Μ M M M tert-Butylbenzene <14 TM116 <140 <14 <14 <14 µg/kg Μ M M M 1,2,4-Trimethylbenzene TM116 <90 <9 <9 <9 <9 µg/kg # # # # TM116 <100 <10 <10 <10 sec-Butylbenzene <10 µg/kg Μ Μ Μ Μ <10 TM116 <100 <10 <10 <10 4-Isopropyltoluene µg/kg Μ Μ Μ М TM116 <80 <8 <8 1.3-Dichlorobenzene <8 <8 µg/kg Μ Μ Μ Μ 1,4-Dichlorobenzene TM116 <50 <5 <5 <5 <5 µg/kg M M M Μ n-Butylbenzene TM116 <110 <11 <11 <11 <11 µg/kg 1,2-Dichlorobenzene <10 TM116 <100 <10 <10 <10 µg/kg M M Μ M 1,2-Dibromo-3-chloroprop <14 TM116 <140 <14 <14 <14 μg/kg ane M M M M Tert-amyl methyl ether TM116 <100 <10 <10 <10 <10 µg/kg # # # # TM116 <200 <20 <20 <20 1,2,4-Trichlorobenzene <20 µg/kg Hexachlorobutadiene <200 <20 TM116 <20 <20 <20 µg/kg Naphthalene <13 TM116 <130 <13 <13 <13 µg/kg Μ Μ Μ



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329023

Superseded Report:

Stag Brewery 150828-57 Location: SDG: Order Number: H\_URS\_WIM-273 Job: **Customer:** AECOM Report Number:

Attention: Gary Marshall Client Reference:

VOC MS (S)

Customer Sample R BH8A BH8A ВН9А BH9A Results Legend
ISO17025 accredited.
mCERTS accredited.
Aqueous / settled sample.
Dissolved / filtered sample.
Total / unfiltered sample. aq diss.filt tot.unfilt 2.20 - 3.30 Depth (m) 3.00 - 3.50 0.50 0.50 Sample Type Soil/Solid 26/08/2015 Soil/Solid 26/08/2015 Soil/Solid 26/08/2015 Soil/Solid 26/08/2015 tot.unfit 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 Trigger breach confirmed

1-58+\$@ Sample deviation (see appendix) Date Sampled Sampled Time 28/08/2015 28/08/2015 28/08/2015 28/08/2015 Date Received 150828-57 11978081 150828-57 150828-57 150828-57 SDG Ref b Sample No.(s) AGS Reference 11978083 11978079 11978080 Component LOD/Units Method 1,2,3-Trichlorobenzene TM116 <200 <20 <20 <20 <20 μg/kg #



SDG:

150828-57

**CERTIFICATE OF ANALYSIS** 

Validated

Order Number:

329023

H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number:

Location:

Client Reference: Attention: Gary Marshall Superseded Report:

# **Asbestos Identification - Soil**

Stag Brewery

		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	BH8A 0.50 SOLID 26/08/2015 00:00:00 01/09/2015 12:03:31 150828-57 11978081 TM048	4/9/15	Kevin Hughes	-	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	BH9A 0.50 SOLID 26/08/2015 00:00:00 01/09/2015 11:54:18 150828-57 11978079 TM048	4/9/15	Kevin Hughes	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

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Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

**SDG:** 150828-57 **Job:** H\_URS\_WIM-273 Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

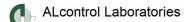
Order Number:
Report Number: 32:
Superseded Report:

329023

# **Table of Results - Appendix**

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	Surrogat Correcte
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		
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		
TM243		Mixed Anions In Soils By Kone		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



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 SDG:
 150828-57
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

# **Test Completion Dates**

<u> </u>			
11978081	11978083	11978079	11978080
BH8A	BH8A	BH9A	BH9A
0.50	3.00 - 3.50	0.50	2.20 - 3.30
SOLID	SOLID	SOLID	SOLID
09-Sep-2015	08-Sep-2015	09-Sep-2015	08-Sep-2015
04-Sep-2015		04-Sep-2015	
08-Sep-2015	07-Sep-2015	08-Sep-2015	07-Sep-2015
04-Sep-2015	03-Sep-2015	04-Sep-2015	03-Sep-2015
04-Sep-2015	03-Sep-2015	04-Sep-2015	03-Sep-2015
02-Sep-2015	02-Sep-2015	03-Sep-2015	02-Sep-2015
07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015
04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015
03-Sep-2015	03-Sep-2015	08-Sep-2015	04-Sep-2015
08-Sep-2015	08-Sep-2015	08-Sep-2015	04-Sep-2015
01-Sep-2015	29-Aug-2015	01-Sep-2015	29-Aug-2015
07-Sep-2015	03-Sep-2015	07-Sep-2015	03-Sep-2015
07-Sep-2015	07-Sep-2015	07-Sep-2015	04-Sep-2015
04-Sep-2015	03-Sep-2015	04-Sep-2015	03-Sep-2015
03-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015
	0.50 SOLID 09-Sep-2015 04-Sep-2015 04-Sep-2015 04-Sep-2015 07-Sep-2015 04-Sep-2015 03-Sep-2015 03-Sep-2015 03-Sep-2015 07-Sep-2015 07-Sep-2015 07-Sep-2015 07-Sep-2015	BH8A         BH8A           0.50         3.00 - 3.50           SOLID         SOLID           09-Sep-2015         08-Sep-2015           04-Sep-2015         07-Sep-2015           04-Sep-2015         03-Sep-2015           04-Sep-2015         02-Sep-2015           07-Sep-2015         07-Sep-2015           04-Sep-2015         04-Sep-2015           04-Sep-2015         03-Sep-2015           03-Sep-2015         03-Sep-2015           04-Sep-2015         08-Sep-2015           08-Sep-2015         08-Sep-2015           07-Sep-2015         03-Sep-2015           07-Sep-2015         03-Sep-2015           07-Sep-2015         07-Sep-2015           04-Sep-2015         03-Sep-2015           04-Sep-2015         03-Sep-2015	BH8A         BH8A         BH9A           0.50         3.00 - 3.50         0.50           SOLID         SOLID         SOLID           09-Sep-2015         08-Sep-2015         09-Sep-2015           04-Sep-2015         04-Sep-2015         08-Sep-2015           04-Sep-2015         03-Sep-2015         04-Sep-2015           04-Sep-2015         03-Sep-2015         04-Sep-2015           02-Sep-2015         03-Sep-2015         03-Sep-2015           04-Sep-2015         07-Sep-2015         07-Sep-2015           04-Sep-2015         04-Sep-2015         04-Sep-2015           04-Sep-2015         04-Sep-2015         04-Sep-2015           03-Sep-2015         03-Sep-2015         08-Sep-2015           04-Sep-2015         03-Sep-2015         03-Sep-2015           07-Sep-2015         03-Sep-2015         07-Sep-2015           07-Sep-2015         07-Sep-2015         07-Sep-2015           04-Sep-2015         03-Sep-2015         07-Sep-2015           04-Sep-2015         03-Sep-2015         04-Sep-2015

09:10:12 09/09/2015

Validated

**SDG**: 150828-57 **Job**: H\_URS\_W

Client Reference:

 150828-57
 Location:
 Stag Brewery

 H\_URS\_WIM-273
 Customer:
 AECOM

 Attention:
 Gary Marshall

Order Number: Report Number: Superseded Report:

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### **ASSOCIATED AQC DATA**

#### Ammonium Soil by Titration

Component	Method Code	QC 1292	QC 1205
Exchangeable Ammonium as NH4	TM024	<b>86.07</b> 79.30 : 104.61	<b>98.01</b> 79.30 : 104.61

#### Easily Liberated Sulphide

Component Method Code		QC 1262	QC 1219	
E	asily Liberated Sulphide	TM180	<b>88.38</b> 49.14 : 123.89	<b>93.21</b> 49.14 : 123.89

#### EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1182	QC 1194	QC 1146
Total Aliphatics	TM173	85.21	87.08	90.21
>C12-C35		62.50 : 112.50	70.80 : 111.51	71.67 : 116.67

#### EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1182	QC 1194	QC 1146
Total Aromatics	TM173	82.67	82.67	83.33
>EC12-EC35		60.62 : 126.95	65.21 : 121.32	59.92 : 107.95

#### GRO by GC-FID (S)

Component	Method Code	QC 1105	QC 1173
Benzene by GC (Moisture Corrected)	TM089	<b>83.5</b> 79.00 : 121.00	<b>95.0</b> 76.33 : 121.87
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>83.5</b> 79.00 : 121.00	<b>99.0</b> 75.73 : 123.83
m & p Xylene by GC (Moisture Corrected)	TM089	<b>83.75</b> 79.00 : 121.00	<b>97.5</b> 75.52 : 120.32
MTBE GC-FID (Moisture Corrected)	TM089	<b>85.5</b> 74.48 : 125.29	<b>94.0</b> 77.89 : 119.70
o Xylene by GC (Moisture Corrected)	TM089	<b>83.5</b> 79.00 : 121.00	<b>93.5</b> 74.15 : 124.59
QC	TM089	<b>112.68</b> 73.70 : 123.60	<b>99.2</b> 62.31 : 122.61
Toluene by GC (Moisture Corrected)	TM089	<b>83.5</b> 79.00 : 121.00	<b>93.5</b> 77.91 : 122.33

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**SDG**: 150828-57 **Job**: H\_URS\_WIM-273

Location: Stag Brewery
Customer: AECOM

Attention:

Order Number: Report Number: Superseded Report:

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#### Hexavalent Chromium (s)

Client Reference:

Component	Method Code	QC 1299	QC 1285
Hexavalent Chromium	TM151	100.0	102.0
		92.20 : 106.60	92.20 : 106.60

#### Metals in solid samples by OES

Component	Method Code	QC 1272	QC 1286	QC 1235
Aluminium	TM181	<b>108.46</b> 86.49 : 129.71	<b>109.23</b> 86.49 : 129.71	<b>98.46</b> 86.49 : 129.71
Antimony	TM181	<b>98.92</b> 77.50 : 122.50	<b>98.21</b> 77.50 : 122.50	<b>97.13</b> 77.50 : 122.50
Arsenic	TM181	<b>94.69</b> 82.63 : 117.37	<b>93.81</b> 82.63 : 117.37	<b>92.92</b> 82.63 : 117.37
Barium	TM181	<b>99.25</b> 79.45 : 120.55	<b>99.25</b> 79.45 : 120.55	<b>95.49</b> 79.45 : 120.55
Beryllium	TM181	<b>101.09</b> 85.92 : 121.27	<b>101.24</b> 85.92 : 121.27	<b>100.47</b> 85.92 : 121.27
Boron	TM181	<b>112.21</b> 77.41 : 143.83	<b>115.27</b> 77.41 : 143.83	<b>99.24</b> 77.41 : 143.83
Cadmium	TM181	<b>97.65</b> 81.95 : 118.05	<b>97.31</b> 81.95 : 118.05	<b>96.47</b> 81.95 : 118.05
Chromium	TM181	<b>109.41</b> 81.29 : 118.71	<b>99.22</b> 81.29 : 118.71	<b>93.73</b> 81.29 : 118.71
Cobalt	TM181	<b>97.83</b> 83.86 : 116.14	<b>97.17</b> 83.86 : 116.14	<b>96.5</b> 83.86 : 116.14
Copper	TM181	<b>100.68</b> 78.57 : 121.43	<b>100.14</b> 78.57 : 121.43	<b>99.46</b> 78.57 : 121.43
Iron	TM181	<b>102.76</b> 87.50 : 122.82	<b>100.69</b> 87.50 : 122.82	<b>97.24</b> 87.50 : 122.82
Lead	TM181	<b>95.28</b> 74.18 : 117.25	<b>93.7</b> 74.18 : 117.25	<b>94.09</b> 74.18 : 117.25
Manganese	TM181	<b>100.0</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09	<b>100.0</b> 82.91 : 117.09
Mercury	TM181	<b>94.47</b> 81.99 : 118.01	<b>93.97</b> 81.99 : 118.01	<b>92.46</b> 81.99 : 118.01
Molybdenum	TM181	<b>100.64</b> 81.45 : 118.55	<b>94.75</b> 81.45 : 118.55	<b>93.79</b> 81.45 : 118.55
Nickel	TM181	<b>109.88</b> 79.64 : 120.36	<b>98.26</b> 79.64 : 120.36	<b>95.93</b> 79.64 : 120.36
Phosphorus	TM181	<b>99.11</b> 81.03 : 118.97	<b>97.91</b> 81.03 : 118.97	<b>98.21</b> 81.03 : 118.97
Selenium	TM181	<b>106.5</b> 87.05 : 121.93	<b>107.01</b> 87.05 : 121.93	<b>108.21</b> 87.05 : 121.93
Strontium	TM181	<b>102.3</b> 83.64 : 116.36	<b>102.68</b> 83.64 : 116.36	<b>96.55</b> 83.64 : 116.36
Thallium	TM181	<b>92.21</b> 77.50 : 122.50	<b>90.55</b> 77.50 : 122.50	<b>88.72</b> 77.50 : 122.50
Tin	TM181	<b>94.35</b> 78.30 : 113.98	<b>93.69</b> 78.30 : 113.98	<b>92.69</b> 78.30 : 113.98
Titanium	TM181	<b>103.91</b> 71.02 : 128.98	<b>103.13</b> 71.02 : 128.98	<b>97.66</b> 71.02 : 128.98

Validated

150828-57 SDG: Location: Stag Brewery H\_URS\_WIM-273 Job:

AECOM **Customer:** Attention: Gary Marshall Order Number: 329023 Report Number: Superseded Report:

Metals in solid samples by OES

		QC 1272	QC 1286	QC 1235
Vanadium	TM181	<b>97.06</b> 86.61 : 113.39	<b>96.76</b> 86.61 : 113.39	<b>93.53</b> 86.61 : 113.39
Zinc	TM181	<b>100.97</b> 89.82 : 114.54	<b>100.32</b> 89.82 : 114.54	<b>98.05</b> 89.82 : 114.54

### PAH by GCMS

Client Reference:

Component	Method Code	QC 1191	QC 1196	QC 1106	QC 1137
Acenaphthene	TM218	<b>85.5</b> 70.00 : 130.00	<b>89.5</b> 78.75 : 116.25	<b>91.5</b> 78.84 : 114.36	<b>96.0</b> 78.84 : 114.36
Acenaphthylene	TM218	<b>78.0</b> 70.00 : 130.00	<b>85.5</b> 76.45 : 110.05	<b>85.5</b> 65.50 : 119.50	<b>90.0</b> 65.50 : 119.50
Anthracene	TM218	<b>79.0</b> 70.00 : 130.00	<b>89.0</b> 67.15 : 124.45	<b>91.0</b> 75.54 : 110.88	<b>97.5</b> 75.54 : 110.88
Benz(a)anthracene	TM218	<b>81.0</b> 70.00 : 130.00	<b>97.5</b> 82.00 : 127.00	<b>97.5</b> 78.02 : 127.38	<b>104.0</b> 78.02 : 127.38
Benzo(a)pyrene	TM218	<b>80.0</b> 70.00 : 130.00	<b>99.5</b> 75.60 : 124.20	<b>99.5</b> 79.21 : 128.01	<b>105.5</b> 79.21 : 128.01
Benzo(b)fluoranthene	TM218	<b>78.0</b> 70.00 : 130.00	<b>99.0</b> 81.20 : 121.77	<b>96.0</b> 86.21 : 131.42	<b>101.5</b> 86.21 : 131.42
Benzo(ghi)perylene	TM218	<b>83.0</b> 70.00 : 130.00	<b>96.0</b> 77.49 : 119.12	<b>95.0</b> 80.11 : 120.52	<b>100.0</b> 80.11 : 120.52
Benzo(k)fluoranthene	TM218	<b>79.0</b> 70.00 : 130.00	<b>96.5</b> 83.50 : 116.50	<b>97.0</b> 78.77 : 120.72	<b>103.0</b> 78.77 : 120.72
Chrysene	TM218	<b>77.5</b> 70.00 : 130.00	<b>95.5</b> 78.35 : 114.42	<b>94.5</b> 78.77 : 118.99	<b>100.5</b> 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	<b>79.0</b> 70.00 : 130.00	<b>95.0</b> 77.15 : 122.45	<b>93.5</b> 76.39 : 122.63	<b>100.0</b> 76.39 : 122.63
Fluoranthene	TM218	<b>83.5</b> 70.00 : 130.00	<b>92.5</b> 79.08 : 114.40	<b>95.0</b> 77.25 : 117.75	<b>101.0</b> 77.25 : 117.75
Fluorene	TM218	<b>86.0</b> 70.00 : 130.00	<b>91.5</b> 79.03 : 113.38	<b>95.5</b> 79.28 : 117.35	<b>98.5</b> 79.28 : 117.35
Indeno(123cd)pyrene	TM218	<b>78.5</b> 70.00 : 130.00	<b>96.5</b> 75.65 : 125.15	<b>93.0</b> 78.87 : 122.50	<b>99.0</b> 78.87 : 122.50
Naphthalene	TM218	<b>91.5</b> 70.00 : 130.00	<b>92.5</b> 77.25 : 112.60	<b>93.0</b> 74.75 : 118.25	<b>95.0</b> 74.75 : 118.25
Phenanthrene	TM218	<b>84.0</b> 70.00 : 130.00	<b>92.0</b> 78.25 : 115.44	<b>95.0</b> 78.61 : 113.98	<b>100.5</b> 78.61 : 113.98
Pyrene	TM218	<b>82.5</b> 70.00 : 130.00	<b>91.0</b> 78.07 : 114.06	<b>94.0</b> 76.15 : 115.26	<b>99.5</b> 76.15 : 115.26

	Component	Method Code	QC 1208	QC 1218	QC 1227	QC 1293
Ì	pН	TM133	100.13	100.25	100.5	100.63
			97.19 : 102.81	97.19 : 102.81	97.19 : 102.81	97.19 : 102.81

#### **Total Organic Carbon**

Validated

150828-57 SDG: Location: Stag Brewery Job: H\_URS\_WIM-273

AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329023

Total Organic Carbon

Client Reference:

Component	Method Code	QC 1254	QC 1245
Total Organic Carbon	TM132	100.46	98.17
		88.82 : 111.18	89.40 : 103.09

#### Total Sulphate

Component	Method Code	QC 1218	QC 1273
Total Sulphate	TM221	<b>115.15</b> 78.49 : 121.51	<b>103.79</b> 78.49 : 121.51

### VOC MS (S)

Component	Method Code	QC 1128	QC 1175
1,1,1,2-tetrachloroethane	TM116	<b>95.6</b> 83.24 : 124.28	<b>102.6</b> 83.24 : 124.28
1,1,1-Trichloroethane	TM116	<b>100.8</b> 81.77 : 121.07	<b>102.4</b> 81.77 : 121.07
1,1,2-Trichloroethane	TM116	<b>100.4</b> 79.24 : 112.23	<b>94.2</b> 79.24 : 112.23
1,1-Dichloroethane	TM116	<b>103.0</b> 72.58 : 116.06	<b>106.6</b> 72.58 : 116.06
1,2-Dichloroethane	TM116	<b>118.8</b> 77.50 : 122.50	<b>112.0</b> 77.50 : 122.50
1,4-Dichlorobenzene	TM116	<b>96.2</b> 73.23 : 116.39	<b>95.4</b> 73.23 : 116.39
2-Chlorotoluene	TM116	<b>85.6</b> 69.22 : 110.64	<b>86.6</b> 69.22 : 110.64
4-Chlorotoluene	TM116	<b>89.0</b> 68.57 : 106.26	<b>87.4</b> 68.57 : 106.26
Benzene	TM116	<b>103.2</b> 84.33 : 124.27	<b>106.0</b> 84.33 : 124.27
Carbon Disulphide	TM116	<b>110.4</b> 77.20 : 122.80	<b>107.4</b> 77.20 : 122.80
Carbontetrachloride	TM116	<b>98.2</b> 84.20 : 119.90	<b>102.8</b> 84.20 : 119.90
Chlorobenzene	TM116	<b>102.4</b> 85.28 : 129.96	<b>103.2</b> 85.28 : 129.96
Chloroform	TM116	<b>108.2</b> 82.73 : 119.72	<b>106.6</b> 82.73 : 119.72
Chloromethane	TM116	<b>123.4</b> 55.16 : 145.46	<b>117.2</b> 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	<b>108.4</b> 73.56 : 118.93	<b>108.4</b> 73.56 : 118.93
Dibromomethane	TM116	<b>104.4</b> 73.40 : 116.60	<b>98.0</b> 73.40 : 116.60
Dichloromethane	TM116	<b>113.2</b> 76.16 : 121.98	<b>108.2</b> 76.16 : 121.98

Validated

 SDG:
 150828-57
 Location:
 Stag Brewery

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM

Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

329023

# Client Reference:

	· ·	QC 1128	QC 1175
Ethylbenzene	TM116	94.0	99.2
		80.07 : 125.98	80.07 : 125.98
Hexachlorobutadiene	TM116	69.0	89.2
		30.92 : 132.28	30.92 : 132.28
Isopropylbenzene	TM116	82.6	92.6
		69.27 : 125.32	69.27 : 125.32
Naphthalene	TM116	110.0	107.4
		79.15 : 121.98	79.15 : 121.98
o-Xylene	TM116	77.6	84.8
		75.46 : 111.52	75.46 : 111.52
p/m-Xylene	TM116	90.2	96.6
		76.97 : 121.75	76.97 : 121.75
Sec-Butylbenzene	TM116	69.6	85.8
		49.27 : 129.90	49.27 : 129.90
Tetrachloroethene	TM116	102.2	110.6
		87.96 : 133.65	87.96 : 133.65
Toluene	TM116	99.0	100.6
		79.23 : 114.58	79.23 : 114.58
Trichloroethene	TM116	94.6	98.4
		84.09 : 114.24	84.09 : 114.24
Trichlorofluoromethane	TM116	107.4	104.4
		76.22 : 114.82	76.22 : 114.82
Vinyl Chloride	TM116	98.2	100.8
		59.68 : 118.68	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.

Validated

SDG: 150828-57 Job: H\_URS\_WIM-273 Client Reference:

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329023

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Depth:** 2.20 - 3.30 Sample No : 11982640 Sample ID :

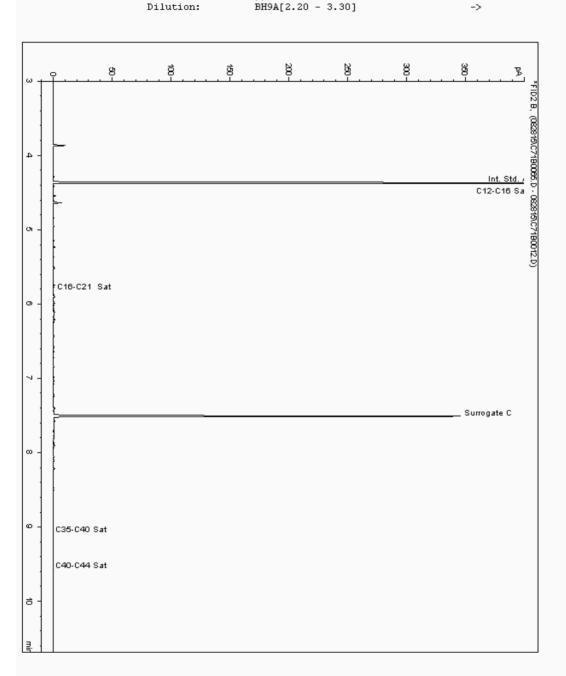
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364862-02/09/2015 08:42:03 PM Date Acquired : Units :

ppb

BH9A[2.20 - 3.30] Dilution:



Validated

SDG: 150828-57 Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329023

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Depth:** 3.00 - 3.50 Sample No : 11982647 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

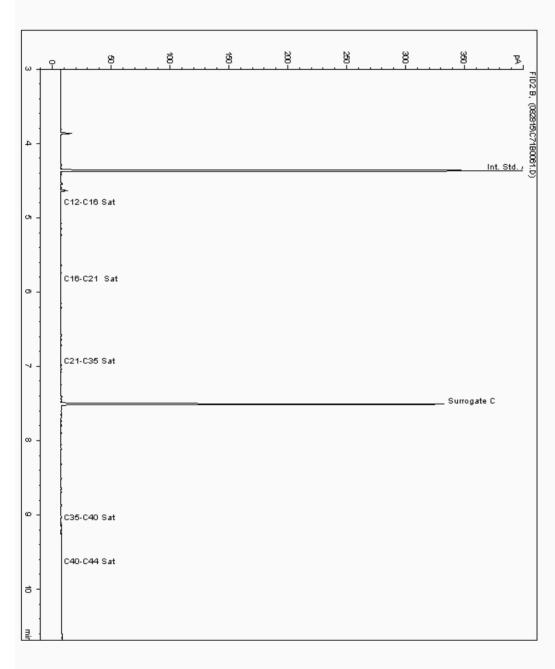
Sample Identity:

11364901-02/09/2015 07:22:34 PM

Date Acquired : Units : Dilution:

ppb BH8A[3.00 - 3.50]

->



Validated

329023

 SDG:
 150828-57
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Chromatogram

 Analysis:
 EPH CWG (Aliphatic) GC (S)
 Sample No : 11989024
 11989024
 Depth : 0.50

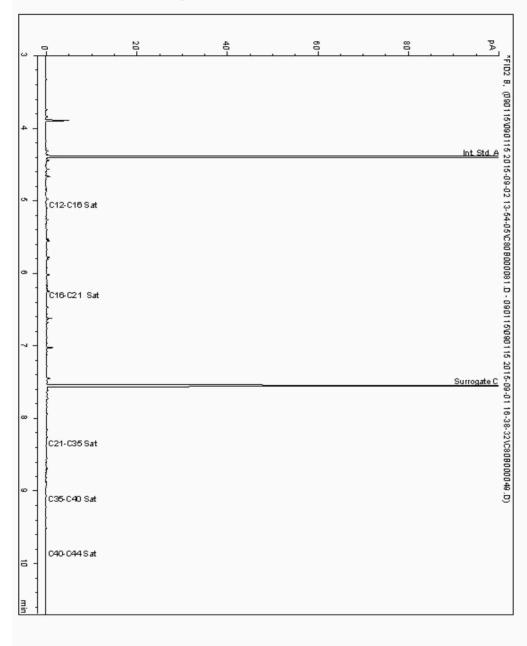
 Sample ID : 8H0Δ
 BH0Δ

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11364846-

Date Acquired : 02/09/15 15:29:04

Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



Validated

SDG: 150828-57 Job: H\_URS\_WIM-273 Client Reference:

Analysis: EPH CWG (Aliphatic) GC (S)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329023

Chromatogram

11989052 Sample No : Sample ID :

**Depth**: 0.50

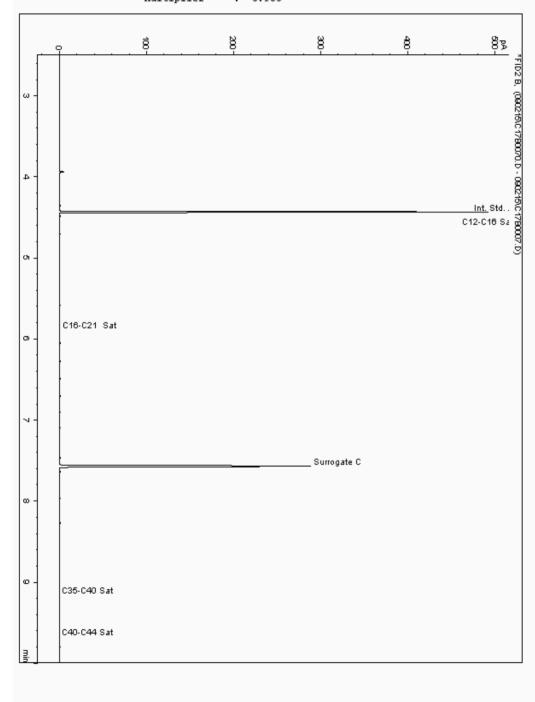
Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( Cl2 - C40 )

11364879-

Sample Identity: Date Acquired : 03/09/2015 09:03:05 PM

Units ppb Dilution

CF 0.950 Multiplier



Validated

150828-57 Location: Stag Brewery SDG: Job: H\_URS\_WIM-273 **Customer:** AECOM Client Reference:

Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329023

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Depth:** 2.20 - 3.30 Sample No : 11982640 Sample ID :

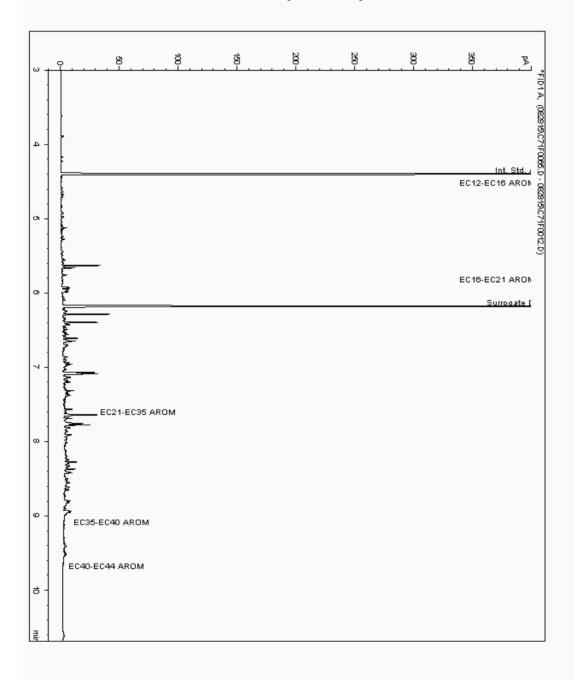
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364863-02/09/2015 08:42:03 PM Date Acquired : Units :

ppb

BH9A[2.20 - 3.30] Dilution:



Validated

150828-57 SDG: Job: H\_URS\_WIM-273

Analysis: EPH CWG (Aromatic) GC (S)

Location: Stag Brewery **Customer:** AECOM Attention:

Order Number: Report Number: Superseded Report:

**Depth:** 3.00 - 3.50

329023

Client Reference:

Gary Marshall Chromatogram

Sample No : 11982647 Sample ID :

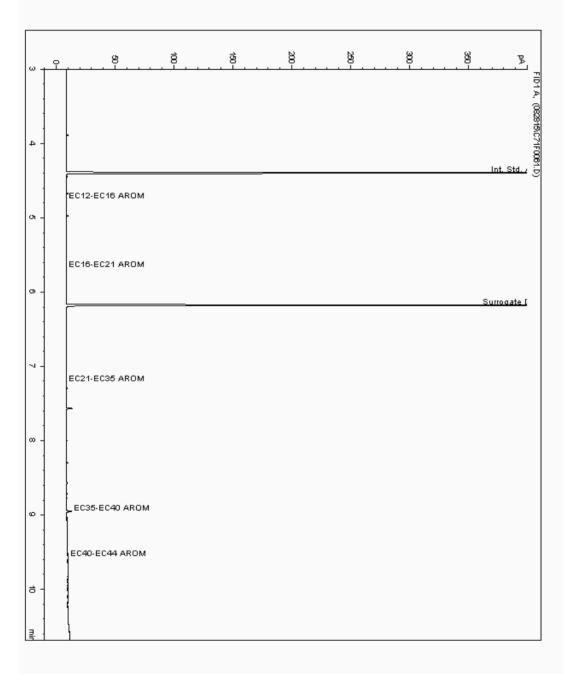
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11364902-02/09/2015 07:22:34 PM Date Acquired : Units :

ppb BH8A[3.00 - 3.50] Dilution:

->



Validated

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329023

Chromatogram

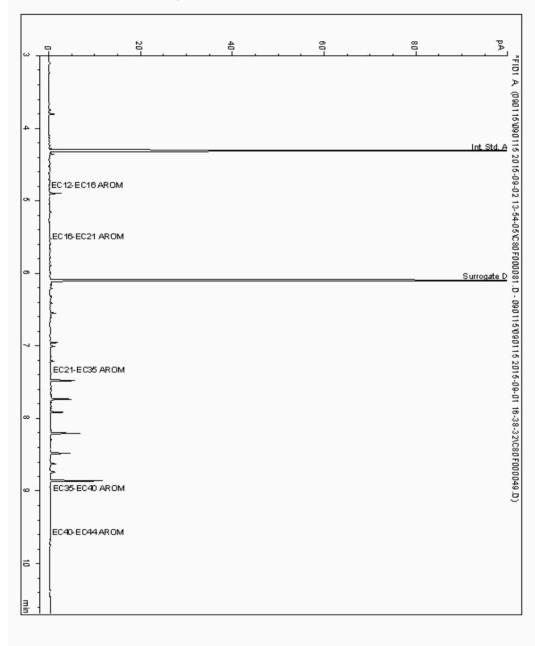
Analysis: EPH CWG (Aromatic) GC (S) Sample No : 11989024 Sample ID :  $8H0\Delta$ 

Alcontrol/Geochem Analytical Services Speciated TPH - AROMS ( C12 - C44)

Sample Identity: 11364847-

Date Acquired : 02/09/15 15:29:04

Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



Validated

329023

150828-57 Location: Stag Brewery SDG: Job: H\_URS\_WIM-273 **Customer:** AECOM Client Reference: Attention:

Order Number: Report Number: Gary Marshall Superseded Report:

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) Sample No : **Depth**: 0.50 11989052 Sample ID :

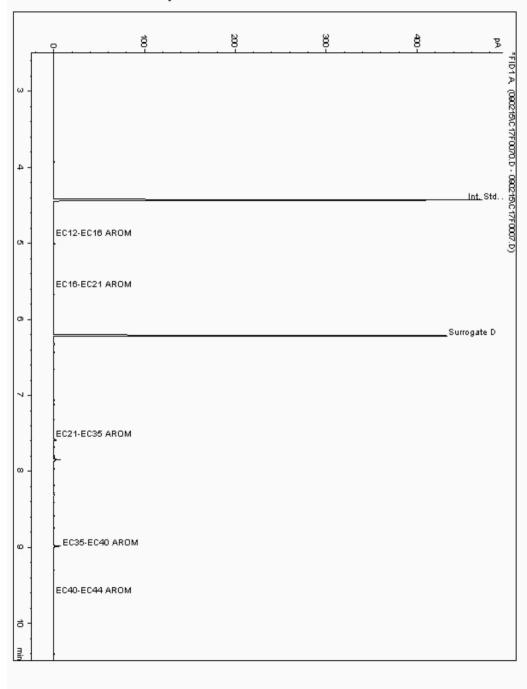
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( Cl2 - C40 )

11364880-

Sample Identity: Date Acquired : 03/09/2015 09:03:05 PM

Units ppb Dilution

CF 0.950 Multiplier





Validated

**SDG:** 150828-57 **Job:** H\_URS\_WIM-273

Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

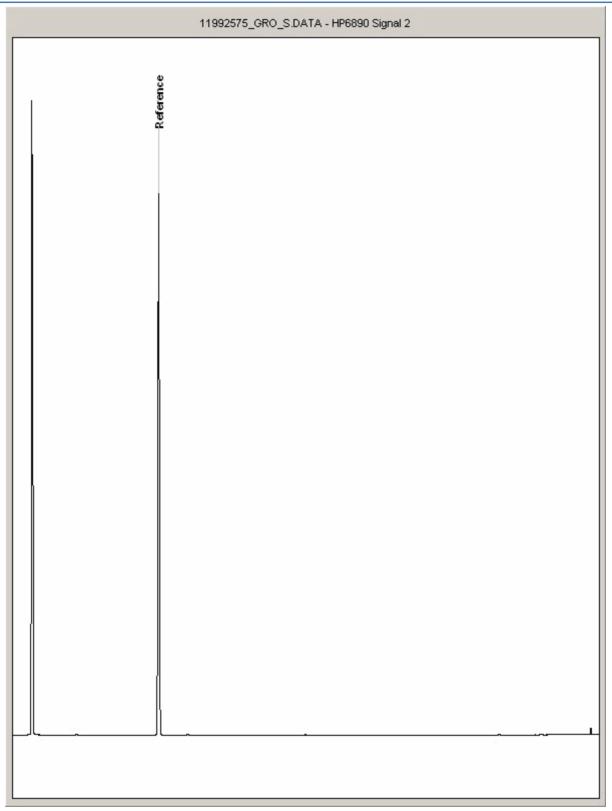
**Depth:** 3.00 - 3.50

329023

Client Reference:

Analysis: GRO by GC-FID (S)

Sample ID : BH8A





Validated

**SDG:** 150828-57 **Job:** H\_URS\_WIM-273

Analysis: GRO by GC-FID (S)

Client Reference:

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

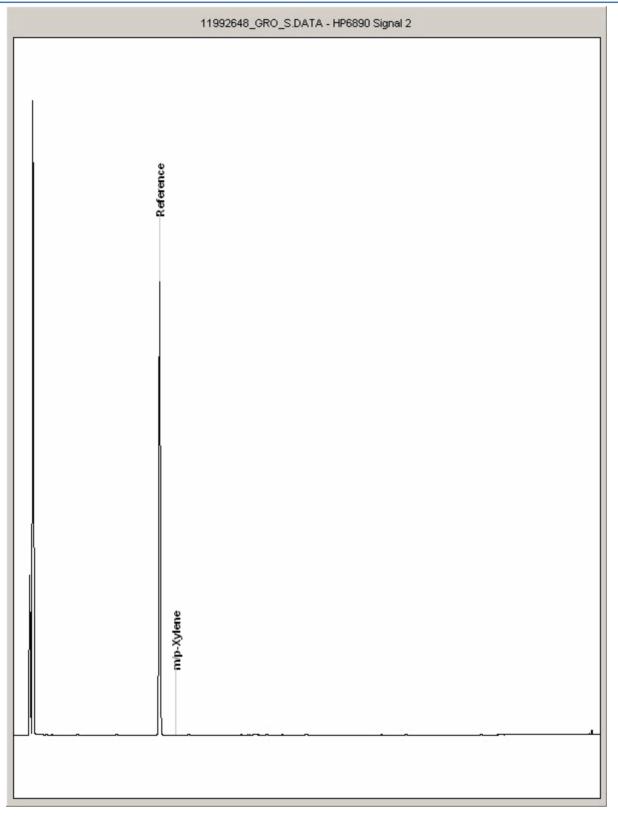
Order Number: Report Number: Superseded Report:

329023

Chromatogram

**Sample No**: 11992648 **Depth**: 2.20 - 3.30

Sample ID : BH9A





Validated

SDG: 150828-57 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number:

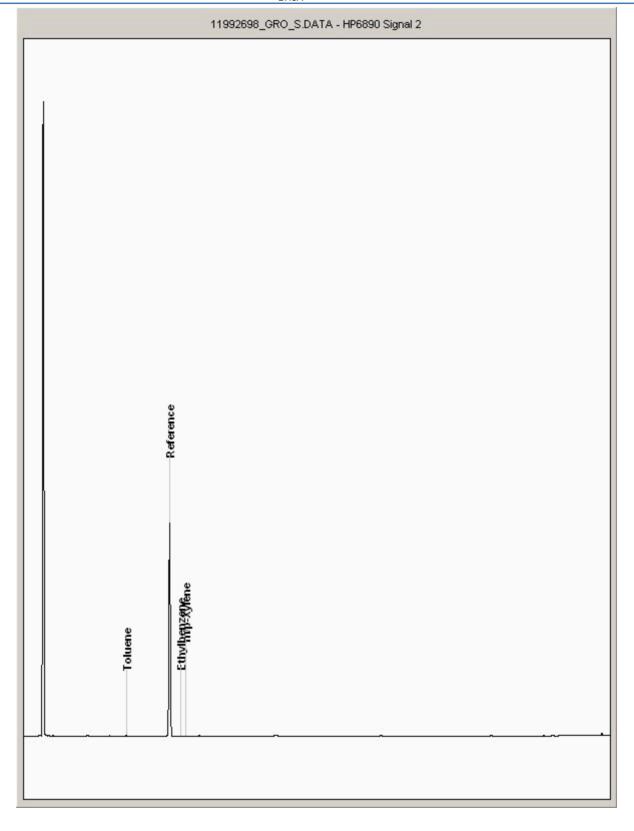
329023

Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (S) **Depth**: 0.50 Sample No : 11992698

Sample ID : BH8A





Validated

**SDG:** 150828-57 **Job:** H\_URS\_WIM-273

Analysis: GRO by GC-FID (S)

Client Reference:

Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

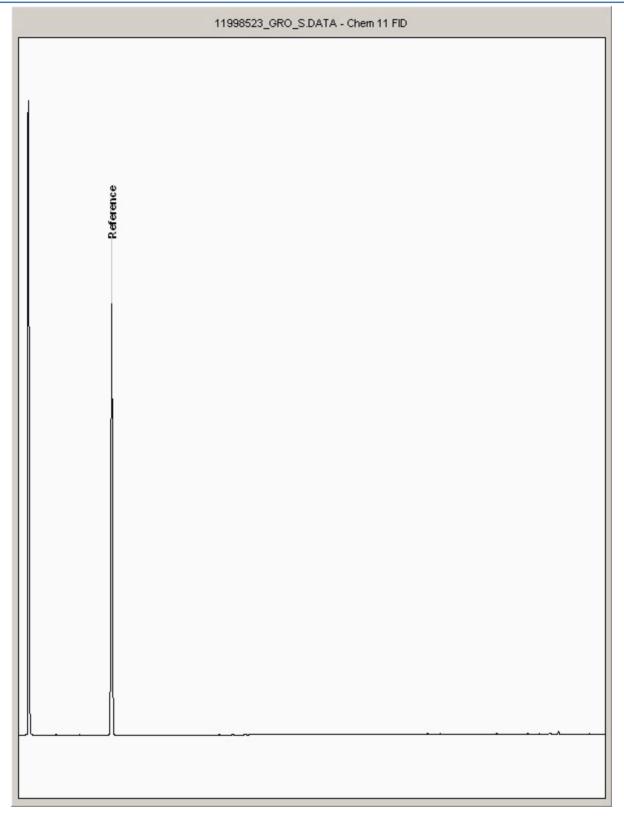
**Depth**: 0.50

329023

Chromatogram

Sample No: 11998523

Sample ID : BH9A



 150828-57
 Location:
 Stag Brewery
 Order Number:

 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Attention:
 Gary Marshall
 Superseded Report:

Job: Client Reference:

SDG

**Appendix** 

- 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/SFARCH 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, 2,5 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

329023

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTALSULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOVIS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	Soxtherm	GCMS
PESTICIDES	D&C	HEXANEACETONE	Soxtherm	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID .
EPH (MNOL)	D&C	HEXANEACETONE	END OVEREND	GC:FID
EPH (OLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLA9H	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAFID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONCATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	extraction Method	SEYJANA
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
₽H.	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	€CFID
MNERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OOP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT NJECTION	GCMS

#### <u>Identification of Asbestos in Bulk</u> <u>Materials</u>

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				
Orrysofile	WhiteAsbestos				
Amoste	BrownAsbestos				
Crodddite	Blue Asbestos				
Fibrous Adindite	=				
Fibrous Anthophylite	-				
Fibrous Trendite	-				

#### 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.

# ALcontrol Laboratories

#### **CERTIFICATE OF ANALYSIS**

 SDG:
 150828-57
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329023

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

## Appendix General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 month 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 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 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				
Chrysofile	White Asbestos				
Amoste	BrownAsbestos				
Crodobite	Blue Asbestos				
Fibrous Adindite	-				
Fibrous Anthophylite	-				
Fibrous Trendite	=				

#### 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.

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:
 10 September 2015

 Customer:
 H\_URS\_WIM

 Sample Delivery Group (SDG):
 150829-68

Your Reference:

Location:Stag BreweryReport No:329373

We received 4 samples on Saturday August 29, 2015 and 4 of these samples were scheduled for analysis which was completed on Thursday September 10, 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









Validated

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number

Client Reference: Attention: Gary Marshall

Report Number: Superseded Report:

329373

# **Received Sample Overview**

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11984669	ВНЗА		0.50	28/08/2015
11984670	ВНЗА		1.50 - 2.00	28/08/2015
11984671	BH5A		0.50	28/08/2015
11984672	BH5A		2.50 - 3.00	28/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

16:04:17 10/09/2015

Validated

150829-68 Stag Brewery SDG: Location: Job: H\_URS\_WIM-273 Customer: AEČOM

Order Number: Report Number: Superseded Report:

329373

Client Reference:		Attention			Marsh	all
SOLID Results Legend X Test	Lab Sample	No(s)	11984669	11984670	11984671	11984672
No Determination Possible	Custome Sample Refe	внза	ВНЗА	внох	BH5A	
	AGS Refere	ence				
	Depth (m			1.50 - 2.00	0.50	8
	Containe	er	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL	250g Amber Jar (AL	400g Tub (ALE214) 250g Amber Jar (AL	60g VOC (ALE215) 400g Tub (ALE214) 250g Amber Jar (AL
Ammonium Soil by Titration	All	NDPs: 0 Tests: 3	X		X	X
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 3	X		X	X
Easily Liberated Sulphide	All	NDPs: 0 Tests: 3	X		X	X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 3	X		X	X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 3	X		X	X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 3	×		<u> </u>	( X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 3	X		X	X
Metals in solid samples by OES	All	NDPs: 0 Tests: 3	X		X	x
PAH by GCMS	All	NDPs: 0 Tests: 3	X		X	x
рН	All	NDPs: 0 Tests: 3	X		X	X
Sample description	All	NDPs: 0 Tests: 4	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 3	x		x	x
Total Sulphate	All	NDPs: 0 Tests: 3	x		x	x
TPH CWG GC (S)	All	NDPs: 0 Tests: 3	X		x	x
VOC MS (S)	All	NDPs: 0 Tests: 3	×		<b>)</b>	( X

Validated

**SDG**: 150829-68 **Job**: H\_URS\_W

H\_URS\_WIM-273 Cus

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number:

329373

Superseded Report:

### **Sample Descriptions**

#### **Grain Sizes**

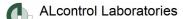
Client Reference:

very fine	<0.063m	m fine	0.063mm - 0.1mm	nedium 0.1mm	n - 2mm coa	rse 2mm - 1	0mm very co	arse >10mm
Lab Sample	e No(s)	Customer Sample R	tef. Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
119846	69	ВН3А	0.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
119846	11984670 BH3A		1.50 - 2.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	None
119846	71	BH5A	0.50	Light Brown	Sand	0.1 - 2 mm	Stones	Vegetation
119846	72	BH5A	2.50 - 3.00	Dark Brown	Sandy Loam	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.



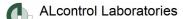
Validated

SDG: 150829-68 Location: Stag Brewery Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329373

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Results Legend # ISO17025 accredited.	C	Customer Sample R	ВН3А	BH5A	П	BH5A			
M mCERTS accredited.									
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50	0.50		2.50 - 3.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Sample Type Date Sampled	Soil/Solid 28/08/2015	Soil/Solid 28/08/2015		Soil/Solid 28/08/2015			
** % recovery of the surrogate standa		Sampled Time							
check the efficiency of the method. results of individual compounds wi		Date Received	29/08/2015	29/08/2015		29/08/2015			
samples aren't corrected for the re-	covery	SDG Ref	150829-68 11984669	150829-68 11984671		150829-68 11984672			
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11004000	11004071		11004072			
Component	LOD/Units								
Moisture Content Ratio (%	%	PM024	6.3	7		5.8			
of as received sample)									
Exchangeable Ammonia	<15	TM024	<15	27.7		<15			
as NH4	mg/kg		М		М		М		
Organic Carbon, Total	<0.2 %	TM132	1.52	1.33	$\neg$	<0.2			
,			М		М		М		
pH	1 pH	TM133	8.22	7.86	$\neg$	7.86			
·	Units		М		М		М		
Chromium, Hexavalent	<0.6	TM151	<0.6	<0.6	$\neg$	<0.6			
,	mg/kg		#		#		#		
Sulphide, Easily liberated	<15	TM180	<15	<15	$\dashv$	<15			
' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	mg/kg		&#</td><td></td><td><b>%</b> #</td><td></td><td>&#</td><td></td><td></td></tr><tr><td>Arsenic</td><td><0.6</td><td>TM181</td><td>18.9</td><td>19.1</td><td><math>\dashv</math></td><td>22.4</td><td></td><td></td><td></td></tr><tr><td></td><td>mg/kg</td><td>1</td><td>М</td><td></td><td>М</td><td></td><td>М</td><td></td><td>   </td></tr><tr><td>Cadmium</td><td><0.02</td><td>TM181</td><td>0.475</td><td>1.13</td><td><math>\dashv</math></td><td>0.533</td><td></td><td></td><td></td></tr><tr><td></td><td>mg/kg</td><td></td><td>М</td><td></td><td>М</td><td></td><td>М</td><td></td><td></td></tr><tr><td>Chromium</td><td><0.9</td><td>TM181</td><td>19.5</td><td>25.4</td><td><math>\dashv</math></td><td>21.6</td><td></td><td></td><td></td></tr><tr><td></td><td>mg/kg</td><td> </td><td>M</td><td></td><td>М</td><td>•</td><td>М</td><td></td><td></td></tr><tr><td>Copper</td><td><1.4</td><td>TM181</td><td>49.3</td><td>28</td><td></td><td>3.56</td><td></td><td></td><td></td></tr><tr><td>· · · ·</td><td>mg/kg</td><td> </td><td>M</td><td></td><td>М</td><td></td><td>М</td><td></td><td></td></tr><tr><td>Lead</td><td><0.7</td><td>TM181</td><td>178</td><td>85.7</td><td></td><td>9.05</td><td></td><td></td><td></td></tr><tr><td>2544</td><td>mg/kg</td><td></td><td>М</td><td></td><td>М</td><td>0.00</td><td>М</td><td></td><td></td></tr><tr><td>Mercury</td><td><0.14</td><td>TM181</td><td>0.151</td><td>1.9</td><td>101</td><td><0.14</td><td>101</td><td></td><td></td></tr><tr><td>e.ca.,</td><td>mg/kg</td><td></td><td>М</td><td></td><td>М</td><td>0</td><td>М</td><td></td><td></td></tr><tr><td>Nickel</td><td><0.2</td><td>TM181</td><td>29.2</td><td>17.1</td><td>101</td><td>20.7</td><td>101</td><td></td><td></td></tr><tr><td>- Honor</td><td>mg/kg</td><td></td><td>_3</td><td></td><td>М</td><td></td><td>М</td><td></td><td></td></tr><tr><td>Selenium</td><td><1 mg/kg</td><td>g TM181</td><td><1</td><td><1</td><td>141</td><td><1</td><td>101</td><td></td><td></td></tr><tr><td>Colonian</td><td>- 1 mg/n</td><td>9 1111101</td><td>#</td><td>''</td><td>#</td><td>- 1</td><td>#</td><td></td><td></td></tr><tr><td>Zinc</td><td><1.9</td><td>TM181</td><td>89.3</td><td>101</td><td>-T</td><td>28.6</td><td>π</td><td></td><td></td></tr><tr><td>Zine</td><td>mg/kg</td><td>110101</td><td>00.0 M</td><td></td><td>М</td><td>20.0</td><td>М</td><td></td><td></td></tr><tr><td>Sulphate, Total</td><td><48</td><td>TM221</td><td>579</td><td>356</td><td>IVI</td><td>95.9</td><td>IVI</td><td></td><td></td></tr><tr><td>Calphato, Total</td><td>mg/kg</td><td>1</td><td>М</td><td></td><td>М</td><td>00.0</td><td>М</td><td></td><td></td></tr><tr><td></td><td>9/.19</td><td>1</td><td>IVI</td><td></td><td>IVI</td><td></td><td>IVI</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td><math>\neg</math></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td><u></u></td><td>_ 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Validated

150829-68 SDG: Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Customer: AECOM 329373 Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

			Attention: (	Gary Marshall		Superseded Repo	 
PAH by GCMS							
Results Legend		Customer Sample R	ВН3А	BH5A	BH5A		
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50	0.50	2.50 - 3.00		
tot.unfilt Total / unfiltered sample.  * Subcontracted test.  ** ** recovery of the surrogate standar		Sample Type Date Sampled	Soil/Solid 28/08/2015	Soil/Solid 28/08/2015	Soil/Solid 28/08/2015		
** % recovery of the surrogate standar check the efficiency of the method. T results of individual compounds with	The	Sampled Time Date Received	29/08/2015	29/08/2015	29/08/2015		
samples aren't corrected for the reco	overy	SDG Ref Lab Sample No.(s)	150829-68 11984669	150829-68 11984671	150829-68 11984672		
1-5&+§@ Sample deviation (see appendix)		AGS Reference					
Component	LOD/Units						
Naphthalene-d8 % recovery**	%	TM218	95	96.9	97.3		
Acenaphthene-d10 % recovery**	%	TM218	90.7	92.6	96		
Phenanthrene-d10 % recovery**	%	TM218	89.2	90.5	94.6		
Chrysene-d12 % recovery**	%	TM218	83.6	85	86.6		
Perylene-d12 % recovery**	%	TM218	87.7	92.4	90.2		
Naphthalene	<9 µg/k	g TM218	34.7 N	15.9 M M	<9 M		
Acenaphthylene	<12	TM218	29.9	28.9	<12		
Acenaphthene	μg/kg <8 μg/kg	g TM218	N	M 9.32	M <8		
Fluorene	<10	TM218	<10	M <10	<10		
	μg/kg		N	и м	M		
Phenanthrene	<15 µg/kg	TM218	188 N	147 И М	<15 M		
Anthracene	<16 µg/kg	TM218	36 N	39.9 M M	<16 M		
Fluoranthene	<17 µg/kg	TM218	445 N	417	<17 M		
Pyrene	<15 µg/kg	TM218	384	359 M M	29.8 M		
Benz(a)anthracene	<14 µg/kg	TM218	245 N	227 M M	<14 M		
Chrysene	<10 µg/kg	TM218	291 N	236 M M	24.5 M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	459 N	391	23.5 M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	134 M	132 M M	<14 M		
Benzo(a)pyrene	<15 µg/kg	TM218	289 N	260 M M	<15 M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	210 N	156 // M	<18 M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	63.4 N	46.8 M M	<23 M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	245 N	196 // M	<24 M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	3050	2660	<118		

Validated

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number

Client Reference:

Client Reference:			Attention: G	Sary Marshall		Superseded Repo	ρrt:	
TPH CWG (S)								
Results Legend # ISO17025 accredited.	•	Customer Sample R	ВН3А	BH5A	BH5A			
M mCERTS accredited.  aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test. ** % recovery of the surrogate stand check the efficiency of the methoc results of individual compounds v samples aren't corrected for the ref. (F) Trigger breach confirmed 1-5&4\$@ Sample deviation (see appendix)	i. The vithin	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	0.50 Soil/Solid 28/08/2015 29/08/2015 150829-68 11984669	0.50 Soil/Solid 28/08/2015 29/08/2015 150829-68 11984671	2.50 - 3.00 Soil/Soild 28/08/2015 29/08/2015 150829-68 11984672			
Component	LOD/Units	s Method						
GRO Surrogate % recovery**	%	TM089	69	72	99			
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 N					
Methyl tertiary butyl ether (MTBE)	<5 μg/kg	g TM089	<5 N	<5 1 M	<5 M			
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10 M			
Toluene	<2 μg/k	g TM089	<2 N	<2 1 M	<2 M			
Ethylbenzene	<3 μg/kg	g TM089	5.34 N	<3 1 M	<3 M			
m,p-Xylene	<6 µg/k	g TM089	<6 N	<6 // M	<6 M			
o-Xylene	<3 µg/kg	g TM089	<3 N	<3	<3			
sum of detected mpo xylene by GC	<9 µg/k	g TM089	<9	<9	<9			
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10			
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100			
Aliphatics >C16-C21	<100 µg/kg	TM173	3140	234	<100			
Aliphatics >C21-C35	<100 µg/kg	TM173	9790	6660	<100			
Aliphatics >C35-C44	<100 µg/kg	TM173	3030	968	<100			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	15900	7860	<100			
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC12-EC16	<100 µg/kg	TM173	714	358	<100			
Aromatics >EC16-EC21	<100 µg/kg	TM173	4780	2620	<100			
Aromatics >EC21-EC35	<100 µg/kg	TM173	24700	16100	<100			
Aromatics >EC35-EC44	<100 µg/kg	TM173	12700	8050	<100			
Aromatics >EC40-EC44	<100 µg/kg	TM173	5160	2870	<100			
Total Aromatics >EC12-EC44	<100 μg/kg	TM173	42900	27100	<100			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	58900	35000	<100			
	100							
	1							

Validated

SDG: 150829-68 Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Custor Client Reference: Attenti

Customer: AECOM
Attention: Gary Marshall

Report Number: 329373

Superseded Report:

VOC MS (S)				•			
Results Legend		Customer Sample R	BH3A	BH5A	BH5A		
# ISO17025 accredited.  M mCERTS accredited.		·		·			
aq Aqueous / settled sample.		Depth (m)	0.50	0.50	2.50 - 3.00		
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid		
* Subcontracted test.		Date Sampled	28/08/2015	28/08/2015	28/08/2015		
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time Date Received	29/08/2015	29/08/2015	29/08/2015		
results of individual compounds wi samples aren't corrected for the re-		SDG Ref	150829-68	150829-68	150829-68		
(F) Trigger breach confirmed	Jovery	Lab Sample No.(s)	11984669	11984671	11984672		
1-5&+§@ Sample deviation (see appendix)		AGS Reference					
Component	LOD/Unit	_					
Dibromofluoromethane**	%	TM116	116	122	120		
Toluene-d8**	%	TM116	104	103	113		
4-Bromofluorobenzene**	%	TM116	69.3	72.4	102		
Dichlorodifluoromethane	<6 µg/k	g TM116	<6	<6	<6		
			M	М	М		
Chloromethane	<7 µg/k	g TM116	<7	<7	<7		
		·	#	#	#		
Vinyl Chloride	<6 µg/k	g TM116	<6	<6	<6		
		·	М	М	М		
Bromomethane	<10	TM116	<10	<10	<10		
	μg/kg		М	М	М		
Chloroethane	<10	TM116	<10	<10	<10		
	μg/kg		M	M	M		
Trichlorofluorormethane	<6 µg/k	g TM116	<6	<6	<6		
memoroination	το μg/it	ig   IWIIIO	M	M	M		
1,1-Dichloroethene	<10	TM116	<10	<10	<10		
1, 1-Dichioloethene	μg/kg	1101110					
Carbon Diaulahida		g TM116	<7	<b>*</b>	<b>*</b>		
Carbon Disulphide	<7 µg/k	g ilviilo					
Dishlanasahana	:40	T14440	M	M	M		
Dichloromethane	<10	TM116	<10	<10	<10		
N. 11 11 11 11 11 11 11 11 11 11 11 11 11	μg/kg	T14440	#	#	#		
Methyl Tertiary Butyl Ether	<10	TM116	<10	<10	<10		
	μg/kg		M	M	M		
trans-1,2-Dichloroethene	<10	TM116	<10	<10	<10		
	μg/kg		M	M	M		
1,1-Dichloroethane	<8 µg/k	g TM116	<8	<8	<8		
			M	М	M		
cis-1,2-Dichloroethene	<6 µg/k	g TM116	<6	<6	<6		
			M	M	M		
2,2-Dichloropropane	<10	TM116	<10	<10	<10		
	μg/kg		M	М	M		
Bromochloromethane	<10	TM116	<10	<10	<10		
	μg/kg		M	М	М		
Chloroform	<8 µg/k	g TM116	<8	<8	<8		
			M	М	М		
1,1,1-Trichloroethane	<7 μg/k	g TM116	<7	<7	<7		
			M	М	М		
1,1-Dichloropropene	<10	TM116	<10	<10	<10		
	μg/kg		M	М	М		
Carbontetrachloride	<10	TM116	<10	<10	<10		
	μg/kg		M	М	М		
1,2-Dichloroethane	<5 µg/k	g TM116	<5	<5	<5		
		·	М	М	М		
Benzene	<9 µg/k	g TM116	<9	<9	<9		
	10	Ĭ	М	М	М		
Trichloroethene	<9 µg/k	g TM116	<9	<9	<9		
	5 1-3		#	#	#		
1,2-Dichloropropane	<10	TM116	<10	<10	<10		
1,2 2.66.6p.6pa6	μg/kg		M	. б	M		
Dibromomethane	<9 µg/k	g TM116	<9	<9	<9		
Bibromonicalane	о руж	9   1111110	М	M	M		
Bromodichloromethane	<7 µg/k	g TM116	<7	<7	<7		
Bromodicilioromethane	∼r μg/κ	g I IWITIO	M	M	-7 M		
cis-1,3-Dichloropropene	<10	TM116	<10	<10	<10		
เลอ- 1,อ-มเติกเดิก opropene	<10 μg/kg	TIVITO					
Toluono		TN4440	M	<7	<7		
Toluene	<7 µg/k	g TM116	<7				
teens 4.0 Districts	.10	T14440	M	M	M		
trans-1,3-Dichloropropene	<10	TM116	<10	<10	<10		
4.4.0 Triaklana (II)	μg/kg	T14440	-40	.40	-40		
1,1,2-Trichloroethane	<10	TM116	<10	<10	<10		
	μg/kg		M	M	M		

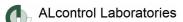
Validated

150829-68 SDG: Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Customer: AECOM 329373 Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

VOC MS (S)							
Results Legend		Customer Sample R	ВН3А	BH5A	BH5A		
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)	0.50	0.50	2.50 - 3.00		
tot.unfilt Total / unfiltered sample.		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid		
* Subcontracted test.  ** % recovery of the surrogate standa	ırd to	Date Sampled Sampled Time	28/08/2015	28/08/2015	28/08/2015		
check the efficiency of the method.	The	Date Received	29/08/2015	29/08/2015	29/08/2015		
results of individual compounds wi samples aren't corrected for the re-		SDG Ref	150829-68	150829-68	150829-68		
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s)	11984669	11984671	11984672		
Component	LOD/Unit	AGS Reference  Method					
1,3-Dichloropropane			<7	<7	<7		
1,3-Dichloropropane	<7 µg/k	g ilviilo			1		
Tatus ablancathana	4F	TM440	M	M		M	
Tetrachloroethene	<5 µg/k	g TM116	<5	<5	<5		
		=======================================	M	M		M	
Dibromochloromethane	<10	TM116	<10	<10	<10		
	μg/kg		M	М		М	
1,2-Dibromoethane	<10	TM116	<10	<10	<10		
	μg/kg		M	M	+	M	
Chlorobenzene	<5 µg/k	g TM116	<5	<5	<5		
			M	M		М	
1,1,1,2-Tetrachloroethane	<10	TM116	<10	<10	<10		
	μg/kg		M	M		М	
Ethylbenzene	<4 µg/k	g TM116	4.45	<4	<4		
			M	М		М	
p/m-Xylene	<10	TM116	<10	<10	<10		
	μg/kg		#	#		#	
o-Xylene	<10	TM116	<10	<10	<10		
	μg/kg		М	М		М	
Styrene	<10	TM116	<10	<10	<10		
	μg/kg		#	#		#	
Bromoform	<10	TM116	<10	<10	<10		
	μg/kg		М	М		М	
Isopropylbenzene	<5 μg/k	g TM116	<5	<5	<5		
	o pg/.	.9	#	#	1	#	
1,1,2,2-Tetrachloroethane	<10	TM116	<10	<10	<10	π	
1,1,2,2 Tetracinoroctilane	μg/kg	1101110	M	м	1	М	
1,2,3-Trichloropropane	×16	TM116	<16	<16	<16	IVI	
1,2,3-Theriloroproparie	μg/kg	1101110				N 4	
Dramahamana		TM44C	M	M	+	M	
Bromobenzene	<10	TM116	<10	<10	<10		
-	μg/kg	T1440	M	M		M	
Propylbenzene	<10	TM116	<10	<10	<10		
	μg/kg		M	M		M	
2-Chlorotoluene	<9 µg/k	g TM116	<9	<9	<9		
			M	M		M	
1,3,5-Trimethylbenzene	<8 µg/k	g TM116	<8	<8	<8		
			M			M	
4-Chlorotoluene	<10	TM116	<10	<10	<10		
	μg/kg		M	М		M	
tert-Butylbenzene	<14	TM116	<14	<14	<14		
	μg/kg		M	М		М	
1,2,4-Trimethylbenzene	<9 µg/k	g TM116	<9	<9	<9		
			#	#		#	
sec-Butylbenzene	<10	TM116	<10	<10	<10		
	μg/kg		М	М		М	
4-Isopropyltoluene	<10	TM116	<10	<10	<10		
,	μg/kg		М	М		М	
1,3-Dichlorobenzene	<8 µg/k	g TM116	<8	<8	<8		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1 7 7		М	М	1	М	
1,4-Dichlorobenzene	<5 µg/k	g TM116	<5	<5	<5		
1,1 2.0	o pg	.9	M	М	1	М	
n-Butylbenzene	<11	TM116	<11	<11	<11	101	
Ti Butyiberizerie	μg/kg	1101110	***		111		
1,2-Dichlorobenzene	<10	TM116	<10	<10	<10		
1,2 Diomoropenzene	μg/kg	1101110	M	М		М	
1,2-Dibromo-3-chloroprop	<14	TM116	<14	<14	<14	IVI	
ane		1101110					
	μg/kg	TN4440	<10	<10	<10	M	
Tert-amyl methyl ether	<10	TM116			1	,.	
1.0.4 Triphlanahan	μg/kg	TN4440	# <20	# -20		#	
1,2,4-Trichlorobenzene	<20	TM116	<20	<20	<20		
	μg/kg						
Hexachlorobutadiene	<20	TM116	<20	<20	<20		
	μg/kg	=					
Naphthalene	<13	TM116	<13	<13	<13		
	μg/kg		M	М		M	



Validated

150829-68 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM 329373 Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

voc	MS (	(S)
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/OC MS (S)								
Results Legend # ISO17025 accredited.		Customer Sample R	ВН3А	BH5A	BH5A			
M mCERTS accredited.								
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)		0.50	2.50 - 3.00			
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Sample Type Date Sampled	Soil/Solid 28/08/2015	Soil/Solid 28/08/2015	Soil/Solid 28/08/2015			
** % recovery of the surrogate		Sampled Time			,			
check the efficiency of the m results of individual compou	nethod. The inds within	Date Received	29/08/2015 150829-68	29/08/2015 150829-68	29/08/2015 150829-68			
samples aren't corrected for (F) Trigger breach confirmed	the recovery	SDG Ref Lab Sample No.(s)	11984669	11984671	11984672			
1-5&+§@ Sample deviation (see apper		AGS Reference						
Component	LOD/Un							
1,2,3-Trichlorobenzene	<20		<20	<20	<20			
	μg/kg	J	#	#	#			
				-		-	-	



SDG:

150829-68

**CERTIFICATE OF ANALYSIS** 

Validated

Order Number:

329373

H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number:

Location:

Client Reference: Attention: Gary Marshall Superseded Report:

# **Asbestos Identification - Soil**

Stag Brewery

			731		iaciitii	ication	- 0011				
		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	BH3A 0.50 SOLID 28/08/2015 00:00:00 01/09/2015 10:13:47 150829-68 11984669 TM048	2/9/15	Kevin Hughes	-	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	BH5A 0.50 SOLID 28/08/2015 00:00:00 01/09/2015 10:15:44 150829-68 11984671 TM048	2/9/15	Kevin Hughes	-	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	BH5A 2.50 - 3.00 SOLID 28/08/2015 00:00:00 03/09/2015 03:31:51 150829-68 11984672 TM048	09/09/2015	Rebecca Rawlings	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

16:04:17 10/09/2015

Validated

**SDG**: 150 **Job**: H\_U

Client Reference:

150829-68 H\_URS\_WIM-273 Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329373

# **Table of Results - Appendix**

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	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		
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		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



Validated

329373

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

Client Reference: Attention: Gary Marshall Superseded Report:

**Test Completion Dates** 

	<u> </u>			
Lab Sample No(s)	11984669	11984670	11984671	11984672
Customer Sample Ref.	BH3A	ВН3А	BH5A	BH5A
AGS Ref.				
Depth	0.50	1.50 - 2.00	0.50	2.50 - 3.00
Туре	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	09-Sep-2015		09-Sep-2015	09-Sep-2015
Asbestos ID in Solid Samples	02-Sep-2015		02-Sep-2015	09-Sep-2015
Easily Liberated Sulphide	08-Sep-2015		08-Sep-2015	08-Sep-2015
EPH CWG (Aliphatic) GC (S)	02-Sep-2015		02-Sep-2015	03-Sep-2015
EPH CWG (Aromatic) GC (S)	02-Sep-2015		02-Sep-2015	03-Sep-2015
GRO by GC-FID (S)	02-Sep-2015		02-Sep-2015	02-Sep-2015
Hexavalent Chromium (s)	04-Sep-2015		04-Sep-2015	10-Sep-2015
Metals in solid samples by OES	07-Sep-2015		07-Sep-2015	04-Sep-2015
PAH by GCMS	03-Sep-2015		03-Sep-2015	03-Sep-2015
pН	09-Sep-2015		09-Sep-2015	09-Sep-2015
Sample description	01-Sep-2015	29-Aug-2015	01-Sep-2015	29-Aug-2015
Total Organic Carbon	07-Sep-2015		10-Sep-2015	07-Sep-2015
Total Sulphate	04-Sep-2015		04-Sep-2015	04-Sep-2015
TPH CWG GC (S)	02-Sep-2015		02-Sep-2015	03-Sep-2015
VOC MS (S)	02-Sep-2015		02-Sep-2015	02-Sep-2015

16:04:17 10/09/2015

Validated

SDG: 150829-68 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329373

# **ASSOCIATED AQC DATA**

#### Ammonium Soil by Titration

Component	Method Code	QC 1205
Exchangeable Ammonium as NH4	TM024	<b>98.01</b> 79.30 : 104.61

#### Easily Liberated Sulphide

Component	Method Code	QC 1231
Easily Liberated Sulphide	TM180	<b>94.71</b> 49.14 : 123.89

#### EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aliphatics >C12-C35	TM173	<b>85.21</b> 62.50 : 112.50	<b>87.08</b> 70.80 : 111.51

#### EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aromatics >EC12-EC35	TM173	<b>82.67</b> 60.62 : 126.95	<b>82.67</b> 65.21 : 121.32

### GRO by GC-FID (S)

Component	Method Code	QC 1141
Benzene by GC (Moisture Corrected)	TM089	<b>93.0</b> 76.33 : 121.87
Ethylbenzene by GC (Moisture Corrected)	TM089	<b>91.5</b> 75.73 : 123.83
m & p Xylene by GC (Moisture Corrected)	TM089	<b>92.0</b> 75.52 : 120.32
MTBE GC-FID (Moisture Corrected)	TM089	<b>95.0</b> 77.89 : 119.70
o Xylene by GC (Moisture Corrected)	TM089	<b>91.0</b> 74.15 : 124.59
QC	TM089	<b>93.51</b> 62.31 : 122.61
Toluene by GC (Moisture Corrected)	TM089	<b>92.0</b> 77.91 : 122.33

16:04:17 10/09/2015

Validated

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

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 H\_URS\_WIM-273
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 Report Number

H\_URS\_WIM-273 Customer: AECOM Report Number: 329373
Attention: Gary Marshall Superseded Report:

Hexavalent Chromium (s)

Client Reference:

Component	Method Code	QC 1187	QC 1229
Hexavalent Chromium	TM151	96.0	100.0
		92.20 : 106.60	92.20 : 106.60

### Metals in solid samples by OES

	1		
Component	Method Code	QC 1293	QC 1251
Aluminium	TM181	<b>96.15</b> 86.49 : 129.71	<b>118.46</b> 86.49 : 129.71
Antimony	TM181	<b>95.34</b> 77.50 : 122.50	<b>94.62</b> 77.50 : 122.50
Arsenic	TM181	<b>90.27</b> 82.63 : 117.37	<b>95.58</b> 82.63 : 117.37
Barium	TM181	<b>100.75</b> 79.45 : 120.55	<b>100.75</b> 79.45 : 120.55
Beryllium	TM181	<b>98.76</b> 85.92 : 121.27	<b>101.55</b> 85.92 : 121.27
Boron	TM181	<b>88.55</b> 77.41 : 143.83	<b>129.01</b> 77.41 : 143.83
Cadmium	TM181	<b>93.28</b> 81.95 : 118.05	<b>94.29</b> 81.95 : 118.05
Chromium	TM181	<b>90.2</b> 81.29 : 118.71	<b>102.75</b> 81.29 : 118.71
Cobalt	TM181	<b>92.33</b> 83.86 : 116.14	<b>98.17</b> 83.86 : 116.14
Copper	TM181	<b>99.32</b> 78.57 : 121.43	<b>99.05</b> 78.57 : 121.43
Iron	TM181	<b>96.55</b> 87.50 : 122.82	<b>104.83</b> 87.50 : 122.82
Lead	TM181	<b>93.7</b> 74.18 : 117.25	<b>91.34</b> 74.18 : 117.25
Manganese	TM181	<b>98.0</b> 82.91 : 117.09	<b>103.4</b> 82.91 : 117.09
Mercury	TM181	<b>90.28</b> 81.99 : 118.01	<b>93.63</b> 81.99 : 118.01
Molybdenum	TM181	<b>91.24</b> 81.45 : 118.55	<b>91.88</b> 81.45 : 118.55
Nickel	TM181	<b>92.44</b> 79.64 : 120.36	<b>100.0</b> 79.64 : 120.36
Phosphorus	TM181	<b>94.34</b> 81.03 : 118.97	<b>97.32</b> 81.03 : 118.97
Selenium	TM181	<b>102.05</b> 87.05 : 121.93	<b>102.91</b> 87.05 : 121.93
Strontium	TM181	<b>90.04</b> 83.64 : 116.36	<b>103.07</b> 83.64 : 116.36
Thallium	TM181	<b>93.03</b> 77.50 : 122.50	<b>86.57</b> 77.50 : 122.50
Tin	TM181	<b>90.03</b> 78.30 : 113.98	<b>91.69</b> 78.30 : 113.98
Titanium	TM181	<b>90.63</b> 71.02 : 128.98	<b>114.06</b> 71.02 : 128.98

Validated

150829-68 SDG: Job:

H\_URS\_WIM-273 Client Reference:

Location: Stag Brewery AECOM **Customer:** 

Gary Marshall

Attention:

Order Number: Report Number: Superseded Report:

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Metals in solid samples by OES

	· ·	QC 1293	QC 1251
Vanadium	TM181	<b>89.12</b> 86.61 : 113.39	<b>97.94</b> 86.61 : 113.39
Zinc	TM181	<b>95.29</b> 89.82 : 114.54	<b>101.14</b> 89.82 : 114.54

### PAH by GCMS

Component	Method Code	QC 1179	QC 1161
· ·	TM218		
Acenaphthene	1 M218	92.5	85.0
		79.96 : 117.68	76.50 : 121.50
Acenaphthylene	TM218	87.0	84.5
		76.25 : 113.75	73.50 : 118.50
Anthracene	TM218	92.0	86.0
		75.14 : 109.30	74.25 : 117.75
Benz(a)anthracene	TM218		
Denz(a)antinacene	1101210	96.0	95.5
- ()	=11010	82.90 : 120.19	82.07 : 118.33
Benzo(a)pyrene	TM218	96.0	92.0
		82.80 : 121.21	79.75 : 116.97
Benzo(b)fluoranthene	TM218	96.0	98.5
		81.11 : 119.79	82.41 : 117.15
Benzo(ghi)perylene	TM218	88.5	89.0
		81.23 : 116.67	77.09 : 114.38
Benzo(k)fluoranthene	TM218		
Delizo(k)iluorailulelle	TIVIZIO	92.0	95.5
		79.07 : 114.76	81.43 : 115.17
Chrysene	TM218	93.5	94.5
		77.94 : 118.46	82.50 : 113.51
Dibenzo(ah)anthracene	TM218	92.0	92.5
		79.94 : 120.03	81.00 : 120.00
Fluoranthene	TM218	94.0	90.0
		77.89 : 110.15	78.67 : 117.61
Fluorene	TM218		
Fluorette	I IVIZ 10	95.0	87.5
		80.93 : 113.54	76.50 : 121.50
Indeno(123cd)pyrene	TM218	92.5	91.0
		80.37 : 120.17	79.19 : 117.60
Naphthalene	TM218	94.5	90.0
		79.70 : 112.37	77.00 : 117.50
Phenanthrene	TM218		
	2.0	<b>95.0</b> 78.44 : 113.95	<b>88.5</b> 75.00 : 123.00
D	TNACAG	10.44 . 113.95	75.00 . 123.00
Pyrene	TM218	92.0	88.0
		81.17 : 112.33	77.82 : 116.98

Component	Method Code	QC 1220	QC 1256
рН	TM133	<b>101.39</b> 96.22 : 103.78	<b>100.88</b> 97.19 : 102.81

#### **Total Organic Carbon**

Validated

 SDG:
 150829-68
 Location:
 Stag Brewery
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 H\_URS\_WIM-273
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 AECOM
 Report Number

Customer:AECOMReport Number:329373Attention:Gary MarshallSuperseded Report:

Total Organic Carbon

Client Reference:

Component	Method Code	QC 1297	QC 1208	QC 1227
Total Organic Carbo	n TM132	97.72	99.54	95.89
		89.40 : 103.09	89.40 : 103.09	89.40 : 103.09

### Total Sulphate

Component	Method Code	QC 1235	QC 1298
Total Sulphate	TM221	<b>102.27</b> 78.49 : 121.51	<b>117.42</b> 78.49 : 121.51

### VOC MS (S)

Component	Method Code	QC 1154
1,1,1,2-tetrachloroethane	TM116	<b>105.0</b> 76.60 : 121.00
1,1,1-Trichloroethane	TM116	<b>102.2</b> 77.80 : 123.40
1,1,2-Trichloroethane	TM116	<b>94.4</b> 75.40 : 119.80
1,1-Dichloroethane	TM116	<b>107.0</b> 80.84 : 124.49
1,2-Dichloroethane	TM116	<b>109.4</b> 91.00 : 135.67
1,4-Dichlorobenzene	TM116	<b>105.4</b> 80.88 : 114.60
2-Chlorotoluene	TM116	<b>102.8</b> 74.00 : 117.20
4-Chlorotoluene	TM116	<b>97.2</b> 71.20 : 113.20
Benzene	TM116	<b>100.6</b> 79.60 : 125.20
Carbon Disulphide	TM116	<b>104.4</b> 74.91 : 122.14
Carbontetrachloride	TM116	<b>101.4</b> 76.80 : 121.20
Chlorobenzene	TM116	<b>103.4</b> 83.47 : 116.82
Chloroform	TM116	<b>108.0</b> 82.00 : 128.80
Chloromethane	TM116	<b>129.8</b> 74.62 : 135.86
Cis-1,2-Dichloroethene	TM116	<b>113.4</b> 81.20 : 128.00
Dibromomethane	TM116	<b>94.4</b> 73.40 : 116.60
Dichloromethane	TM116	<b>111.8</b> 86.60 : 137.00

Validated

SDG: 150829-68 Location: Stag Brewery Order Number:

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 Attention:
 Gary Marshall
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VOC MS (S)

		QC 1154
Ethylbenzene	TM116	<b>97.8</b> 73.60 : 115.60
Hexachlorobutadiene	TM116	<b>86.2</b> 33.65 : 130.56
Isopropylbenzene	TM116	<b>101.0</b> 72.52 : 117.52
Naphthalene	TM116	<b>106.0</b> 83.23 : 126.48
o-Xylene	TM116	<b>92.2</b> 69.60 : 110.40
p/m-Xylene	TM116	<b>93.6</b> 71.30 : 112.70
Sec-Butylbenzene	TM116	<b>105.0</b> 59.20 : 125.20
Tetrachloroethene	TM116	<b>105.8</b> 85.92 : 127.92
Toluene	TM116	<b>92.6</b> 76.08 : 110.17
Trichloroethene	TM116	<b>101.2</b> 78.17 : 121.37
Trichlorofluoromethane	TM116	<b>109.0</b> 83.78 : 132.82
Vinyl Chloride	TM116	<b>101.6</b> 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.

16:04:17 10/09/2015

Validated

SDG: 150829-68 Job: H\_URS\_WIM-273 Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329373

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Depth:** 2.50 - 3.00 Sample No : 11985336

Sample ID :

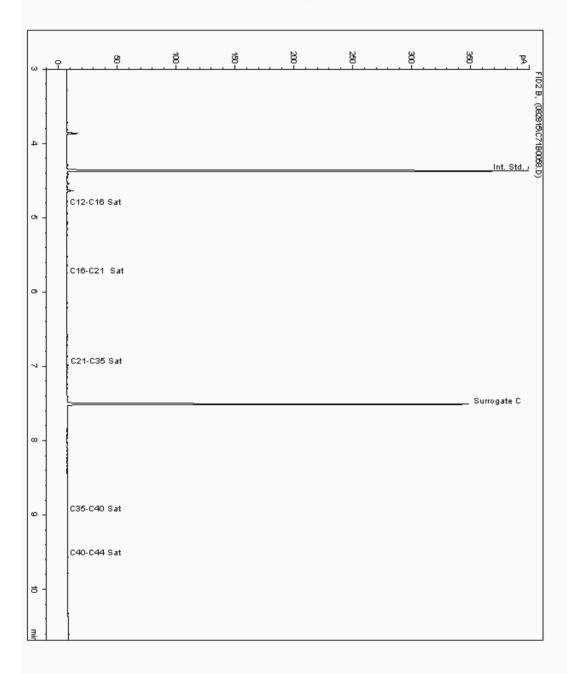
Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11368744-02/09/2015 06:23:01 PM Date Acquired : Units :

ppb BH5A[2.50 - 3.00] Dilution:

->



Validated

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

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 H\_URS\_WIM-273
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 AECOM
 Report Number:
 329373

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No: 11987620 Depth: 0.50

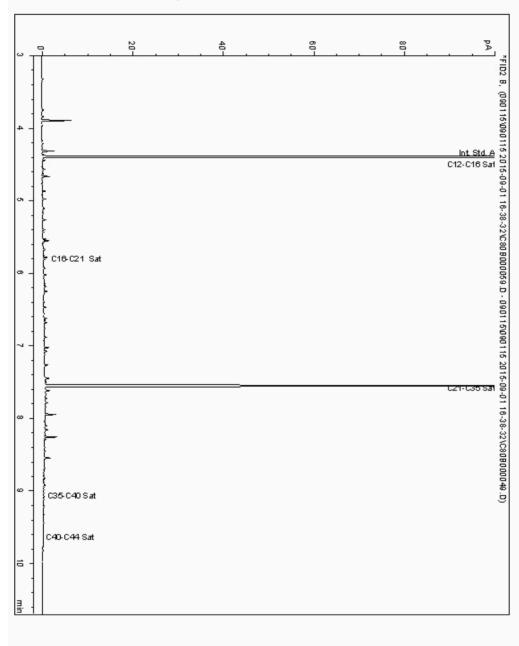
Sample ID : BH3A

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11368708-

Date Acquired : 02/09/15 09:07:08

Units : ppb
Dilution :
CF : 1
Multiplier : 0.950



Validated

329373

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) Sample No: 11988122 Depth: 0.50

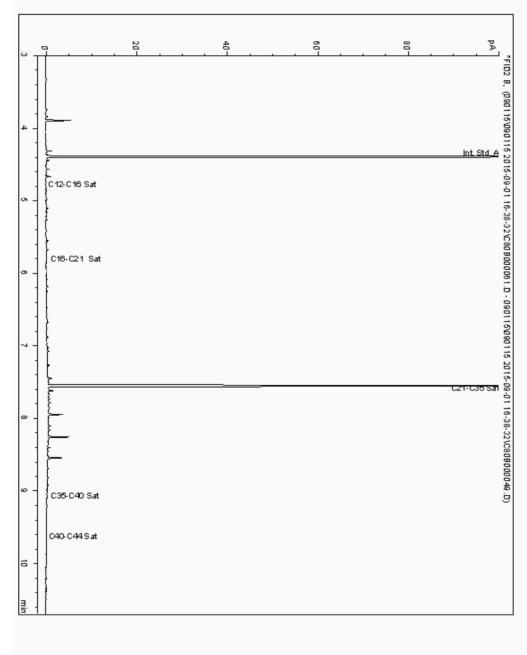
Sample ID : BH5A

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11368731-

Date Acquired : 02/09/15 09:38:12

Units : ppb
Dilution :
CF : 1
Multiplier : 0.960



Analysis: EPH CWG (Aromatic) GC (S)

Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

150829-68 SDG: Job: H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329373

Chromatogram

**Depth:** 2.50 - 3.00

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

11985336

Sample Identity:

Sample No :

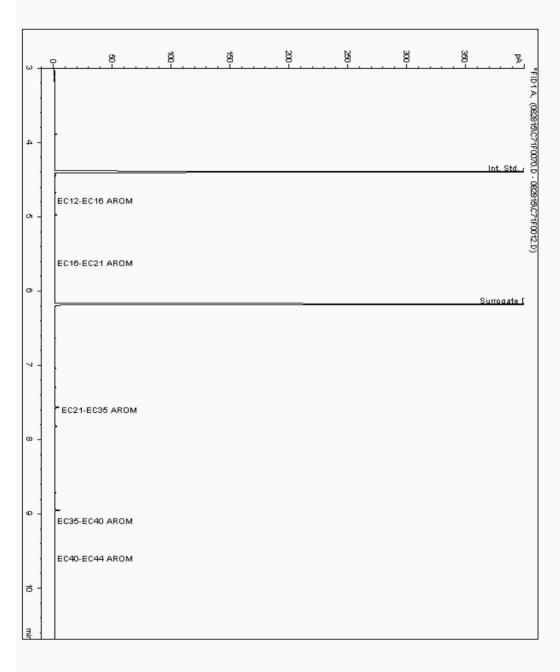
Sample ID :

11368745-03/09/2015 11:49:12 PM

Date Acquired : Units : ppb

BH5A[2.50 - 3.00] Dilution:

->



Validated

 SDG:
 150829-68

 Job:
 H\_URS\_WIM-273

 Client Reference:

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

**Depth**: 0.50

329373

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S)

Sample No: 11987620

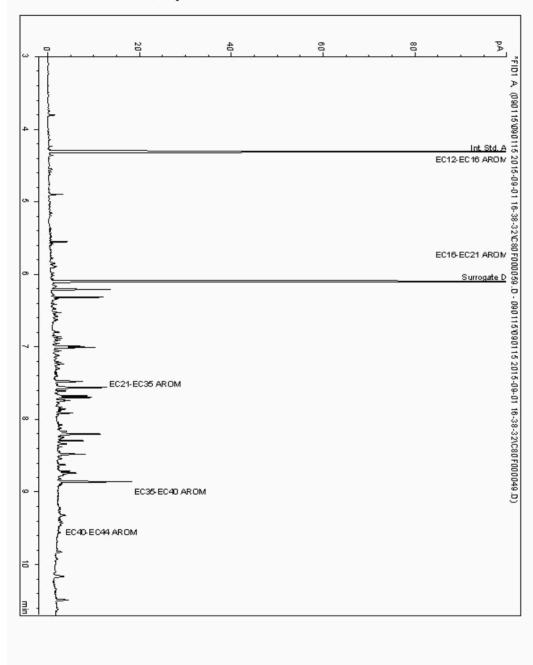
Sample ID : BH3A

Alcontrol/Geochem Analytical Services Speciated TPH - AROMS ( C12 - C44)

Sample Identity: 11368709-

Date Acquired : 02/09/15 09:07:08

Units : ppb
Dilution :
CF : 1
Multiplier : 0.950



Validated

 SDG:
 150829-68

 Job:
 H\_URS\_WIM-273

 Client Reference:

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329373

Chromatogram

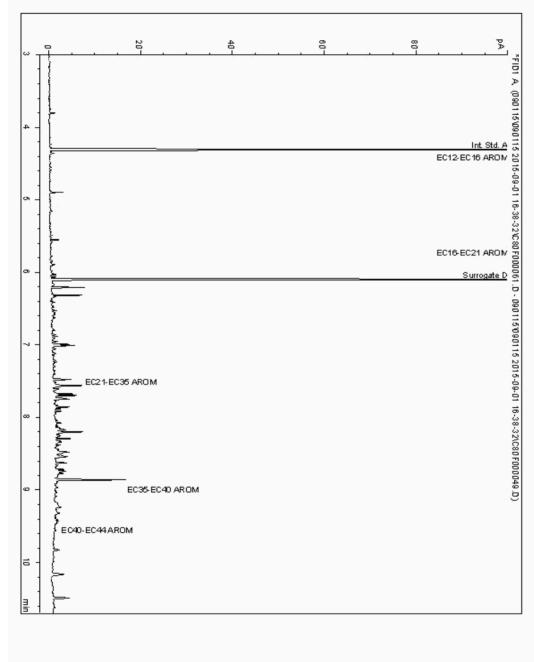
Analysis: EPH CWG (Aromatic) GC (S) Sample No : 11988122 Depth : 0.50 Sample ID :  $8H5\Delta$ 

Alcontrol/Geochem Analytical Services Speciated TPH - AROMS ( C12 - C44)

Sample Identity: 11368732-

Date Acquired : 02/09/15 09:38:12

Units : ppb
Dilution :
CF : 1
Multiplier : 0.960





Analysis: GRO by GC-FID (S)

Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

SDG: 150829-68 Job:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number:

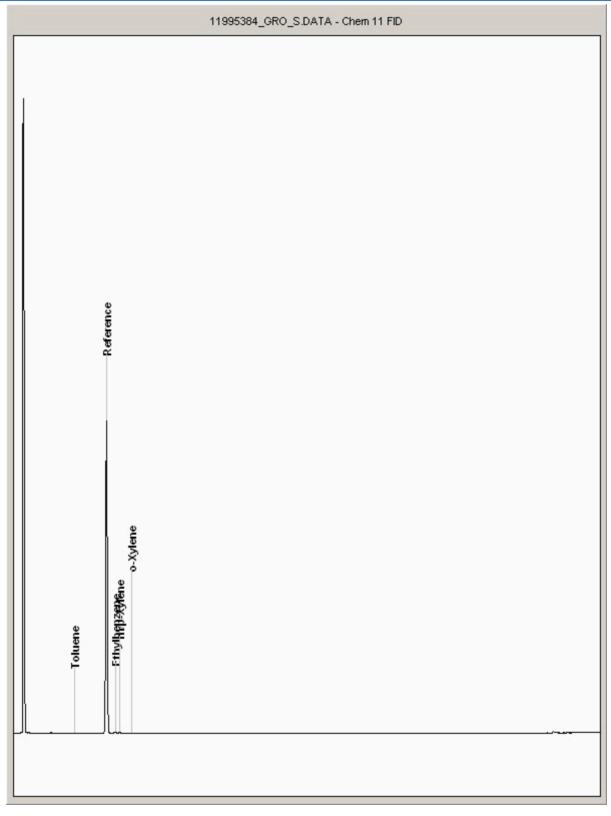
329373

Superseded Report:

Chromatogram

**Depth**: 0.50 Sample No : 11995384

Sample ID : внза





Validated

SDG: 150829-68 Job:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Superseded Report:

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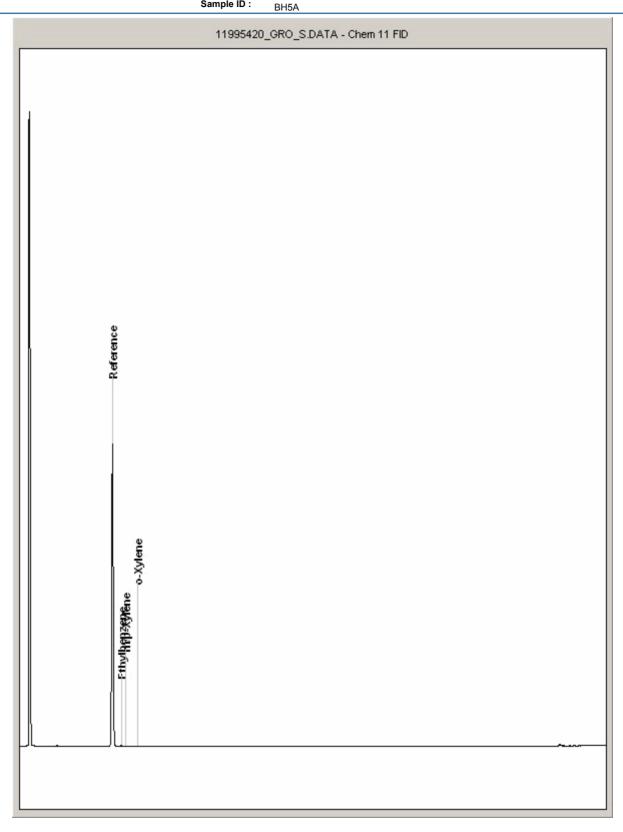
Chromatogram

Analysis: GRO by GC-FID (S)

Client Reference:

Sample No : 11995420 Sample ID :

**Depth**: 0.50





Validated

**SDG:** 150829-68 **Job:** H\_URS\_WIM-273

Analysis: GRO by GC-FID (S)

Client Reference:

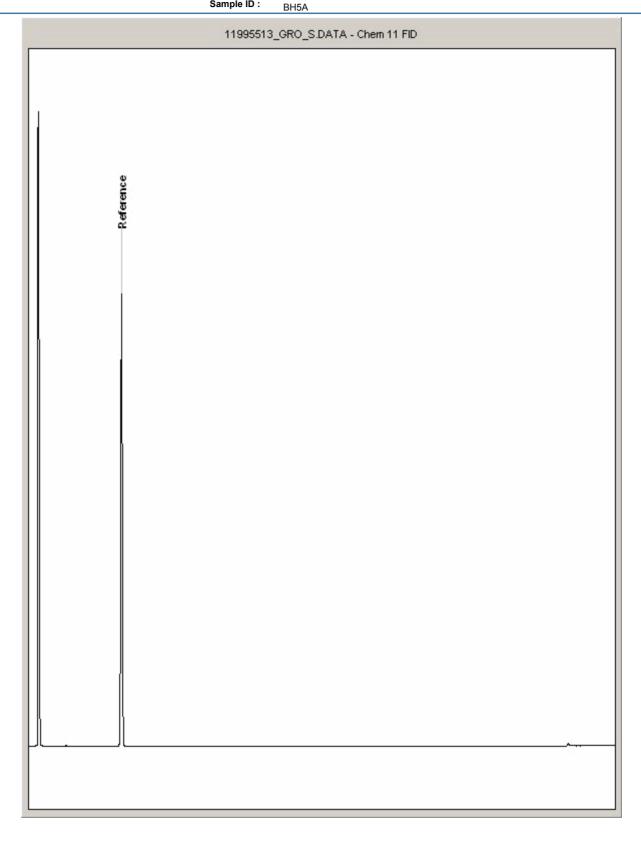
Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329373

Chromatogram

Sample No: 11995513 Sample ID: BH5A Depth: 2.50 - 3.00



150829-68 Location: Stag Brewery Order Number: H URS WIM-273 **AECOM Customer:** Report Number: Superseded Report:

Job: Client Reference: Attention: Gary Marshall

# Appendix

SDG

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 quaranteed 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
- 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
- monohydric by HPLC include phenol, cresols (2-Methylphenol, bl) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 3-Methylphenol 4-Methylphenol) 2.5 Dimethylphenol. Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
- 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

SOLID MATRICES EXTRACTION SUMMARY

329373

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	SEYJANA
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	Soxtherm	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (OLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANE:ACETONE	BND OVERBND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMAGETONE	SONICATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	extraction Method	ANALYSIS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
MNERAL OIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OOP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT NJECTION	GCMS

#### Identification of Asbestos in Bulk

The results for asbestos identification soil samples are obtained from possible Asbestos Containing Material, removed 'Screening of during the soils Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) (Hawarden) method of transmitted/polarised light microscopy and central dispersion staining, based on HSG 248 (2005)

Asbestos Type	Common Name
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Crodddite	Blue Asbestos
Fibrous Adindite	=
Fibrous Anthophylite	=
Fibrous Trentalite	-

#### 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.

# ALcontrol Laboratories

#### **CERTIFICATE OF ANALYSIS**

 SDG:
 150829-68
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329373

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

# Appendix General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 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 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
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Orodolite	Blue Asbestos
Fibrous Adinoite	-
Fibrous Anhaphylite	-
Fibrous Tremdile	-

#### 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.

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:
 14 September 2015

 Customer:
 H\_URS\_WIM

 Sample Delivery Group (SDG):
 150902-38

Your Reference:

Location:Stag BreweryReport No:329713

We received 8 samples on Wednesday September 02, 2015 and 8 of these samples were scheduled for analysis which was completed on Monday September 14, 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





Validated

**SDG**: 150902-38 **Job**: H\_URS\_WIM-273

Client Reference:

Location: Sta Customer: AE Attention: Ga

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329713

**Received Sample Overview** 

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11995368	BH3			01/09/2015
11995366	BH4			01/09/2015
11995367	BH5			01/09/2015
11995371	BH8			01/09/2015
11995370	BH109			01/09/2015
11995369	BH110			01/09/2015
11995372	BH111			01/09/2015
11995373	DUP01			01/09/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

150902-38 Stag Brewery SDG Location: Order Number: 329713 Job: H\_URS\_WIM-273 **Customer: AECOM** Report Number: Attention: Superseded Report: Client Reference: Gary Marshall **LIQUID** 11995366 11995369 11995368 11995367 1995371 **Results Legend** Lab Sample No(s) X Test No Determination Possible Customer BH109 BH110 BH3 BH4 Sample Reference **AGS Reference** Depth (m) Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE297)
No3 Filtered (ALE
Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE297)
HNO3 Filtered (ALE
Vial (ALE297)
HNO3 Filtered (ALE
Usial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE21
0.51 glass bottle (AL HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE21
0.51 glass bottle (AL Vial (ALE297)
HN03 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml Bob (ALE2
0.51 glass bottle (AL
Vial (ALE297) Container Ammoniacal Nitrogen All NDPs: 0 Tests: 8 All Anions by Kone (w) NDPs: 0 Tests: 8 COD Unfiltered All NDPs: 0 Tests: 8 Dissolved Metals by ICP-MS All NDPs: 0 Tests: 8 X All Dissolved W, Nb and Zr by ICP-MS NDPs: 0 Tests: 8 X EPH (DRO) (C10-C40) Aqueous All NDPs: 0 (W) Tests: 8 EPH CWG (Aliphatic) Aqueous GC All NDPs: 0 (W) Tests: 8 X X X EPH CWG (Aromatic) Aqueous GC All NDPs: 0 Tests: 8 GRO by GC-FID (W) All NDPs: 0 Tests: 8 All Mercury Dissolved NDPs: 0 Tests: 8 pH Value All NDPs: 0 Tests: 8 SVOC MS (W) - Aqueous All NDPs: 0 Tests: 7 Total EPH (aq) All NDPs: 0 Tests: 8

TPH CWG (W)

VOC MS (W)

All

All

NDPs: 0 Tests: 8

NDPs: 0 Tests: 8 Х

X

Validated

 SDG:
 150902-38
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329713

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Client Reference: Attention: Gary Marshall LIQUID 11995373 11995369 11995372 **Results Legend** Lab Sample No(s) X Test No Determination Possible Customer BH110 DUP01 Sample Reference **AGS Reference** Depth (m) Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BoD (ALE21
0.51 glass botte (AL
Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml BoD (ALE21
0.51 glass botte (AL
Vial (ALE244)
HNO3 Filtered (ALE
Vial (ALE217)
HNO3 Filtered (ALE Container All Ammoniacal Nitrogen NDPs: 0 Tests: 8 Anions by Kone (w) All NDPs: 0 Tests: 8 COD Unfiltered All NDPs: 0 Tests: 8 Dissolved Metals by ICP-MS All NDPs: 0 Tests: 8 Dissolved W, Nb and Zr by ICP-MS All NDPs: 0 Tests: 8 EPH (DRO) (C10-C40) Aqueous All NDPs: 0 (W) Tests: 8 EPH CWG (Aliphatic) Aqueous GC All NDPs: 0 (W) Tests: 8 EPH CWG (Aromatic) Aqueous GC All NDPs: 0 Tests: 8 GRO by GC-FID (W) All NDPs: 0 Tests: 8 Mercury Dissolved All NDPs: 0 Tests: 8 pH Value All NDPs: 0 Tests: 8 SVOC MS (W) - Aqueous All NDPs: 0 Tests: 7 Total EPH (aq) ΑII NDPs: 0 Tests: 8 TPH CWG (W) All NDPs: 0

VOC MS (W)

Tests: 8

NDPs: 0 Tests: 8

All

Validated

150902-38 SDG: Job:

H\_URS\_WIM-273 Client Reference:

Location: Customer: Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number:

Superseded Report:

329713

Results Legend # ISO17025 accredited.		Customer Sample R	BH3	BH4	BH5	BH8	BH109	BH110
M mCERTS accredited.  aq Aqueous / settled sample.								
diss.filt Dissolved / filtered sample.		Depth (m) Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Date Sampled	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time	02/09/2015	00:00:00 02/09/2015	02/09/2015	02/09/2015	02/09/2015	02/09/2015
results of individual compounds with samples aren't corrected for the re-	ithin	Date Received SDG Ref	150902-38	150902-38	150902-38	150902-38	150902-38	150902-38
(F) Trigger breach confirmed	Lovery	Lab Sample No.(s)	11995368	11995366	11995367	11995371	11995370	11995369
1-5&+§@ Sample deviation (see appendix)  Component	LOD/Unit	AGS Reference						
Ammoniacal Nitrogen as	<0.2 mg	_	<0.2	<0.2	0.508	0.619	1.23	<0.2
N	~0.2 III	g/1 110099	~0. <u>2</u> #	~0. <u>2</u> #	#	0.019	1.25	~0. <u>2</u> #
Ammoniacal Nitrogen as	<0.3 mg	g/I TM099	<0.3	<0.3	0.653	0.796	1.58	<0.3
NH4	0.0,		#	#	#	#	#	#
COD, unfiltered	<7 mg.	/I TM107	<7	8.09	21.2	10.5	190	<7
			#	#	#	#	#	#
Antimony (diss.filt)	<0.16	TM152	0.415	0.36	<0.16	0.726	0.64	0.464
	μg/l							
Arsenic (diss.filt)	<0.12	TM152	7.32	5.08	5.12	15.7	32.6	14
	μg/l	=111=2	#	#	#	#	#	#
Barium (diss.filt)	<0.03	TM152	64.2	22.1	47.9	83.4	18.2	40.7
Beryllium (diss.filt)	μg/l	TM152	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Dei yilium (ulaa.ilit)	<0.07 µg/l	1101152	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Boron (diss.filt)	- μg/i - <9.4 μg	ı/l TM152	152	52.7	99.2	130	107	137
	#8	,	#	#	#	#	#	#
Cadmium (diss.filt)	<0.1 µç	g/l TM152	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
			#	#	#	#	#	#
Chromium (diss.filt)	<0.22	TM152	3.62	1.53	2.26	3.98	3.56	3.44
	μg/l		#	#	#	#	#	#
Cobalt (diss.filt)	<0.06	TM152	2.33	0.594	3.15	2.77	9.39	4.36
Conner (dies filt)	μg/l <0.85	TM152	1.13	0.939	1.09	# 1.4	1.26	1.29
Copper (diss.filt)	νυ.δ5 μg/l	1101152	1.13	0.939	1.09	1.4	1.26 #	1.29
Lead (diss.filt)	<0.02	TM152	0.034	0.066	0.057	0.033	0.085	0.04
	μg/l		#	#	#	#	#	#
Manganese (diss.filt)	<0.04	TM152	91.2	8.89	860	169	1320	126
	μg/l		#	#	#	#	#	#
Nickel (diss.filt)	<0.15	TM152	6.92	1.77	5.5	7.03	11	6.1
	μg/l		#	#	#	#	#	#
Selenium (diss.filt)	<0.39	TM152	9.06	0.781	1.67	1.92	3 "	13.2
Thallium (diss.filt)	μg/l <0.96	TM152	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96
Triallium (diss.ilit)	-0.90 μg/l	1101132	<b>~</b> 0.90	<b>~</b> 0.90	<b>~</b> 0.90	<b>~</b> 0.90	<b>~</b> 0.90	<b>~</b> 0.90
Vanadium (diss.filt)	<0.24	TM152	1.56	1.61	1.33	1.56	1.57	1.33
, ,	μg/l		#	#	#	#	#	#
Zinc (diss.filt)	<0.41	TM152	8.79	12.6	5.59	9.92	27.4	4.62
	μg/l		#	#	#	#	#	#
EPH Range >C10 - C40	<46 µg	/I TM172	<46	<46	<46	<46	159	<46
(aq)	.400		#	#	#	#	#	#
Total EPH (C6-C40) (aq)	<100 μ	g/I TM172	<100	<100	<100	<100	159	<100
Mercury (diss.filt)	<0.01	TM183	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
(3.00)	μg/l		#	#	#	#	#	#
Sulphate	<2 mg.	/I TM184	57.4	43	79.9	61.6	75	55.2
·			#	#	#	#	#	#
Phosphate (ortho) as PO4	<0.05	TM184	0.465	7.3	1.55	0.302	0.297	0.216
	mg/l		#	#	#	#	#	#
Nitrate as NO3	<0.3 m	g/l TM184	5.18	21.5	6.42	4.42	0.942	5.64
nH	<1 pH	TM256	7.45	7.1	7.39	7.38	7.49	7.52
pH	Units	i ivi∠50	7.45 #	7.1	7.39	7.38	7.49	7.52
Silver (diss.filt)	<1.5 µg	ı/l TM283	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5



Validated

SDG: 150902-38 Location: Stag Brewery Order Number:

Results Legend		Customer Sample R	BH111	DUP01			
# ISO17025 accredited.  M mCERTS accredited.							
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)					
tot.unfilt Total / unfiltered sample.		Sample Type	Water(GW/SW)	Water(GW/SW)			
* Subcontracted test.  ** % recovery of the surrogate standa	ard to	Date Sampled Sampled Time	01/09/2015	01/09/2015			
check the efficiency of the method.	The	Date Received	02/09/2015	02/09/2015			
results of individual compounds with samples aren't corrected for the re-		SDG Ref	150902-38	150902-38			
(F) Trigger breach confirmed	,	Lab Sample No.(s)	11995372	11995373			
1-5&+§@ Sample deviation (see appendix)	10001	AGS Reference					
Component	LOD/Unit						
Ammoniacal Nitrogen as	<0.2 m	g/I TM099	4.74	<0.2			
N			#		#		
Ammoniacal Nitrogen as	<0.3 m	g/I TM099	6.09	<0.3			
NH4	_		#		#		
COD, unfiltered	<7 mg	/I TM107	43.5	<7			
			#		#		
Antimony (diss.filt)	<0.16	TM152	0.199	0.816			
	μg/l						
Arsenic (diss.filt)	<0.12	TM152	22	4.8			
	μg/l		#		#		
Barium (diss.filt)	<0.03	TM152	104	21.4			
5 III ( II 500	µg/l		#		#		
Beryllium (diss.filt)	<0.07	TM152	<0.07	<0.07			
D (1) 500	μg/l	, <del></del>	#		#		
Boron (diss.filt)	<9.4 µg	g/l TM152	65.1	52.2			
			#		#		
Cadmium (diss.filt)	<0.1 μς	g/l TM152	<0.1	<0.1			
			#		#		
Chromium (diss.filt)	<0.22	TM152	3.75	1.22			
	μg/l		#		#		
Cobalt (diss.filt)	<0.06	TM152	1.79	0.262			
	μg/l		#		#		
Copper (diss.filt)	<0.85	TM152	<0.85	1.13			
	μg/l		#		#		
Lead (diss.filt)	<0.02	TM152	<0.02	0.028			
	μg/l		#		#		
Manganese (diss.filt)	<0.04	TM152	2270	7.19			
	μg/l		#		#		
Nickel (diss.filt)	<0.15	TM152	3.85	1.81			
	μg/l		#		#		
Selenium (diss.filt)	<0.39	TM152	2.87	0.897			
	μg/l		#		#		
Thallium (diss.filt)	<0.96	TM152	<0.96	<0.96			
	μg/l						
Vanadium (diss.filt)	<0.24	TM152	1.07	1.45			
	μg/l		#		#		
Zinc (diss.filt)	<0.41	TM152	6	5.01			
	μg/l		#		#		
EPH Range >C10 - C40	<46 µg	/I TM172	65.8	<46			
(aq)			#		#		
Total EPH (C6-C40) (aq)	<100 µ	g/l TM172	<100	<100			
Mercury (diss.filt)	<0.01	TM183	<0.01	<0.01			
	μg/l		#		#		
Sulphate	<2 mg	/I TM184	37.5	42.3			
			#		#		
Phosphate (ortho) as PO4	<0.05	TM184	<0.05	7.28			
	mg/l		#		#		
Nitrate as NO3	<0.3 mg	g/l TM184	0.94	21.9			
			#		#		
рН	<1 pH	TM256	7.32	7.14			
	Units		#		#		
Silver (diss.filt)	<1.5 μς	J/I TM283	<1.5	<1.5			

Validated

150902-38 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery Customer: AECOM

Gary Marshall

Attention:

Order Number: Report Number:

Superseded Report:

329713

Client Reference:

SVOC MS (W) - Aqueous								
Results Legend # ISO17025 accredited.		Customer Sample R	ВН3	BH4	BH5	BH8	BH109	BH110
m mCERTS accredited.  aq Aqueous / settled sample. diss.fill: Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.  * Subcontracted test.  ** % recovery of the surrogate stands check the efficiency of the method. results of individual compounds w samples aren't corrected for the re	. The ithin	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref	Water(GW/SW) 01/09/2015 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 00:00:00 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 02/09/2015 150902-38
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11995368	11995366	11995367	11995371	11995370	11995369
Component	LOD/Unit							
1,2,4-Trichlorobenzene	<1 µg/	TM176	<1	<1	<1	<1	<2	<1
1,2-Dichlorobenzene (aq)	<1 µg/	TM176	**************************************	*1 *1 *	<1 #	**************************************	**************************************	<1 #
1,3-Dichlorobenzene (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg/	TM176	<1	<1	<1	<1	<2	<1
2,4,5-Trichlorophenol (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2,4,6-Trichlorophenol (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2,4-Dichlorophenol (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2,4-Dimethylphenol (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2,4-Dinitrotoluene (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2,6-Dinitrotoluene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Chloronaphthalene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Chlorophenol (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Methylnaphthalene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Methylphenol (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Nitroaniline (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
2-Nitrophenol (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
3-Nitroaniline (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Bromophenylphenylethe r (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Chloroaniline (aq)	<1 µg/		<1	<1	<1	<1	<2	<1
4-Chlorophenylphenylethe r (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Methylphenol (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Nitroaniline (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
4-Nitrophenol (aq)	<1 µg/		<1	<1	<1	<1	<2	<1
Azonarahthulana (ag)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Acenaphthylene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Acenaphthene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Anthracene (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
bis(2-Chloroethoxy)metha ne (aq)	<1 µg/		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 μg/		<2 #	<2 #	<2 #	<2 #	<4 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg/	TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #

Validated

 SDG:
 150902-38
 Location:
 S

 Job:
 H\_URS\_WIM-273
 Customer:
 A

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329713

Client Reference:

SVOC MS (W) - Aqueous

SVOC MS (W) - Aqueou	S							
# ISO17025 accredited.  M mCERTS accredited.		Customer Sample R	внз	BH4	BH5	BH8	BH109	BH110
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted test. " recovery of the surrogate stand- check the efficiency of the method results of individual compounds w	. The	Depth (m) Sample Type Date Sampled Sampled Time Date Received		Water(GW/SW) 01/09/2015 00:00:00 02/09/2015 150902-38	Water(GW/SW) 01/09/2015 	Water(GW/SW) 01/09/2015	Water(GW/SW) 01/09/2015  02/09/2015 150902-38	Water(GW/SW) 01/09/2015 
samples aren't corrected for the re (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)  Component	LOD/Uni	SDG Ref Lab Sample No.(s) AGS Reference ts Method	11995368	11995366	11995367	11995371	11995370	11995369
Benzo(a)anthracene (aq)	<1 μg		<1	<1	<1	<1	<2	<1
Benzo(b)fluoranthene (aq)	<1 µg	/I TM176	<1 # #	<1 #	<1 #	<1 #	<2 #	**************************************
Benzo(k)fluoranthene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Benzo(a)pyrene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Benzo(g,h,i)perylene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Carbazole (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Chrysene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Dibenzofuran (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
n-Dibutyl phthalate (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Diethyl phthalate (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Dibenzo(a,h)anthracene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Dimethyl phthalate (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
n-Dioctyl phthalate (aq)	<5 µg	/I TM176	<5 #	<5 #	<5 #	<5 #	<10 #	<5 #
Fluoranthene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Fluorene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Hexachlorobenzene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Hexachlorobutadiene (aq)	<1 µg.	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Pentachlorophenol (aq)	<1 µg	/I TM176	<1	<1	<1	<1	<2	<1
Phenol (aq)	<1 µg	/I TM176	<1	<1	<1	<1	<2	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg		<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Hexachloroethane (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Nitrobenzene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Naphthalene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Isophorone (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Hexachlorocyclopentadien e (aq)	<1 µg	/I TM176	<1	<1	<1	<1	<2	<1
Phenanthrene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #
Pyrene (aq)	<1 µg	/I TM176	<1 #	<1 #	<1 #	<1 #	<2 #	<1 #



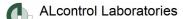
Validated

150902-38 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 AECOM Job:

Client Reference:

Customer: Attention: Gary Marshall Report Number: Superseded Report: 329713

Client Reference:			Attention:	Gary Marshall		Superseded Repo	ort:	
SVOC MS (W) - Aqueou								
# ISO17025 accredited.  M mCERTS accredited.  aq Aqueous / settled sample. diss.filit of lisolved / filitered sample.  * Subcontracted test.  * " % recovery of the surrogate stand check the efficiency of the method results of individual compounds w samples aren't corrected for the ref.  (F) Trigger breach confirmed 1-5&4-\$@ Sample deviation (see appendix)  Component	lard to d. The within	Depth (m) Sample Type Date Sampled Time Date Received SDG Ref Lab Sample No.(s) AGS Reference	BH111 Water(GW/SW) 01/09/2015 02/09/2015 150902-38 11995372					
1,2,4-Trichlorobenzene	<1 µg/		<1					
(aq)				#				
1,2-Dichlorobenzene (aq)	<1 µg/		<1	#				
1,3-Dichlorobenzene (aq)	<1 µg/	TM176	<1	#				
1,4-Dichlorobenzene (aq)	<1 µg/	I TM176	<1					
2,4,5-Trichlorophenol (aq)	<1 µg/	I TM176	<1	#				
2,4,6-Trichlorophenol (aq)	<1 µg/	TM176	<1	#				
2,4-Dichlorophenol (aq)	<1 µg/	TM176	<1	#				
2,4-Dimethylphenol (aq)	<1 µg/	I TM176	<1	#				
2,4-Dinitrotoluene (aq)	<1 µg/	I TM176	<1	#				
2,6-Dinitrotoluene (aq)	<1 µg/	TM176	<1	#				
2-Chloronaphthalene (aq)	<1 µg/	I TM176	<1	#				
2-Chlorophenol (aq)	<1 µg/	I TM176	<1	#				
2-Methylnaphthalene (aq)	<1 µg/	I TM176	<1	#				
2-Methylphenol (aq)	<1 µg/	I TM176	<1	#				
2-Nitroaniline (aq)	<1 µg/	I TM176	<1	#				
2-Nitrophenol (aq)	<1 µg/	TM176	<1	#				
3-Nitroaniline (aq)	<1 µg/	I TM176	<1	#				
4-Bromophenylphenylethe r (aq)	<1 µg/	TM176	<1	#				
4-Chloro-3-methylphenol (aq)	<1 µg/	I TM176	<1	#				
4-Chloroaniline (aq)	<1 µg/	I TM176	<1					
4-Chlorophenylphenylethe r (aq)	<1 µg/	I TM176	<1	#				
4-Methylphenol (aq)	<1 µg/	I TM176	5.42	#				
4-Nitroaniline (aq)	<1 µg/		<1	#				
4-Nitrophenol (aq)	<1 µg/		<1					
Azobenzene (aq)	<1 µg/		<1	#				
Acenaphthylene (aq)	<1 µg/		<1	#				
Acenaphthene (aq)	<1 µg/		<1	#				
Anthracene (aq)	<1 µg/		<1	#				
bis(2-Chloroethyl)ether (aq)	<1 µg/	I TM176	<1	#				
bis(2-Chloroethoxy)metha ne (aq)	<1 µg/	I TM176	<1	#				
bis(2-Ethylhexyl) phthalate (aq)	<2 μg/	I TM176	<2	#				
Butylbenzyl phthalate (aq)	<1 µg/	TM176	<1					
				#	1	I .	I.	I .



Validated

150902-38 H\_URS\_WIM-273 SDG: Location: Stag Brewery Order Number:

Job: Customer: AECOM Report Number: 329713 Attention: Gary Marshall Superseded Report:

Client Reference:

Client Reference:			Attention: G	Sary Marshall	Superseded Repo	ort:	
SVOC MS (W) - Aqueous	s						
Results Legend		Customer Sample R	BH111				
# 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 stands check the efficiency of the method results of individual compounds w samples aren't corrected for the re  (F) Trigger breach confirmed	. The ithin	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s)	Water(GW/SW) 01/09/2015 02/09/2015 150902-38 11995372				
1-5&+§@ Sample deviation (see appendix)	100011	AGS Reference					
Component	LOD/Unit	_					
Benzo(a)anthracene (aq)	<1 µg/		<1 #	ŧ			
Benzo(b)fluoranthene (aq)	<1 µg/		<1 #	ŧ			
Benzo(k)fluoranthene (aq)	<1 µg/		<1 #	<b>#</b>			
Benzo(a)pyrene (aq)	<1 µg/		<1 #	ŧ			
Benzo(g,h,i)perylene (aq)	<1 µg/		<1 #	ŧ			
Carbazole (aq)	<1 µg/		<1 #	ŧ			
Chrysene (aq)	<1 µg/		<1 #	ŧ			
Dibenzofuran (aq)	<1 µg/		<1 #	ŧ			
n-Dibutyl phthalate (aq)	<1 µg/		<1 #	ŧ			
Diethyl phthalate (aq)	<1 µg/		<1 #	ŧ			
Dibenzo(a,h)anthracene (aq)	<1 µg/		<1 #	ŧ			
Dimethyl phthalate (aq)	<1 µg/	TM176	<1 #	<b>#</b>			
n-Dioctyl phthalate (aq)	<5 μg/	TM176	<5 #	<b>‡</b>			
Fluoranthene (aq)	<1 µg/	TM176	<1 #	ŧ			
Fluorene (aq)	<1 µg/	TM176	<1 #	<b>#</b>			
Hexachlorobenzene (aq)	<1 µg/	TM176	<1 #	<b>#</b>			
Hexachlorobutadiene (aq)	<1 µg/	TM176	<1 #	<i>‡</i>			
Pentachlorophenol (aq)	<1 µg/		<1				
Phenol (aq)	<1 µg/		<1				
n-Nitroso-n-dipropylamine (aq)	<1 µg/			<b>#</b>			
Hexachloroethane (aq)	<1 µg/		<1 #	<i>‡</i>			
Nitrobenzene (aq)	<1 µg/		<1 #	ŧ			
Naphthalene (aq)	<1 µg/			<i>‡</i>			
Isophorone (aq)	<1 µg/	TM176	<1 #	<u> </u>			
Hexachlorocyclopentadien e (aq)	<1 µg/		<1				
Phenanthrene (aq)	<1 µg/	TM176	<1 #	<u> </u>			
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/	TM176	<1	<u> </u>			
Pyrene (aq)	<1 µg/	TM176	<1	<i>‡</i>			

Validated

150902-38 SDG: Location: Stag Brewery Order Number: Job:

Client Reference:

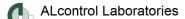
H\_URS\_WIM-273 Customer: AECOM Attention: Gary Marshall

Report Number:

329713

Superseded Report:

TPH CWG (W)								
Results Legend # ISO17025 accredited.		Customer Sample R	ВН3	BH4	BH5	BH8	BH109	BH110
M mCERTS accredited.								
diss.filt Dissolved / filtered sample.		Depth (m) Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Date Sampled	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015
** % recovery of the surrogate standa check the efficiency of the method		Sampled Time Date Received	02/09/2015	00:00:00 02/09/2015	02/09/2015	02/09/2015	02/09/2015	02/09/2015
results of individual compounds w samples aren't corrected for the re	ithin	SDG Ref	150902-38	150902-38	150902-38	150902-38	150902-38	150902-38
(F) Trigger breach confirmed  1-5&+§@ Sample deviation (see appendix)	,	Lab Sample No.(s)	11995368	11995366	11995367	11995371	11995370	11995369
Component	LOD/Unit	AGS Reference ts Method						
Methyl tertiary butyl ether	<3 μg/		<3	<3	<3	<3	<3	<3
(MTBE)	- ο μg/	1101240	#	#	#	#	#	#
Benzene	<7 μg/	/I TM245	<7	<7	<7	<7	<7	<7
			#	#	#	#	#	#
Toluene	<4 µg/	/I TM245	<4	<4	<4	<4	<4	<4
			#	#	#	#	#	#
Ethylbenzene	<5 µg/	/I TM245	<b>&lt;</b> 5	<5	<b>&lt;</b> 5	<5	<b>&lt;</b> 5	<5
m,p-Xylene	<0 ua	/I TM245	<b>*</b>	<b>*</b>	<b>*</b>	<b>*</b>	# <8	<b>*</b>
III,p-Aylerie	<8 µg/	1 111245	<b>~</b> 0				<b>~</b> 0	<b>~</b> 0 #
o-Xylene	<3 µg/	/I TM245	<3	<3	<3	<3	<3	<3
			#	#	#	#	#	#
Sum of detected BTEX	<28 µg	ı/l TM245	<28	<28	<28	<28	<28	<28
Aliphatics >C12-C16 (aq)	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
			1.5					
Aliphatics >C16-C21 (aq)	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
Aliphatics > 02 1-000 (aq)	- 10 μg	)/I IIVII/ <del>-</del>	~10	110	110	110	110	110
Total Aliphatics >C12-C35	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
(aq)								
Aromatics >EC12-EC16	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
(aq)								
Aromatics >EC16-EC21	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
(aq)	.10	.// TN4474	:40	-40	-40	-40	.40	.40
Aromatics >EC21-EC35 (aq)	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
Total Aromatics	<10 µg	ı/l TM174	<10	<10	<10	<10	<10	<10
>EC12-EC35 (aq)		,						.0
Total Aliphatics &	<10 µg	J/I TM174	<10	<10	<10	<10	<10	<10
Aromatics >C5-35 (aq)								
GRO >C5-C10	<10 µg	ı/l TM245	<10	<10	<10	<10	<10	<10
EDIT (00 040)	1100	-/L TM245	-1100	*400	-100	-100	*100	-100
EPH (C6-C10)	<100 μ	g/l TM245	<100	<100	<100	<100	<100	<100
		_						
	<u></u>							
		_						
	I			I	l	I		



Validated

150902-38 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273

Customer:

AECOM

Report Number: Superseded Report: 329713

Client Reference: Attention: Gary Marshall

Ollent Reference.			Ouperscaed Repe			
TPH CWG (W)						
Results Legend		Customer Sample R	BH111	DUP01		
# ISO17025 accredited.						
M mCERTS accredited.  aq Aqueous / settled sample.						
diss.filt Dissolved / filtered sample.		Depth (m)				
tot.unfilt Total / unfiltered sample.		Sample Type	Water(GW/SW)	Water(GW/SW)		
* Subcontracted test.     ** % recovery of the surrogate standa	ard to	Date Sampled	01/09/2015	01/09/2015		
check the efficiency of the method.		Sampled Time Date Received	02/09/2015	02/09/2015		
results of individual compounds wi		SDG Ref	150902-38	150902-38		
samples aren't corrected for the red (F) Trigger breach confirmed	covery	Lab Sample No.(s)	11995372	11995373		
1-5&+§@ Sample deviation (see appendix)		AGS Reference				
Component	LOD/Unit					
	_	_	<3	<3		
Methyl tertiary butyl ether	<3 µg/	I TM245				
(MTBE)			#	#		
Benzene	<7 μg/	I TM245	<7	<7		
			#	#		
Toluene	<4 µg/	I TM245	<4	<4		
Toluene	\4 μg/	1 1101245				
			#	#		
Ethylbenzene	<5 µg/	I TM245	<5	<5		
			#	#		
m,p-Xylene	<8 µg/	I TM245	<8	<8		
III,p-Aylerie	-to μg/	1 11012-13				
			#	#		
o-Xylene	<3 µg/	I TM245	<3	<3		
I			#	#		
Sum of detected BTEX	<28 µg	/I TM245	<28	<28		
Tames detected by Ex			_~			
Albertan CAO CAO	110	n ====================================	-10	-40		
Aliphatics >C12-C16 (aq)	<10 µg	/I TM174	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg	/I TM174	<10	<10		
Aliahatiaa 2004 005 (as)	.40	() T14474	.40	-40		
Aliphatics >C21-C35 (aq)	<10 µg	/I TM174	<10	<10		
Total Aliphatics >C12-C35	<10 µg	/I TM174	<10	<10		
(aq)	10					
	-10	// TN4474	-10	-40		
Aromatics >EC12-EC16	<10 µg	/I TM174	<10	<10		
(aq)						
Aromatics >EC16-EC21	<10 µg	/I TM174	<10	<10		
(aq)	'					
	.40	// TN4474	.40	-40		
Aromatics >EC21-EC35	<10 µg	/I TM174	<10	<10		
(aq)						
Total Aromatics	<10 µg	/I TM174	<10	<10		
>EC12-EC35 (aq)						
Total Aliphatics &	<10 µg	/I TM174	<10	<10		
	- 10 μg	/	10	110		
Aromatics >C5-35 (aq)						
GRO >C5-C10	<10 µg	/I TM245	<10	<10		
EPH (C6-C10)	<100 μς	g/l TM245	<100	<100		
(33.3.7)		'				

Validated

150902-38 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 Job:

Client Reference:

AECOM **Customer:** Attention: Gary Marshall

329713 Report Number:

Superseded Report:

VOC MS (W)													
# ISO17025 accredited.  M mCERTS accredited.		Customer Sample R	BH3	BH4		BH5		BH8		BH109		BH110	
aq Aqueous' settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted test. '* (*recovery of the surrogate stand. check the efficiency of the method		Depth (m) Sample Type Date Sampled Sampled Time		Water(GW 01/09/20 00:00:0	115 0	Water(GW/SV 01/09/2015		Water(GW/S 01/09/201	5	Water(GW/S 01/09/2015	5	Water(GW/S 01/09/201	15
results of individual compounds w samples aren't corrected for the re  (F) Trigger breach confirmed  1-5&+§@ Sample deviation (see appendix)	rithin	Date Received SDG Ref Lab Sample No.(s) AGS Reference	02/09/2015 150902-38 11995368	02/09/20 150902- 119953	38	02/09/2015 150902-38 11995367		02/09/201: 150902-38 11995371	3	02/09/2015 150902-38 11995370	3	02/09/201 150902-3 11995369	8
Component	LOD/Uni												
Dibromofluoromethane**	%	TM208	88.6 1	92.5		89.5	1	88.4	4	88.2	1	87.9	4
Toluene-d8**	%	TM208	81.8	82.6	1	81.9	1	81.5	1	82.2	1	83.1	1
4-Bromofluorobenzene**	%	TM208	81.4 1	79.4		80.6	1	77.1	1	79.5	1	81	1
Dichlorodifluoromethane	<1 µg	/I TM208	<1 1	<1	1	<1	1	<1	1	<1	1	<1	1
Chloromethane	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
Vinyl chloride	<1 µg		<1 1 #		1#	<1	1#	<1	1#	<1	1#	<1	1#
Bromomethane	<1 µg		<1 1‡		1#	<1	1#	<1	1#	<1	1#	<1	1#
Chloroethane	<1 µg	/I TM208	<1 1;	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
Trichlorofluoromethane	<1 µg	/I TM208	<1 1 ‡	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,1-Dichloroethene	<1 µg.	/I TM208	<1 1 #	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
Carbon disulphide	<1 µg	/I TM208	<1 1 ‡	<b>&lt;</b> 1	1#	<1	1#	<1	1#	<1	1#	<1	1#
Dichloromethane	<3 µg	/I TM208	<3	<3	1#	<3	1#	<3	1#	<3	1#	<3	1#
Methyl tertiary butyl ether (MTBE)	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
trans-1,2-Dichloroethene	<1 µg	/I TM208	<1 1;	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,1-Dichloroethane	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
cis-1,2-Dichloroethene	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
2,2-Dichloropropane	<1 µg	/I TM208	<1 1	<1	1	<1	1	<1	1	<1	1	<1	1
Bromochloromethane	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
Chloroform	<1 µg	/I TM208	<1 1 #	1.57		<1	1#	<1	1#	<1	1#	<1	1#
1,1,1-Trichloroethane	<1 µg	/I TM208	<1	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,1-Dichloropropene	<1 µg	/I TM208	<1 1 ‡	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
Carbontetrachloride	<1 µg	/I TM208	<1 1 ‡	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,2-Dichloroethane	<1 µg	/I TM208	<1 1	<1	1	<1	1	<1	1	<1	1	<1	1
Benzene	<1 µg	/I TM208	<1 1 #	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
Trichloroethene	<1 µg	/I TM208	<1 1 ‡	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,2-Dichloropropane	<1 µg	/I TM208	<1 1 #	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
Dibromomethane	<1 µg	/I TM208	<1 1 ‡	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
Bromodichloromethane	<1 µg	/I TM208	<1 1;	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
cis-1,3-Dichloropropene	<1 µg.		<1 1 i	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
Toluene	<1 µg	/I TM208	<1 1 #	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#
trans-1,3-Dichloropropene	<1 µg	/I TM208	<1 1 ‡	<1	1#	<1	1#	<1	1#	<1	1#	<1	1#
1,1,2-Trichloroethane	<1 µg	/I TM208	<1 1 ‡	<1 #	1#	<1	1#	<1	1#	<1	1#	<1	1#

Validated

**SDG**: 150902-38 **Job**: H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number:

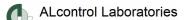
329713

Superseded Report:

#### VOC MS (W)

Client Reference:

December   Company   Com	VOC MS (W)	OC MS (W)								
Part			Customer Sample R	ВН3	BH4	BH5	BH8	BH109	BH110	
Secretary of the company and	aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Sample Type							
Second   S	** % recovery of the surrogate standa		Sampled Time		00:00:00					
Table   Market   Ma	samples aren't corrected for the re		SDG Ref	150902-38	150902-38	150902-38	150902-38	150902-38	150902-38	
1-20 Entropropose				11995368	11995366	11995367	11995371	11995370	11995369	
Tarebriorecembers			_							
Testandonocheme	1,3-Dichloropropane	<1 µg	/I TM208							
1.2-Debromethane	Tetrachloroethene	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
Coltroborageme	Dibromochloromethane	<1 µg		1 #	1:	# 1#	1#	1#	1#	
1.1,1,2,1=teachtoroethane	1,2-Dibromoethane	<1 µg	/I TM208							
Ethybenzene   41 pg1   TAZOB   41   41   41   41   41   41   41   4	Chlorobenzene	<1 µg	/I TM208			1			· .	
March   1   1   1   1   1   1   1   1   1	1,1,1,2-Tetrachloroethane	<1 µg.	/I TM208							
Nylene	Ethylbenzene	<1 µg	/I TM208							
Sylvene	m,p-Xylene	<1 µg	/I TM208		<1	<1		<1	<1	
Styrene	o-Xylene	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
Bromoform	Styrene	<1 µg	/I TM208							
Sopropytherzene	Bromoform	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
1,1,2,2-Tetrachloropethane	Isopropylbenzene	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
Bromobenzene	1,1,2,2-Tetrachloroethane	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
Propylbenzene	1,2,3-Trichloropropane	<1 µg	/I TM208							
1	Bromobenzene	<1 µg	/I TM208							
1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 #	Propylbenzene	<1 µg	/I TM208							
1	2-Chlorotoluene	<1 µg	/I TM208		<1	<1		<1		
TM208	1,3,5-Trimethylbenzene	<1 µg	/I TM208							
1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 # 1 #	4-Chlorotoluene	<1 µg	/I TM208				1			
1,2,4-Trimethylbenzene	tert-Butylbenzene	<1 µg	/I TM208							
Sec-Butylbenzene   <1 \( \mu g \)   TM208   <1     <1     <1     1     1     1     1     1     1       1	1,2,4-Trimethylbenzene	<1 µg	/I TM208			<1	<1		<1	
1# 1# 1# 1# 1# 1# 1# 1# 1# 1# 1# 1# 1# 1	sec-Butylbenzene	<1 µg	/I TM208				1			
1,3-Dichlorobenzene	4-iso-Propyltoluene	<1 µg	/I TM208				1			
1,4-Dichlorobenzene	1,3-Dichlorobenzene	<1 µg	/I TM208	<1	<1	<1	<1	<1		
n-Butylbenzene   <1 μg/l   TM208   <1   <1   <1   <1   <1   <1   <1   <	1,4-Dichlorobenzene	<1 µg	/I TM208	<1	<1	<1	<1	<1		
1,2-Dichlorobenzene   <1 μg/l   TM208   <1   <1   <1   <1   <1   <1   <1   <	n-Butylbenzene	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
1,2-Dibromo-3-chloroprop and   1   21   31   31   31   31   31   31	1,2-Dichlorobenzene	<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
1,2,4-Trichlorobenzene   <1 μg/l   TM208   <1   <1   <1   <1   <1   <1   <1   <		<1 µg	/I TM208	<1	<1	<1	<1	<1	<1	
Hexachlorobutadiene     <1 μg/l     TM208     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1<	1,2,4-Trichlorobenzene	<1 µg	/I TM208						<1 1 #	
tert-Amyl methyl ether     <1 μg/l     TM208     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1     <1	Hexachlorobutadiene	<1 µg	/I TM208		<1	<1	<1			
Naphthalene <1 μg/l TM208 <1 <1 <1 <1 <1 <1	, ,	<1 µg	/I TM208	<1	<1 1:	<1	<1 1 #	<1 1 #	<1 1 #	
	Naphthalene	<1 µg	/I TM208	<1	<1	<1	<1	<1		



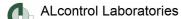
Validated

150902-38 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM 329713 Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

VOC MS (W)

VOC	MS (W)								
# M	Results Legend ISO17025 accredited. mCERTS accredited.	C	ustomer Sample R	ВН3	BH4	BH5	BH8	BH109	BH110
aq diss.filt tot.unfilt * **	Aqueous / settled sample. Dissolved / filtered sample.	The thin covery	Depth (m) Sample Type Date Sampled Sampled Time Date Received SDG Ref Lab Sample No.(s)	Water(GW/SW) 01/09/2015  02/09/2015 150902-38 11995368	Water (GW/SW) 01/09/2015 00:00:00 02/09/2015 150902-38 11995366	Water(GW/SW) 01/09/2015 	Water (GW/SW) 01/09/2015 	Water(GW/SW) 01/09/2015  02/09/2015 150902-38 11995370	Water(GW/SW) 01/09/2015 02/09/2015 150902-38 11995369
1-5&+§@	Sample deviation (see appendix)		AGS Reference						
Comp		LOD/Units							
	Trichlorobenzene	<1 µg/l		<1 1#	<1 1#	<1 1#	<1 1#	<1 1 #	<1 1#
1,3,5-	Trichlorobenzene	<1 µg/l	TM208	<1 1	<1 1	<1 1	<1 1	<1 1	<1 1



Validated

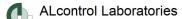
329713

SDG: 150902-38 Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Customer: AECOM Report Number:
Client Reference: Attention: Gary Marshall Superseded Report:

Client Reference:

VOC MS (W)							
# ISO17025 accredited. M mCERTS accredited.		Customer Sample R	BH111	DUP01			
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test.		Depth (m) Sample Type Date Sampled	Water(GW/SW) 01/09/2015	Water(GW/S 01/09/2015			
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time	. 02/09/2015	02/09/201	5		
results of individual compounds wi samples aren't corrected for the rec	thin	Date Received SDG Ref	150902-38	150902-38			
(F) Trigger breach confirmed 1-5&+\$@ Sample deviation (see appendix)	,	Lab Sample No.(s) AGS Reference	11995372	11995373			
Component	LOD/Unit						
Dibromofluoromethane**	%	TM208	91.7 1	90.5	1		
Toluene-d8**	%	TM208	80.4 1	80.1	1		
4-Bromofluorobenzene**	%	TM208	77.9 1	78	1		
Dichlorodifluoromethane	<1 µg/	/I TM208	<1 1	<1	1		
Chloromethane	<1 µg/		<1 1 #	<1	1#		
Vinyl chloride	<1 µg/	/I TM208	<1 1 #	<1	1#		
Bromomethane	<1 µg/	/I TM208	<1 1 #	<1	1#		
Chloroethane	<1 µg/	/I TM208	<1 1 #	<1	1#		
Trichlorofluoromethane	<1 µg/	/I TM208	<1 1 #	<1	1#		
1,1-Dichloroethene	<1 µg/	/I TM208	<1 1 #	<1	1#		
Carbon disulphide	<1 µg/	/I TM208	<1 1#	<1	1#		
Dichloromethane	<3 µg/	/I TM208	<3 1#	<3	1#		
Methyl tertiary butyl ether (MTBE)	<1 µg/	/I TM208	<1 1 #	<1	1#		
trans-1,2-Dichloroethene	<1 µg/	/I TM208	<1 1 #	<1	1#		
1,1-Dichloroethane	<1 µg/	/I TM208	<1 1 #	<1	1#		
cis-1,2-Dichloroethene	<1 µg/	/I TM208	<1 1 #	<1	1#		
2,2-Dichloropropane	<1 µg/	/I TM208	<1 1	<1	1		
Bromochloromethane	<1 µg/		<1 1 #	<1	1#		
Chloroform	<1 µg/		<1 1 #	1.41	1#		
1,1,1-Trichloroethane	<1 µg/		<1 1 #	<1	1#		
1,1-Dichloropropene	<1 µg/		<1 1 #	<1	1#		
Carbontetrachloride	<1 µg/		<1 1 #	<1	1#		
1,2-Dichloroethane	<1 µg/		<1 1	<1	1		
Benzene	<1 µg/		<1 1 #	<1	1#		
Trichloroethene	<1 µg/		<1 1 #	<1	1#		
1,2-Dichloropropane	<1 µg/		<1 1#	<1	1#		
Dibromomethane	<1 µg/		<1 1#	<1	1#		
Bromodichloromethane	<1 µg/		<1 1 #	<1	1#		
cis-1,3-Dichloropropene	<1 µg/		<1 1#	<1	1#		
Toluene	<1 µg/		<1 1 #	<1	1#		
trans-1,3-Dichloropropene	<1 µg/		<1 1 #	<1	1#		
1,1,2-Trichloroethane	<1 µg/	/I TM208	<1 1#	<1	1#		



Validated

150902-38 SDG: Location: Stag Brewery Order Number:

H\_URS\_WIM-273 Customer: AECOM 329713 Job: Report Number: Attention: Gary Marshall Superseded Report:

Client Reference:

OC MS (W)									
Results Legend # ISO17025 accredited.		Customer Sample R	BH111	DUP01					
M mCERTS accredited.  aq Aqueous / settled sample.		Donath (mr)							
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	Water(GW/SW)	Water(GW/SW)					
* Subcontracted test.     ** % recovery of the surrogate standa	ard to	Date Sampled	01/09/2015	01/09/2015					
check the efficiency of the method.	. The	Sampled Time Date Received	02/09/2015	02/09/2015					
results of individual compounds wi samples aren't corrected for the re-		SDG Ref	150902-38 11995372	150902-38 11995373					
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	11990372	11990373					
Component	LOD/Unit	s Method							
1,3-Dichloropropane	<1 µg/	I TM208	<1	<1					
			1#	1:	#				
Tetrachloroethene	<1 µg/	I TM208	<1	<1					
Dibromochloromethane	<1 µg/	I TM208	1 # <1	1 : <1	#				<del>                                     </del>
	. 49		1#	1:	#				
1,2-Dibromoethane	<1 µg/	TM208	<1	<1					
			1#	1:	#				
Chlorobenzene	<1 µg/	I TM208	<1	<1					
1 1 1 2 Tetrachlereethene	z1a/	I TM208	1 # <1	1 : <1	#				
1,1,1,2-Tetrachloroethane	<1 µg/	1 11/1/200	1#	1:	#				
Ethylbenzene	<1 µg/	I TM208	<1	<1	π				
, , , , , ,	"3		1#	1:	#				
m,p-Xylene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
o-Xylene	<1 µg/	I TM208	<1	<1					
Styrono	<1 ua/	TM208	1 # <1	1 : <1	#				
Styrene	<1 µg/	1 111206	1#	1:	#				
Bromoform	<1 µg/	I TM208	<1	<1	π				
			1#	1:	#				
Isopropylbenzene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
1,1,2,2-Tetrachloroethane	<1 µg/	I TM208	<1	<1	.				
1,2,3-Trichloropropane	<1 µg/	TM208	<1	<1 <1	1				
1,2,3-Thorioropropane	- i μg/	1 111200	1#	1:	#				
Bromobenzene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
Propylbenzene	<1 µg/	I TM208	<1	<1					
O Oblancial cons	.4	T 4000	1#	1:	#				
2-Chlorotoluene	<1 µg/	I TM208	<1 1 #	<1 1:	<b>"</b>				
1,3,5-Trimethylbenzene	<1 µg/	I TM208	<1	<1	#				
1,2,2			1#	1:	#				
4-Chlorotoluene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
tert-Butylbenzene	<1 µg/	TM208	<1	<1	ш				
1,2,4-Trimethylbenzene	<1 µg/	TM208	1 # <1	1 : <1	#				
1,2,4 Timethylbenzene	11 µg/	1 111200	1#	1:	#				
sec-Butylbenzene	<1 µg/	I TM208	<1	<1					
			1#	1:	#				
4-iso-Propyltoluene	<1 µg/	TM208	<1	<1					
1,3-Dichlorobenzene	z1a/	I TM208	1 # <1	1 : <1	#				<del>                                     </del>
1,3-DIGNIOTODENZENE	<1 µg/	I IVIZUO	< i 1 #	1:	#				
1,4-Dichlorobenzene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
n-Butylbenzene	<1 µg/	TM208	<1	<1					
100111			1#	1:	#				
1,2-Dichlorobenzene	<1 µg/	I TM208	<1	<1	.				
1,2-Dibromo-3-chloroprop	<1 µg/	TM208	<u> </u>	<1	1				<del>                                     </del>
ane	- ' μg/		1	1	1				
1,2,4-Trichlorobenzene	<1 µg/	TM208	<1	<1					
			1#	1:	#				
Hexachlorobutadiene	<1 µg/	TM208	<1	<1					
tant Annal section 1 at	.4 *	T. 4000	1#	1:	#				
tert-Amyl methyl ether (TAME)	<1 µg/	I TM208	<1	<1	#				
Naphthalene	<1 µg/	TM208	1 # <1	1 : <1	π				
	μg/		1#		#				
-		•						•	



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150902-38 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM 329713 Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

VOC MS (W)

voc	C MS (W)								
# M	Results Legend ISO17025 accredited. mCERTS accredited.	C	Customer Sample R	BH111	DUP01				
	Aqueous / settled sample. Dissolved / filtered sample.		Depth (m)						
*	Total / unfiltered sample. Subcontracted test.		Sample Type Date Sampled	Water(GW/SW) 01/09/2015	Water(GW/SW) 01/09/2015				
**	% recovery of the surrogate standa check the efficiency of the method.		Sampled Time	02/09/2015	02/09/2015				
	results of individual compounds wi samples aren't corrected for the red	ithin	Date Received SDG Ref	150902-38	150902-38				
(F) 1-5848@	Trigger breach confirmed Sample deviation (see appendix)	,	Lab Sample No.(s)	11995372	11995373				
Compo		LOD/Units	AGS Reference Method						
	Trichlorobenzene	<1 μg/l		<1	<1				
1,3,5-	Trichlorobenzene	<1 µg/l	TM208	1 # <1	1 # <1				
				1	1				
						<u> </u>	<u> </u>	<u> </u>	

Client Reference:

#### **CERTIFICATE OF ANALYSIS**

Validated

150902-38 SDG: Location: H\_URS\_WIM-273 Job:

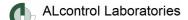
Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	Gample	Johnson
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		

Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.



Validated

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 SDG:
 150902-38
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 Stag Brewery
 Order Number:

 Job:
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 Customer:
 AECOM
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Client Reference: Attention: Gary Marshall Superseded Report:

# **Test Completion Dates**

Lab Sample No(s)	11995368	11995366	11995367	11995371	11995370	11995369	11995372	11995373
Customer Sample Ref.	BH3	BH4	BH5	BH8	BH109	BH110	BH111	DUP01
AGS Ref.								
Depth								
Туре	LIQUID							
Ammoniacal Nitrogen	08-Sep-2015	08-Sep-2015	07-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015
Anions by Kone (w)	09-Sep-2015							
COD Unfiltered	05-Sep-2015							
Dissolved Metals by ICP-MS	09-Sep-2015	09-Sep-2015	09-Sep-2015	09-Sep-2015	09-Sep-2015	08-Sep-2015	09-Sep-2015	09-Sep-2015
Dissolved W, Nb and Zr by ICP-MS	08-Sep-2015							
EPH (DRO) (C10-C40) Aqueous (W)	10-Sep-2015							
EPH CWG (Aliphatic) Aqueous GC (W)	14-Sep-2015							
EPH CWG (Aromatic) Aqueous GC (W)	14-Sep-2015							
GRO by GC-FID (W)	04-Sep-2015	08-Sep-2015						
Mercury Dissolved	07-Sep-2015							
Nitrite by Kone (w)	06-Sep-2015							
pH Value	10-Sep-2015							
SVOC MS (W) - Aqueous	08-Sep-2015							
Total EPH (aq)	11-Sep-2015							
TPH CWG (W)	14-Sep-2015							
VOC MS (W)	04-Sep-2015	04-Sep-2015	04-Sep-2015	03-Sep-2015	04-Sep-2015	04-Sep-2015	03-Sep-2015	03-Sep-2015

14:19:25 14/09/2015

Validated

**SDG**: 150902-38 **Job**: H\_URS\_W

H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

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# **ASSOCIATED AQC DATA**

#### Ammoniacal Nitrogen

Client Reference:

Component	Method Code	QC 1224	QC 1233	QC 1270
Ammoniacal Nitrogen as	TM099	96.0	102.8	102.0
IN		91.84 : 108.16	91.84 : 108.16	91.84 : 108.16

### Anions by Kone (w)

Component	Method Code	QC 1236	QC 1219
Chloride	TM184		
		94.64 : 106.82	94.23 : 107.50
Phosphate (Ortho as	TM184		105.6
PO4)		96.40 : 108.40	96.41 : 109.80
Sulphate (soluble)	TM184	99.6	
		96.47 : 104.74	94.38 : 108.93
TON as NO3	TM184	102.5	
		93.05 : 112.12	93.93 : 110.49

#### COD Unfiltered

Component	Method Code	QC 1264	QC 1268	QC 1273
COD	TM107	100.57	100.19	99.43
		95.90 : 102.57	95.90 : 102.57	95.90 : 102.57

## Dissolved Metals by ICP-MS

Component	Method Code	QC 1270	QC 1278
Aluminium	TM152	406.42	
7 1101111110111	52	<b>106.13</b> 88.58 : 117.87	<b>104.93</b> 88.58 : 117.87
Authorom	T14450		
Antimony	TM152	101.73	101.73
		87.01 : 109.33	87.01 : 109.33
Arsenic	TM152	102.4	98.67
		89.45 : 113.51	89.45 : 113.51
Barium	TM152	102.4	102.67
		90.47 : 113.85	90.47 : 113.85
Beryllium	TM152	96.27	105.6
		84.68 : 120.26	84.68 : 120.26
Boron	TM152	95.6	100.13
		82.95 : 121.47	82.95 : 121.47
Cadmium	TM152	101.47	103.6
		90.40 : 113.29	90.40 : 113.29
Chromium	TM152	100.13	102.53
		90.01 : 114.05	90.01 : 114.05
Cobalt	TM152	100.67	100.93
		87.14 : 117.85	87.14 : 117.85
Copper	TM152	100.67	103.6
		88.43 : 114.27	88.43 : 114.27
Lead	TM152	95.33	96.0
		89.53 : 109.90	89.53 : 109.90

Validated

SDG: 150902-38 Location: Stag Brewery Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
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 329713

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Dissolved Metals by ICP-MS

		QC 1270	QC 1278
Lithium	TM152	97.07	105.33
		84.32 : 123.11	84.32 : 123.11
Manganese	TM152	99.87	103.2
		91.43 : 113.17	91.43 : 113.17
Molybdenum	TM152	102.13	101.2
		80.73 : 113.85	80.73 : 113.85
Nickel	TM152	100.0	100.53
		87.68 : 113.94	87.68 : 113.94
Phosphorus	TM152	106.67	100.8
		86.68 : 118.34	86.68 : 118.34
Selenium	TM152	101.33	100.93
		91.03 : 113.34	91.03 : 113.34
Strontium	TM152	101.07	102.13
		90.44 : 114.09	90.44 : 114.09
Tellurium	TM152	104.53	102.53
		80.93 : 116.91	80.93 : 116.91
Thallium	TM152	96.13	96.4
		90.27 : 111.31	90.27 : 111.31
Tin	TM152	100.27	100.53
		83.07 : 112.37	83.07 : 112.37
Titanium	TM152	102.53	101.87
		92.65 : 111.58	92.65 : 111.58
Uranium	TM152	92.13	97.33
		88.60 : 110.35	88.60 : 110.35
Vanadium	TM152	100.4	103.07
		88.43 : 116.60	88.43 : 116.60
Zinc	TM152	99.87	105.33
		89.84 : 113.06	89.84 : 113.06

#### Dissolved W, Nb and Zr by ICP-MS

Component	Method Code	QC 1290
Bismuth	TM283	<b>92.13</b> 66.55 : 123.56
Niobium	TM283	<b>107.6</b> 85.00 : 115.00
Silver	TM283	<b>105.33</b> 81.37 : 112.35
Tungsten	TM283	<b>85.87</b> 85.00 : 115.00
Zirconium	TM283	<b>102.27</b> 85.00 : 115.00

### EPH (DRO) (C10-C40) Aqueous (W)

Component	Method Code	QC 1208	QC 1212
EPH (DRO) (C10-C40)	TM172	<b>96.5</b> 59.22 : 112.78	<b>77.0</b> 59.47 : 106.15

### EPH CWG (Aliphatic) Aqueous GC (W)

Validated

**SDG**: 150902-38 **Job**: H\_URS\_WIM-

Client Reference:

H\_URS\_WIM-273 Custo

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

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#### EPH CWG (Aliphatic) Aqueous GC (W)

Component	Method Code	QC 1219
Total Aliphatics >C12-C35	TM174	<b>79.17</b> 66.67 : 110.42

#### EPH CWG (Aromatic) Aqueous GC (W)

_	Component	Method Code	QC 1220
	Total Aromatics >EC12-EC35	TM174	<b>88.67</b> 63.00 : 121.00

# GRO by GC-FID (W)

Component	Method Code	QC 1199	QC 1175	QC 1286
Benzene by GC	TM245	<b>95.5</b> 76.72 : 118.62	<b>104.5</b> 79.00 : 121.00	<b>90.0</b> 77.50 : 122.50
Ethylbenzene by GC	TM245	<b>90.0</b> 74.74 : 116.76	<b>104.0</b> 79.00 : 121.00	<b>87.5</b> 77.50 : 122.50
m & p Xylene by GC	TM245	<b>89.75</b> 73.06 : 114.58	<b>103.5</b> 79.00 : 121.00	<b>87.75</b> 77.50 : 122.50
MTBE GC-FID	TM245	<b>98.5</b> 80.00 : 121.03	<b>108.0</b> 79.00 : 121.00	<b>92.0</b> 77.50 : 122.50
o Xylene by GC	TM245	<b>90.0</b> 70.00 : 130.00	<b>103.0</b> 79.00 : 121.00	<b>87.5</b> 77.50 : 122.50
QC	TM245	<b>101.89</b> 70.00 : 130.00	<b>104.28</b> 79.00 : 121.00	<b>102.19</b> 74.88 : 125.54
Toluene by GC	TM245	<b>92.0</b> 79.35 : 119.27	<b>105.0</b> 79.00 : 121.00	<b>88.5</b> 77.50 : 122.50

## Mercury Dissolved

Component	Method Code	QC 1262	QC 1200
Mercury Dissolved (CVAF)	TM183	<b>98.5</b> 73.51 : 120.83	<b>95.5</b> 73.51 : 120.83

#### pH Value

Component	Method Code	QC 1201	QC 1215
рН	TM256	<b>101.08</b> 99.20 : 102.85	<b>100.54</b> 99.37 : 102.65

## SVOC MS (W) - Aqueous

Validated

 SDG:
 150902-38
 Location:

 Job:
 H\_URS\_WIM-273
 Customer

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329713

SVOC MS (W) - Aqueous

Client Reference:

Component	Method Code	QC 1208	QC 1247
4-Bromophenylphenyleth er	TM176	<b>87.2</b> 55.04 : 128.00	<b>82.4</b> 65.62 : 120.95
Benzo(a)anthracene	TM176	<b>87.2</b> 52.64 : 123.68	<b>82.4</b> 62.83 : 114.26
Benzo(a)pyrene	TM176	<b>79.68</b> 49.60 : 114.40	<b>80.8</b> 54.19 : 105.67
Butylbenzyl phthalate	TM176	<b>93.6</b> 49.04 : 127.76	<b>82.4</b> 45.10 : 118.90
Hexachlorobutadiene	TM176	<b>77.52</b> 42.80 : 108.20	<b>61.28</b> 43.12 : 110.32
Naphthalene	TM176	<b>92.0</b> 47.20 : 116.80	<b>85.6</b> 69.48 : 118.94
Nitrobenzene	TM176	<b>88.8</b> 58.70 : 110.90	<b>79.52</b> 69.13 : 107.62
Phenol	TM176	<b>50.08</b> 30.25 : 79.75	<b>49.12</b> 30.92 : 74.19

## VOC MS (W)

1,1,1,2-Tetrachloroethan   e   e   84.25 : 114.84   87.29 : 112.22   1,1,1-Trichloroethane   TM208   90.0   91.5   83.02 : 113.68   93.5   80.19 : 121.45   77.85 : 123.56   1,2-Dichloroethane   TM208   91.0   96.5   77.68 : 127.05   80.96 : 124.37   2-Chlorotoluene   TM208   91.0   96.5   87.22 : 115.45   88.70 : 113.67   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 112.35   84.42 : 113.67   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.62   84.42 : 113.42   84.43 : 113.42   84.	•		22//22	22.442
e         84.25 : 114.84         87.29 : 112.22           1,1,1-Trichloroethane         TM208         90.0         91.5           1,1-Dichloroethane         TM208         93.5         83.02 : 113.68           1,2-Dichloroethane         TM208         93.5         77.85 : 123.56           1,2-Dichloroethane         TM208         94.0         96.5           77.68 : 127.05         80.96 : 124.37           2-Chlorotoluene         TM208         91.0         86.5           85.81 : 116.77         84.42 : 112.35           4-Chlorotoluene         TM208         92.0         96.5           87.22 : 115.45         88.70 : 113.67           Benzene         TM208         91.0         95.0           82.30 : 120.49         85.85 : 118.22           Bromomethane         TM208         91.0         95.0           83.96 : 117.98         82.06 : 117.49           Carbontetrachloride         TM208         93.0         93.5           85.75 : 114.88         77.50 : 122.50           Chloroform         TM208         95.0         100.0           77.50 : 122.50         100.0         77.50 : 122.50           Chloromethane         TM208         104.0         82.70 : 120.11 </th <th>Component</th> <th>Method Code</th> <th>QC 1188</th> <th>QC 1162</th>	Component	Method Code	QC 1188	QC 1162
1,1,1-Trichloroethane	1 1 1	TM208	•	
1,1-Dichloroethane	6		84.25 : 114.84	87.29 : 112.22
1,1-Dichloroethane         TM208         93.5 80.19:121.45         77.85:123.56           1,2-Dichloroethane         TM208         94.0 77.68:127.05         80.96:124.37           2-Chlorotoluene         TM208         91.0 96.5 80.96:124.37           2-Chlorotoluene         TM208         91.0 96.5 84.42:112.35           4-Chlorotoluene         TM208         92.0 96.5 88.70:113.67           Benzene         TM208         91.0 95.0 85.85:118.22           Bromomethane         TM208         91.0 95.0 85.85:118.22           Bromomethane         TM208         93.0 95.0 85.85:118.22           Carbontetrachloride         TM208         93.0 93.5 82.06:117.49           Chlorobenzene         TM208         93.0 97.5 77.50:122.50           Chloroform         TM208         95.0 100.0 97.5 77.50:122.50           Chloromethane         TM208         95.0 100.0 97.5 97.50:122.50           Chloromethane         TM208         95.0 100.0 97.5 97.50:122.50           Chloromethane         TM208         17.5 97.50:122.50           Chloromethane         TM208         94.0 99.5 80.49:145.80           Cis-1,2-Dichloroethene         TM208 94.0 99.5 80.45:125.21           Ethylbenzene         TM208 98.5 90.0 80.45:125.21           Ethylbenzene         TM208 98.5 99.0 79.39:11	1,1,1-Trichloroethane	TM208	90.0	91.5
1,2-Dichloroethane			84.67 : 111.97	83.02 : 113.68
Ro.19 : 121.45	1,1-Dichloroethane	TM208	93.5	95.0
2-Chlorotoluene				00.0
2-Chlorotoluene	1.2-Dichloroethane	TM208	04.0	96.5
2-Chlorotoluene         TM208         91.0         85.81: 116.77         84.42: 112.35           4-Chlorotoluene         TM208         92.0         86.5           87.22: 115.45         88.70: 113.67           Benzene         TM208         91.0         95.0           82.30: 120.49         85.85: 118.22           Bromomethane         TM208         101.0         103.0           76.16: 123.35         78.68: 126.84           Carbontetrachloride         TM208         93.0         93.5           83.96: 117.98         82.06: 117.49           Chlorobenzene         TM208         93.0         97.5           85.75: 114.88         77.50: 122.50           Chloroform         TM208         95.0         100.0           84.84: 119.97         77.50: 122.50           Chloromethane         TM208         117.5         113.0           64.99: 145.80         64.99: 145.80           Cis-1,2-Dichloroethene         TM208         94.0         82.70: 120.11           Dichloromethane         TM208         94.0         82.70: 120.11           Dichloromethane         TM208         89.5         80.45: 125.21           Ethylbenzene         TM208         89.5         80.74: 11	,		••	
## A-Chlorotoluene ## A-Chloroto	2 Chlorotoluono	TM200		
4-Chlorotoluene         TM208         92.0         96.5           87.22:115.45         88.70:113.67           Benzene         TM208         91.0         95.0           82.30:120.49         85.85:118.22           Bromomethane         TM208         101.0         103.0           76.16:123.35         78.68:126.84           Carbontetrachloride         TM208         93.0         93.5           83.96:117.98         82.06:117.49           Chlorobenzene         TM208         93.0         97.5           77.50:122.50         95.0         100.0           84.84:119.97         77.50:122.50           Chloroform         TM208         117.5         113.0           64.99:145.80         64.99:145.80           Cis-1,2-Dichloroethene         TM208         104.0         82.70:120.11           Dichloromethane         TM208         94.0         99.5           79.31:122.56         80.45:125.21         80.45:125.21           Ethylbenzene         TM208         89.5         80.45:125.21           Hexachlorobutadiene         TM208         98.5         99.0           68.91:121.59         79.39:111.07           0-Xylene         TM208         91.0	2-Ciliorotoluene	1101200		
S2.0   87.22 : 115.45   88.70 : 113.67			85.81 : 116.77	-
Benzene         TM208         91.0         95.0           82.30 : 120.49         85.85 : 118.22           Bromomethane         TM208         101.0         103.0           76.16 : 123.35         78.68 : 126.84           Carbontetrachloride         TM208         93.0         82.06 : 117.49           Chlorobenzene         TM208         93.0         97.5           85.75 : 114.88         77.50 : 122.50           Chloroform         TM208         95.0         100.0           84.84 : 119.97         77.50 : 122.50           Chloromethane         TM208         117.5         113.0           64.99 : 145.80         64.99 : 145.80           Cis-1,2-Dichloroethene         TM208         104.0         82.70 : 120.11           Dichloromethane         TM208         94.0         82.70 : 120.11           Dichloromethane         TM208         89.5         80.45 : 125.21           Ethylbenzene         TM208         89.5         80.45 : 125.21           Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           0-Xylene         TM208         91.0         95.0	4-Chlorotoluene	TM208	92.0	96.5
Bromomethane			87.22 : 115.45	88.70 : 113.67
Bromomethane         TM208         101.0         103.0           76.16: 123.35         78.68: 126.84           Carbontetrachloride         TM208         93.0         93.5           83.96: 117.98         82.06: 117.49           Chlorobenzene         TM208         93.0         97.5           85.75: 114.88         77.50: 122.50           Chloroform         TM208         95.0         100.0           84.84: 119.97         77.50: 122.50           Chloromethane         TM208         117.5         113.0           53.63: 141.38         64.99: 145.80           Cis-1,2-Dichloroethene         TM208         104.0         82.70: 120.11           Dichloromethane         TM208         94.0         82.70: 120.11           Dichloromethane         TM208         99.5         80.45: 125.21           Ethylbenzene         TM208         89.5         90.0           80.74: 110.74         81.00: 111.00           Hexachlorobutadiene         TM208         98.5           68.91: 121.59         79.39: 111.07           0-Xylene         TM208         91.0         95.0	Benzene	TM208	91.0	95.0
Total			82.30 : 120.49	85.85 : 118.22
Carbontetrachloride         TM208         93.0         93.5           Baselin 17.98         82.06 : 117.49         82.06 : 117.49           Chlorobenzene         TM208         93.0         97.5           Baselin 17.5         77.50 : 122.50         77.50 : 122.50           Chloroform         TM208         95.0         100.0           Baselin 19.97         77.50 : 122.50         77.50 : 122.50           Chloromethane         TM208         117.5         113.0           Baselin 19.97         113.0         64.99 : 145.80           Cis-1,2-Dichloroethene         TM208         104.0         82.70 : 120.11           Dichloromethane         TM208         94.0         99.5           79.31 : 122.56         80.45 : 125.21           Ethylbenzene         TM208         89.5         80.45 : 125.21           Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           0-Xylene         TM208         91.0         95.0	Bromomethane	TM208	101.0	103.0
Sa.96 : 117.98   82.06 : 117.49				
TM208       83.96 : 117.98       82.06 : 117.49         Chlorobenzene       TM208       93.0       97.5         Chloroform       TM208       95.0       100.0         Chloromethane       TM208       117.5       113.0         64.99 : 145.80         Cis-1,2-Dichloroethene       TM208       104.0       108.0         81.65 : 120.44       82.70 : 120.11         Dichloromethane       TM208       99.5         79.31 : 122.56       80.45 : 125.21         Ethylbenzene       TM208       89.5       90.0         Hexachlorobutadiene       TM208       98.5       99.0         68.91 : 121.59       79.39 : 111.07         O-Xylene       TM208       91.0       95.0	Carbontetrachloride	TM208	03.0	02.5
Chlorobenzene         TM208         93.0 85.75 : 114.88         97.5 77.50 : 122.50           Chloroform         TM208         95.0 100.0 77.50 : 122.50           Chloromethane         TM208         117.5 53.63 : 141.38         113.0 64.99 : 145.80           Cis-1,2-Dichloroethene         TM208         104.0 82.70 : 120.11         82.70 : 120.11           Dichloromethane         TM208         94.0 99.5 80.45 : 125.21         80.45 : 125.21           Ethylbenzene         TM208         89.5 80.45 : 125.21         90.0 81.00 : 111.00           Hexachlorobutadiene         TM208         98.5 99.0 79.39 : 111.07         99.0 79.39 : 111.07           o-Xylene         TM208         91.0 95.0         95.0				
State	Chlorobenzene	TM208		
Chloroform         TM208         95.0 84.84 : 119.97         100.0 77.50 : 122.50           Chloromethane         TM208         117.5 53.63 : 141.38         113.0 64.99 : 145.80           Cis-1,2-Dichloroethene         TM208         104.0 82.70 : 120.11           Dichloromethane         TM208         94.0 99.5 80.45 : 125.21           Ethylbenzene         TM208         89.5 80.45 : 125.21           Ethylbenzene         TM208         89.5 80.74 : 110.74         81.00 : 111.00           Hexachlorobutadiene         TM208         98.5 99.0 79.39 : 111.07           o-Xylene         TM208         91.0         95.0	Officioscrizeric	1101200		
Salar   Sala	011 6	T11000	85.75 : 114.88	77.50 : 122.50
Chloromethane         TM208         117.5         113.0           53.63 : 141.38         64.99 : 145.80           Cis-1,2-Dichloroethene         TM208         104.0         108.0           81.65 : 120.44         82.70 : 120.11           Dichloromethane         TM208         94.0         99.5           79.31 : 122.56         80.45 : 125.21           Ethylbenzene         TM208         89.5         90.0           80.74 : 110.74         81.00 : 111.00           Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           o-Xylene         TM208         91.0         95.0	Chloroform	TM208		
TM208			84.84 : 119.97	77.50 : 122.50
Cis-1,2-Dichloroethene         TM208         104.0         108.0           81.65: 120.44         82.70: 120.11           Dichloromethane         TM208         94.0         99.5           79.31: 122.56         80.45: 125.21           Ethylbenzene         TM208         89.5         90.0           80.74: 110.74         81.00: 111.00           Hexachlorobutadiene         TM208         98.5         99.0           68.91: 121.59         79.39: 111.07           o-Xylene         TM208         91.0         95.0	Chloromethane	TM208	117.5	113.0
Dichloromethane			53.63 : 141.38	64.99 : 145.80
Dichloromethane         TM208         94.0         99.5           79.31 : 122.56         80.45 : 125.21           Ethylbenzene         TM208         89.5         90.0           80.74 : 110.74         81.00 : 111.00           Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           o-Xylene         TM208         91.0         95.0	Cis-1,2-Dichloroethene	TM208	104.0	108.0
TM208   TM208   S9.5   S0.45 : 125.21			81.65 : 120.44	82.70 : 120.11
79.31 : 122.56     80.45 : 125.21       Ethylbenzene     TM208     89.5     90.0       88.5     99.0       68.91 : 121.59     79.39 : 111.07       o-Xylene     TM208     91.0     95.0	Dichloromethane	TM208	94 0	99.5
Ethylbenzene         TM208         89.5         90.0           80.74 : 110.74         81.00 : 111.00           Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           o-Xylene         TM208         91.0         95.0			••	00.0
Name	Ethylbenzene	TM208		
Hexachlorobutadiene         TM208         98.5         99.0           68.91 : 121.59         79.39 : 111.07           o-Xylene         TM208         91.0         95.0	20.3.00120110	200		00.0
0-Xylene TM208 91.0 95.0 95.0	Llovaphlarahutadi	TM200		
o-Xylene TM208 91.0 95.0	nexachiorodutadienė	1 IVI2U8		
91.0			68.91 : 121.59	79.39 : 111.07
85.43 : 113.21 84.32 : 113.42	o-Xylene	TM208	91.0	95.0
			85.43 : 113.21	84.32 : 113.42

Validated

150902-38 Location: Stag Brewery SDG: Order Number: Job:

329713 H\_URS\_WIM-273 **Customer: AECOM** Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

VOC MS (W)

	'	QC 1188	QC 1162
p/m-Xylene	TM208	89.25	92.75
		80.94 : 113.51	82.25 : 112.25
Tert-butyl methyl ether	TM208	98.0	93.0
		59.77 : 129.51	76.57 : 125.98
Tetrachloroethene	TM208	91.0	93.5
		83.21 : 115.40	84.88 : 110.14
Toluene	TM208	90.0	93.0
		86.02 : 114.04	85.71 : 113.18
Trichloroethene	TM208	91.0	94.0
		83.50 : 113.50	87.32 : 112.88
Vinyl Chloride	TM208	92.5	88.0
		63.71 : 124.88	67.57 : 130.24

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.

Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

Sample No : 12041687 Sample ID :

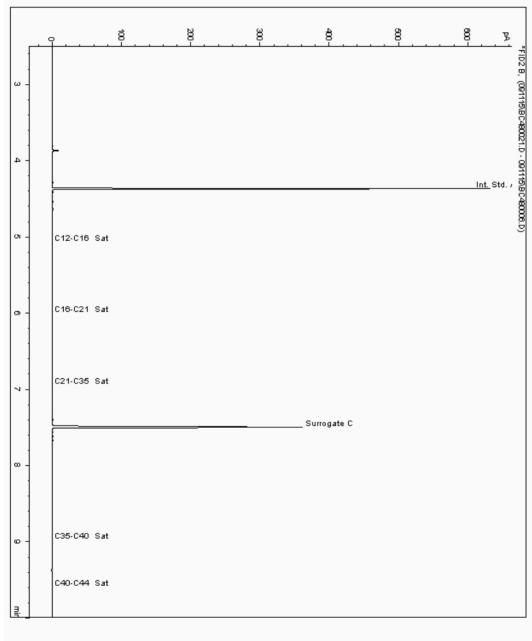
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416099-11/09/2015 21:08:44 PM Date Acquired : Units :

ppb Dilution 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

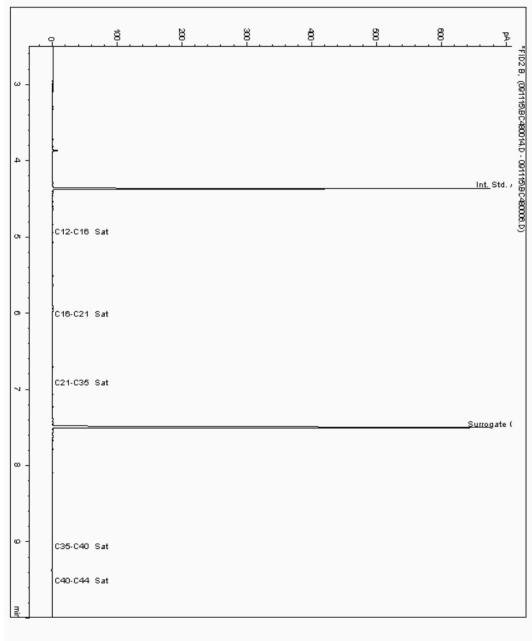
Analysis: EPH CWG (Aliphatic) Aqueous GC (W) Sample No : Depth: 12041693 Sample ID : BH111

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416113-11/09/2015 18:56:51 PM Date Acquired : Units :

ppb Dilution 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

Depth:

329713

Chromatogram

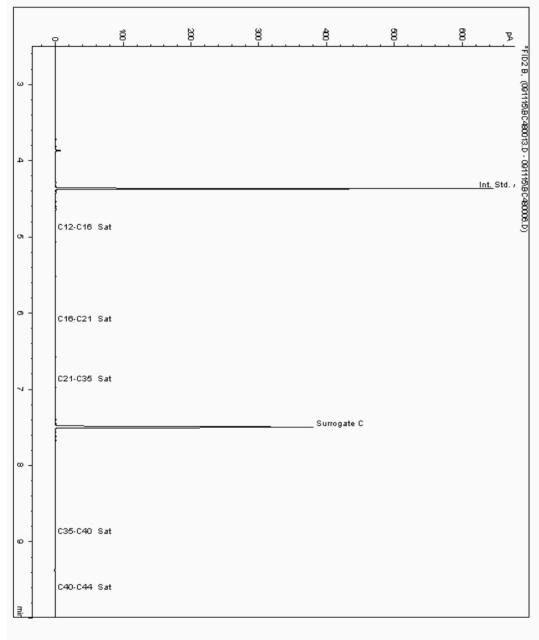
Analysis: EPH CWG (Aliphatic) Aqueous GC (W) Sample No : 12041696 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416120-11/09/2015 18:38:02 PM

Date Acquired : Units : ppb Dilution CF 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

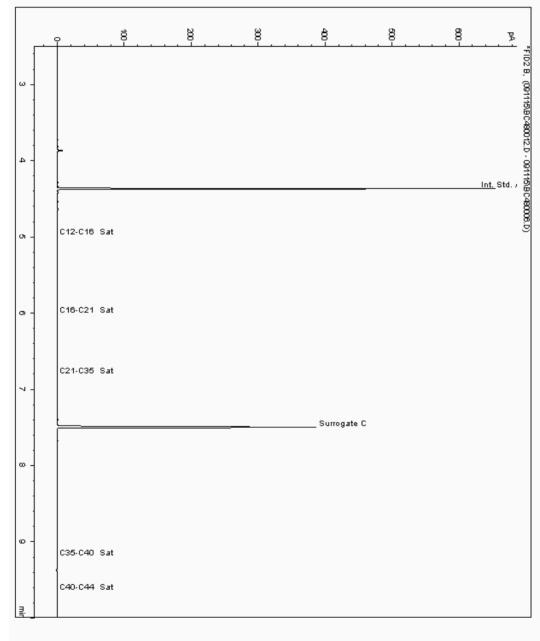
Sample No : 12041700 Sample ID : BH110

Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

11416094-11/09/2015 18:19:01 PM

Sample Identity: Date Acquired : Units : ppb Dilution CF 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

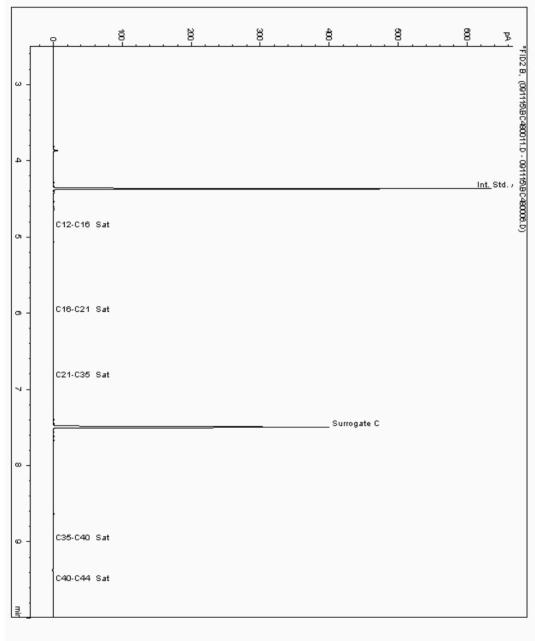
12041705 Sample No : Sample ID :

Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

11416104-11/09/2015 18:00:15 PM Sample Identity: Date Acquired : Units :

ppb Dilution CF 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W)

12041823 Sample No : Sample ID :

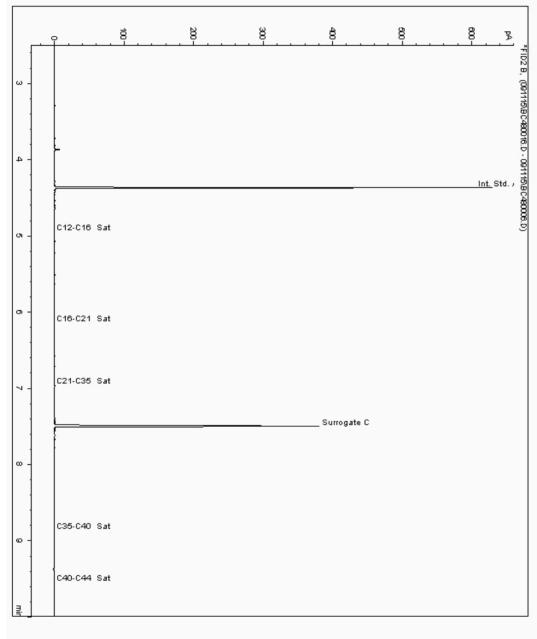
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416073-11/09/2015 19:34:23 PM Date Acquired : Units :

ppb Dilution 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) Sample No : 12041835

Sample ID :

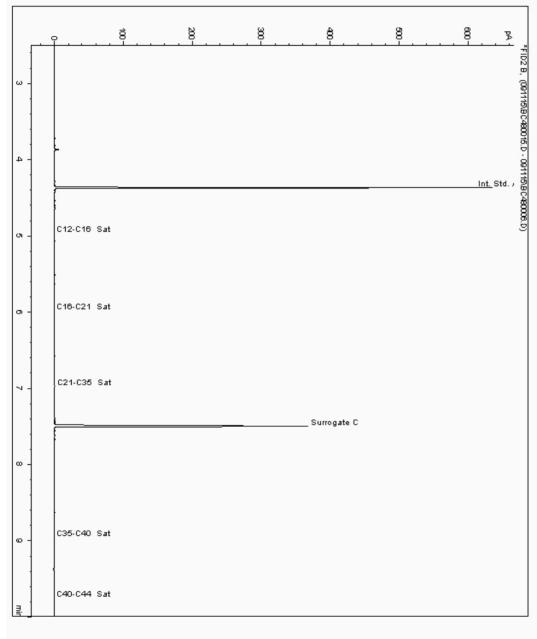
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416089-11/09/2015 19:15:37 PM Date Acquired : Units :

ppb Dilution CF 1 0.008 Multiplier



Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

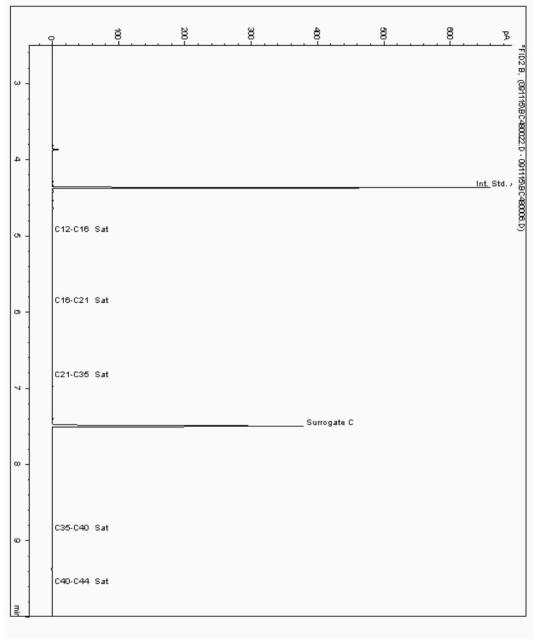
Analysis: EPH CWG (Aliphatic) Aqueous GC (W) Sample No : Depth: 12041844 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - SATS ( C12 - C40 )

Sample Identity:

11416079-11/09/2015 21:27:30 PM Date Acquired : Units :

ppb Dilution 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

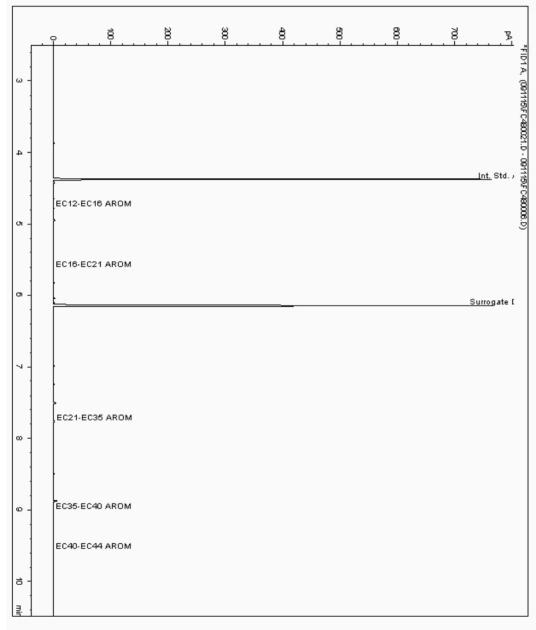
Analysis: EPH CWG (Aromatic) Aqueous GC (W) Sample No : Depth: 12041687 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416100-11/09/2015 21:08:44 PM ppb Date Acquired : Units :

Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12041693 Sample ID : BH111

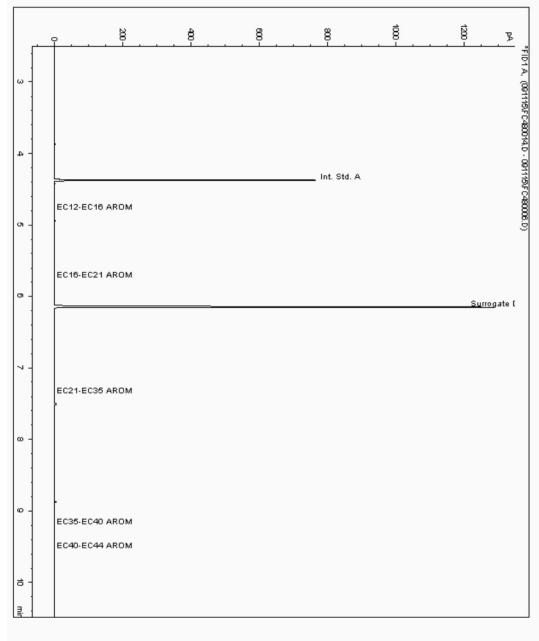
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416114-11/09/2015 18:56:50 PM ppb Date Acquired : Units :

Dilution CF 1 0.008 Multiplier



Chromatogram

Validated

150902-38 SDG: H\_URS\_WIM-273 Job:

Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Client Reference:

Sample No : 12041696

Sample ID :

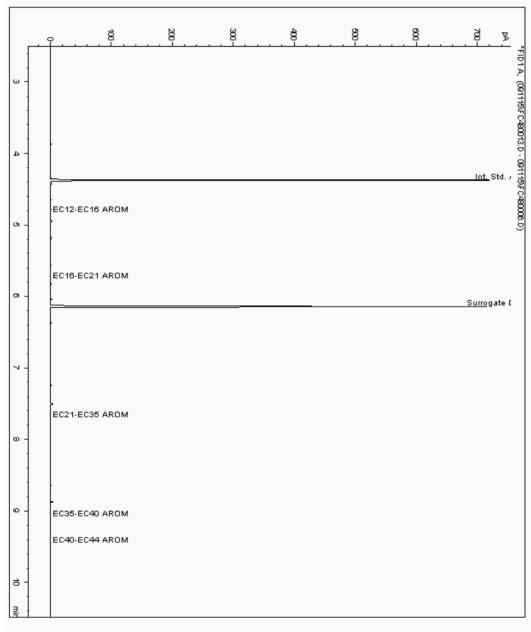
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416121-11/09/2015 18:38:02 PM ppb Date Acquired : Units :

Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number:

329713

Superseded Report:

Chromatogram

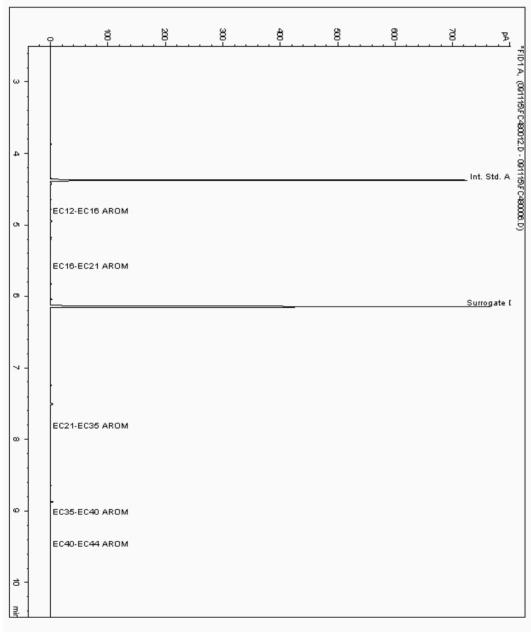
Analysis: EPH CWG (Aromatic) Aqueous GC (W) Sample No : Depth: 12041700 Sample ID : BH110

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416095-11/09/2015 18:19:02 PM

Date Acquired : Units : ppb Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number:

329713

Superseded Report:

Chromatogram

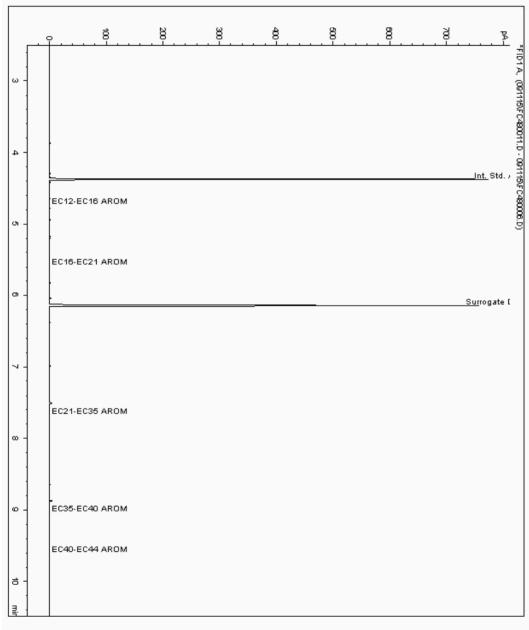
Analysis: EPH CWG (Aromatic) Aqueous GC (W) 12041705 Sample No : Depth:

Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity: Date Acquired : Units : 11416105-11/09/2015 18:00:16 PM

ppb Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

# Chromatogram

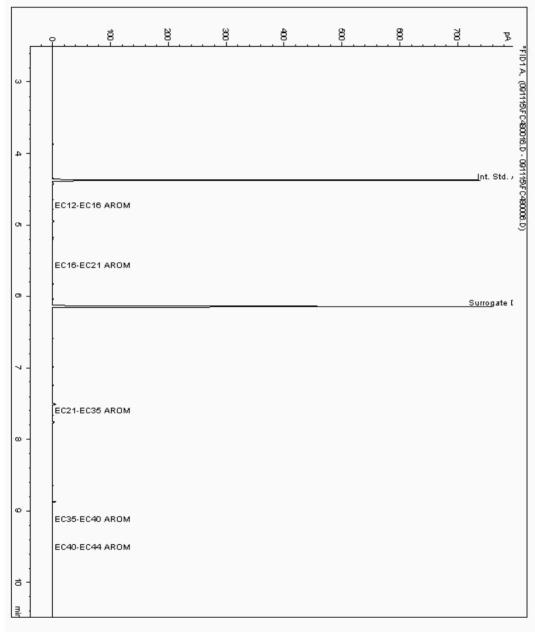
Analysis: EPH CWG (Aromatic) Aqueous GC (W) Sample No : Depth: 12041823 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416074-11/09/2015 19:34:23 PM ppb Date Acquired : Units :

Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: Job:

Client Reference:

H\_URS\_WIM-273

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

# Chromatogram

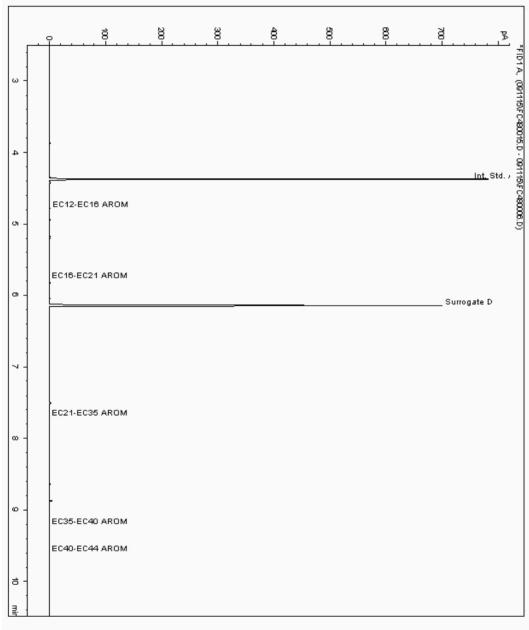
Analysis: EPH CWG (Aromatic) Aqueous GC (W) Sample No : Depth: 12041835 Sample ID :

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416090-11/09/2015 19:15:37 PM Date Acquired : Units :

ppb Dilution CF 1 0.008 Multiplier



Validated

150902-38 SDG: H\_URS\_WIM-273 Job:

Client Reference:

Location: **Customer:** Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W)

Sample No : 12041844 Sample ID :

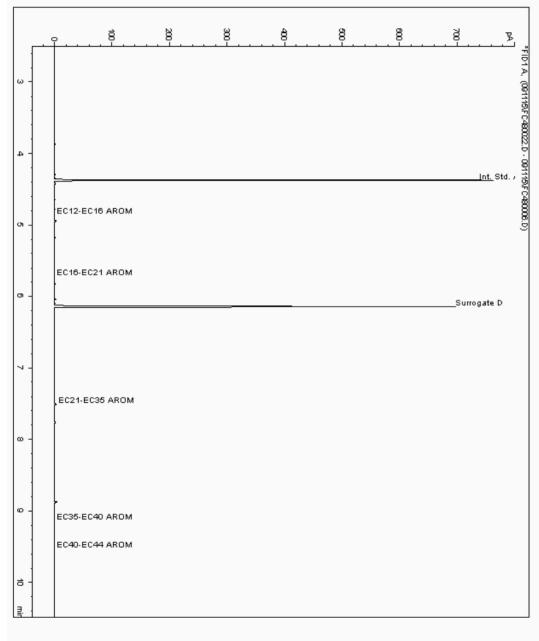
Depth:

Alcontrol/Geochem Analytical Services Speciated TPH - AROM ( C12 - C40 )

Sample Identity:

11416080-11/09/2015 21:27:30 PM Date Acquired : Units :

ppb Dilution CF 1 0.008 Multiplier



Validated

150902-38 Location: Stag Brewery SDG: H\_URS\_WIM-273 Job: **Customer:** AECOM

Client Reference: Attention: Gary Marshall Order Number: Report Number: Superseded Report:

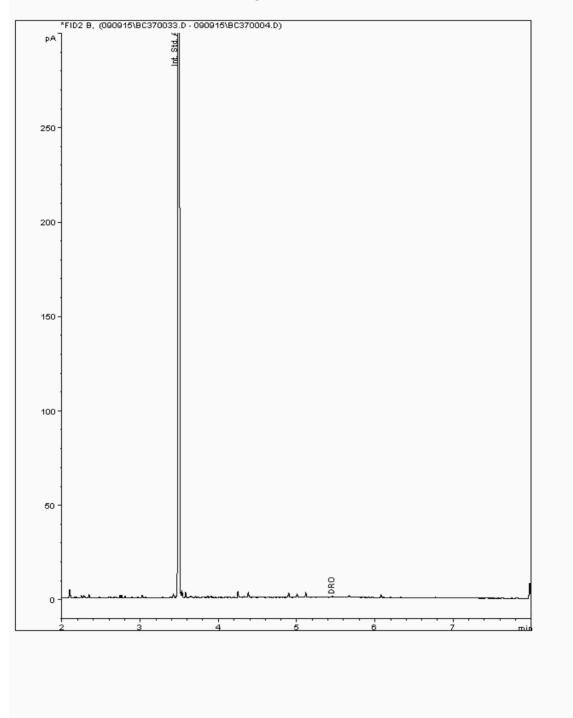
329713

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12010785 Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378749Date Acquired : 10/09/2015 03:40:25 PM
Units : mg/1



Validated

150902-38 SDG: Job:

Location: Stag Brewery AECOM **Customer:** 

Order Number: Report Number:

329713

Client Reference:

H\_URS\_WIM-273 Attention: Gary Marshall

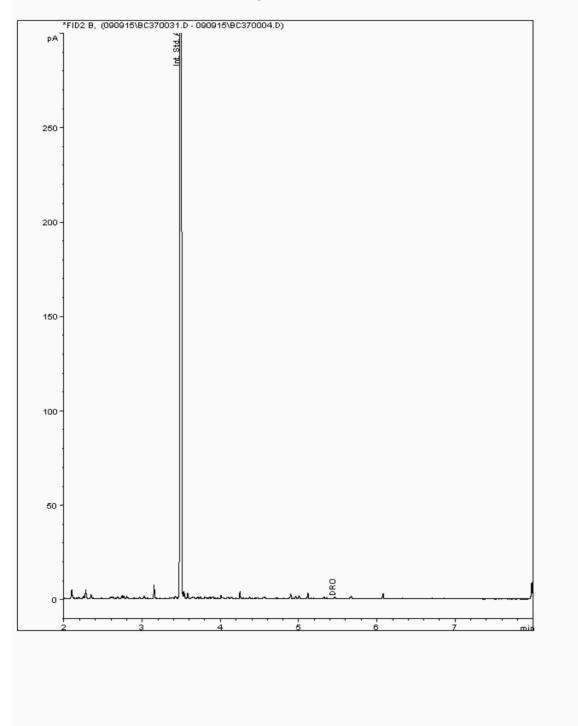
Superseded Report:

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) 12010813 Sample No : Depth: Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378785-Date Acquired : 10/09/2015 02:56:26 PM Units : mg/l



Validated

150902-38 Location: Stag Brewery SDG: Order Number: Job:

Client Reference:

H\_URS\_WIM-273

**Customer:** AECOM Attention: Gary Marshall

Report Number: Superseded Report:

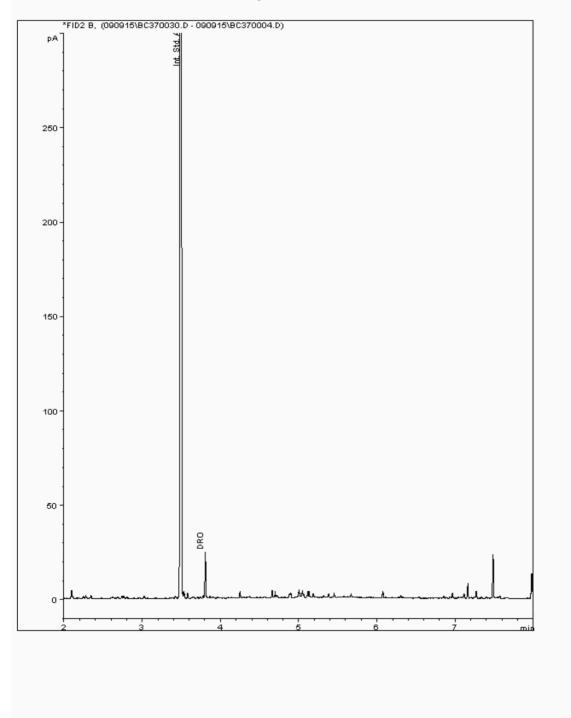
329713

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12010836 Sample ID : BH111

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378767Date Acquired : 10/09/2015 02:34:21 PM
Units : mg/1



## **CERTIFICATE OF ANALYSIS**

Validated

150902-38 Location: SDG: Job: H\_URS\_WIM-273

Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

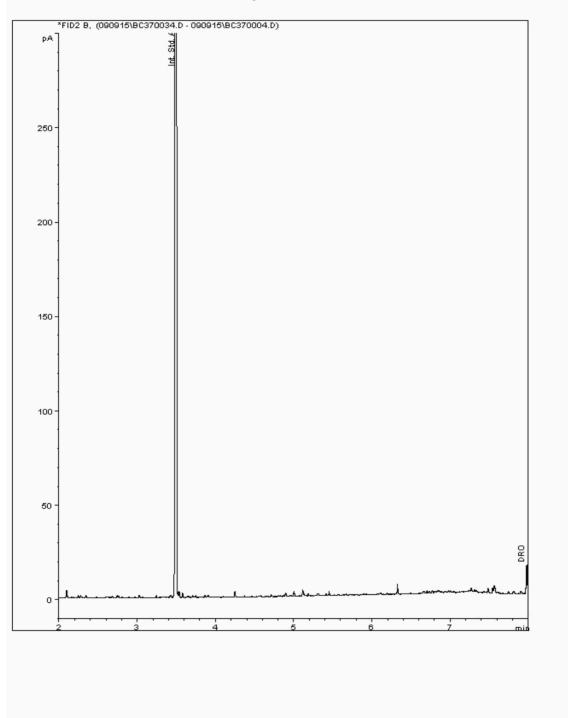
329713

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12010862 Sample ID :

BH109 Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378728Date Acquired : 10/09/2015 04:02:28 PM
Units : mg/1



Validated

150902-38 Location: Stag Brewery SDG: Order Number: H\_URS\_WIM-273 Job:

Client Reference:

**Customer:** AECOM Attention: Gary Marshall

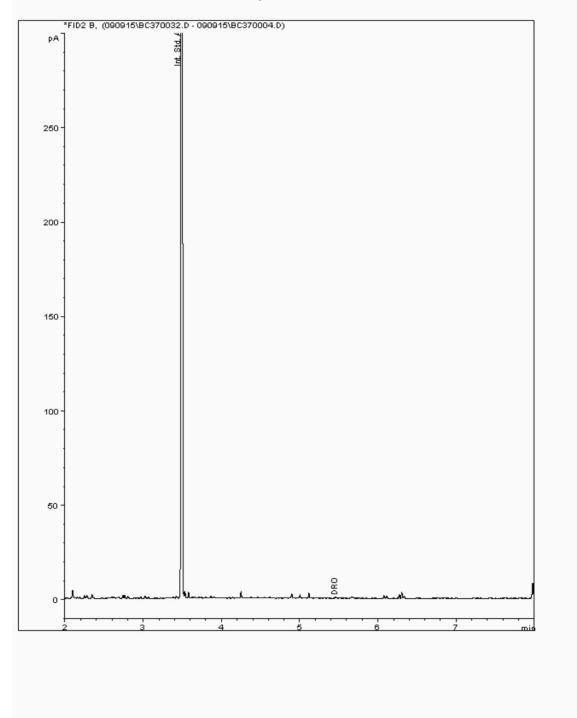
Report Number: Superseded Report: 329713

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12010877 Sample ID : BH110

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378714Date Acquired : 10/09/2015 03:18:35 PM
Units : mg/1



## **CERTIFICATE OF ANALYSIS**

Validated

329713

Superseded Report:

150902-38 Location: Stag Brewery SDG: Order Number: H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number: Attention:

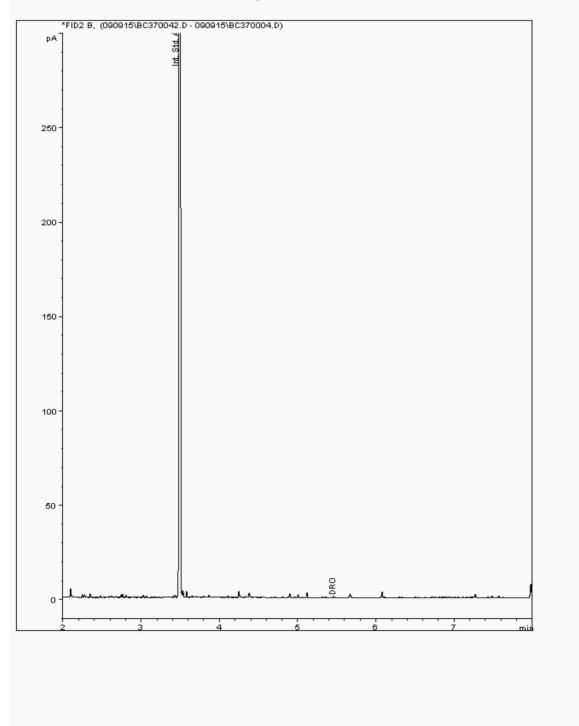
Chromatogram

Gary Marshall

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : 12012900 Depth: Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378677Date Acquired : 10/09/2015 06:59:22 PM
Units : mg/1



## **CERTIFICATE OF ANALYSIS**

Validated

150902-38 SDG: H\_URS\_WIM-273 Job:

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

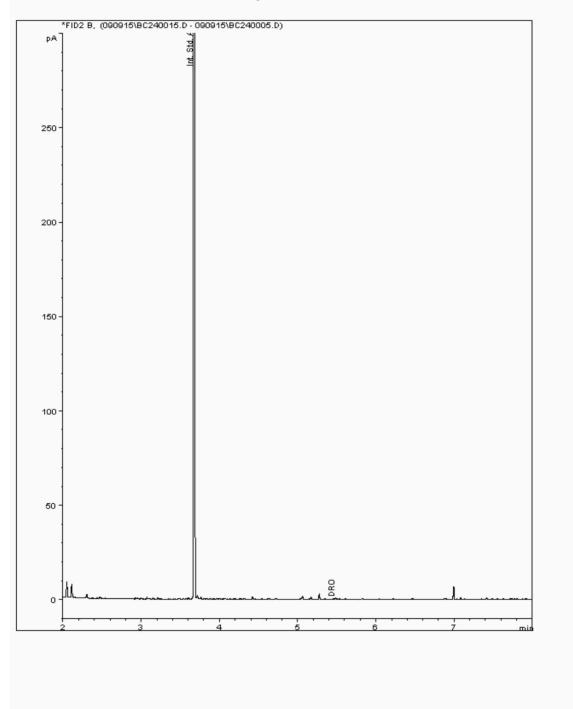
329713

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : 12012997 Depth: Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378700-Date Acquired : 09/09/2015 21:21:25 PM Units : mg/1



## **CERTIFICATE OF ANALYSIS**

Validated

150902-38 SDG: H\_URS\_WIM-273 Job:

Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Location: Stag Brewery **Customer:** AECOM Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

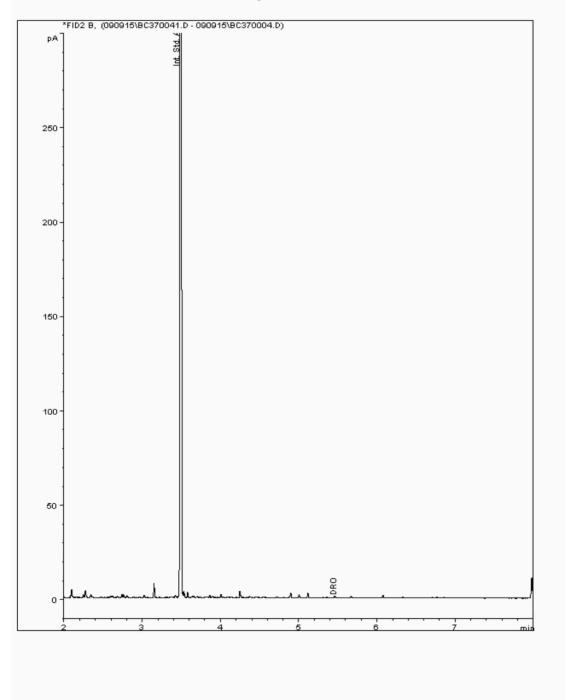
Chromatogram

Sample No : 12013027 Sample ID :

Depth:

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11378662-Date Acquired : 10/09/2015 06:37:21 PM Units : mg/l





Validated

SDG: 150902-38 Job:

Location: **Customer:**  Order Number: Report Number:

329713

Client Reference:

H\_URS\_WIM-273 Attention:

AECOM Gary Marshall

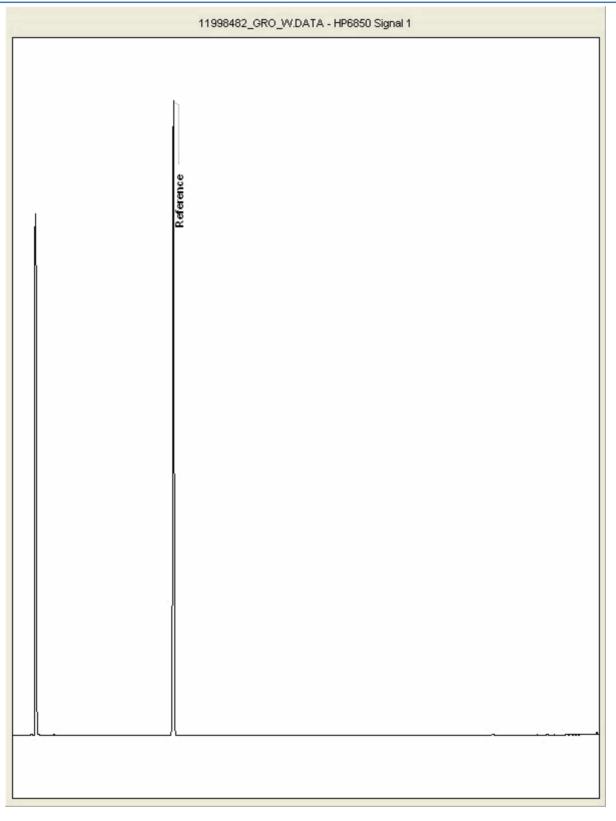
Stag Brewery

Superseded Report:

Chromatogram

Analysis: GRO by GC-FID (W) Sample No : 11998482 Depth:

Sample ID : BH8





Validated

**SDG:** 150902-38 **Job:** H\_URS\_WIM-273

Client Reference:

Location: Customer: Attention:

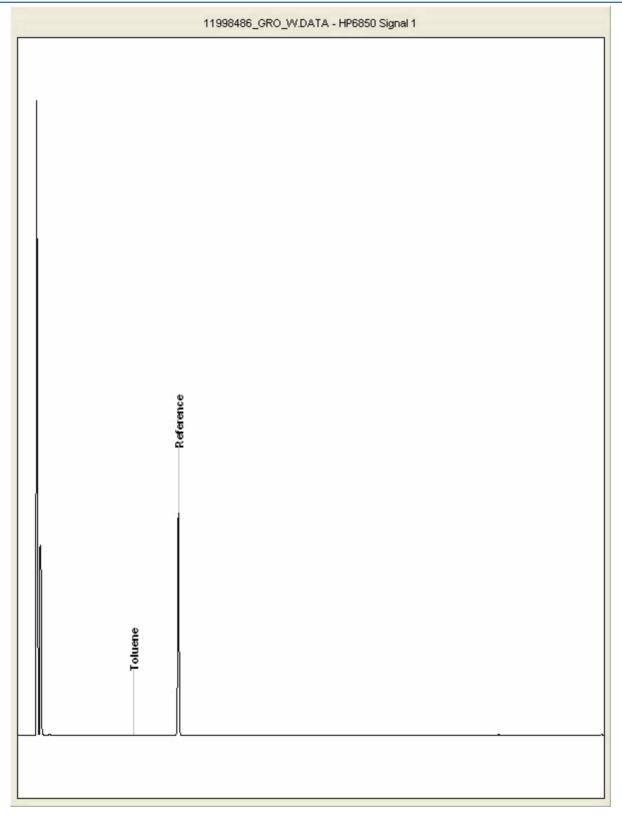
Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

 Analysis:
 GRO by GC-FID (W)
 Sample No: 11998486
 Depth:

Sample ID : BH111





Validated

SDG: 150902-38 Job:

Client Reference:

H\_URS\_WIM-273

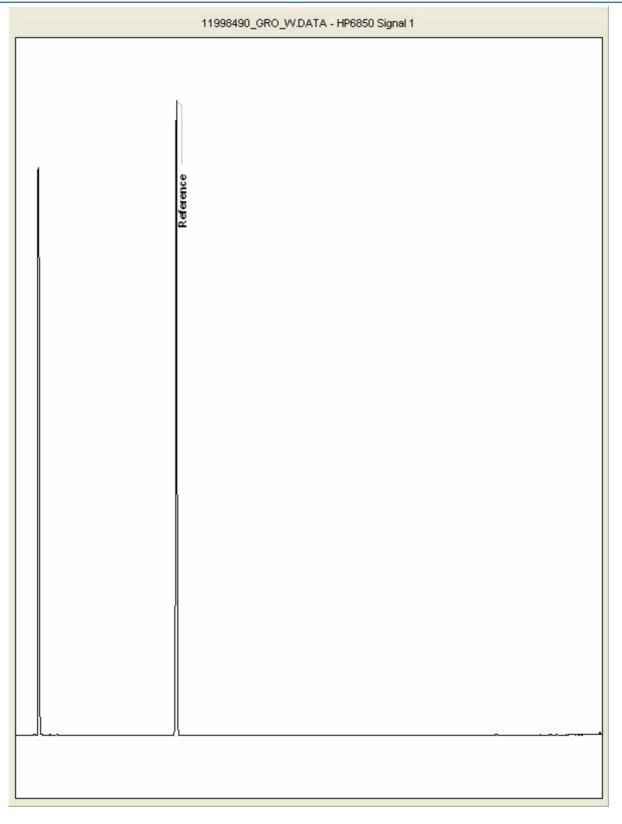
Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329713

Chromatogram

Analysis: GRO by GC-FID (W) Sample No : 11998490 Depth:

Sample ID : BH109





Validated

**SDG:** 150902-38 **Job:** H\_URS\_WIM-273

Client Reference:

Location:
Customer:
Attention:

Stag Brewery AECOM Gary Marshall Order Number: Report Number:

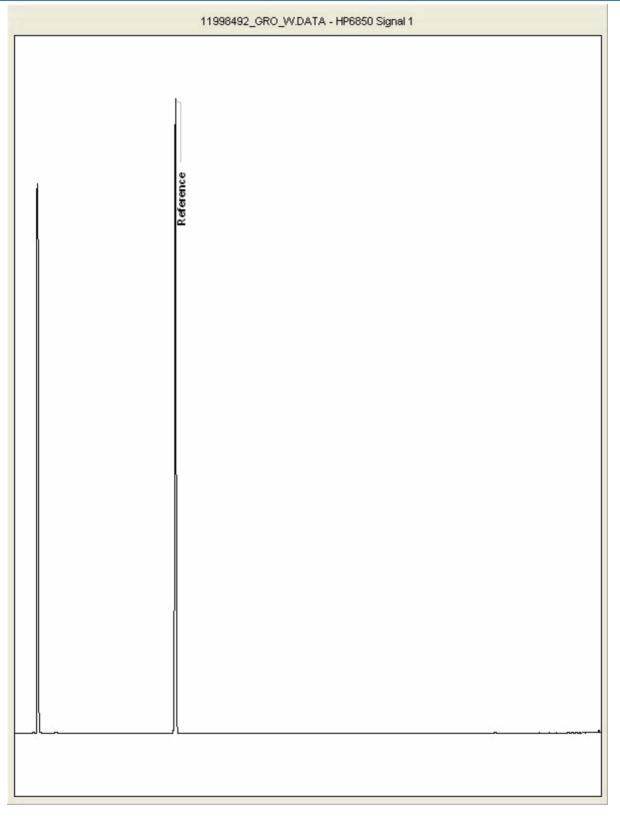
329713

Superseded Report:

Chromatogram

 Analysis:
 GRO by GC-FID (W)
 Sample No: 11998492
 Depth:

Sample ID : BH110





Validated

**SDG:** 150902-38 **Job:** H\_URS\_WIM-273

Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

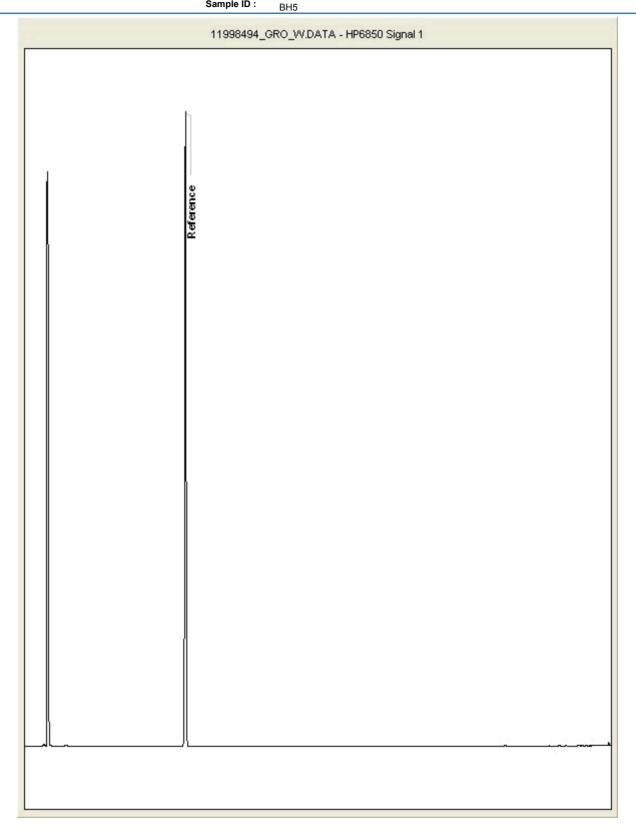
329713

Client Reference:

Analysis: GRO by GC-FID (W)

Chromatogram

Sample No: 11998494 Sample ID: BH5 Depth:





Validated

**SDG**: 150902-38 **Job**: H\_URS\_WIM-

Analysis: GRO by GC-FID (W)

Client Reference:

H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number:

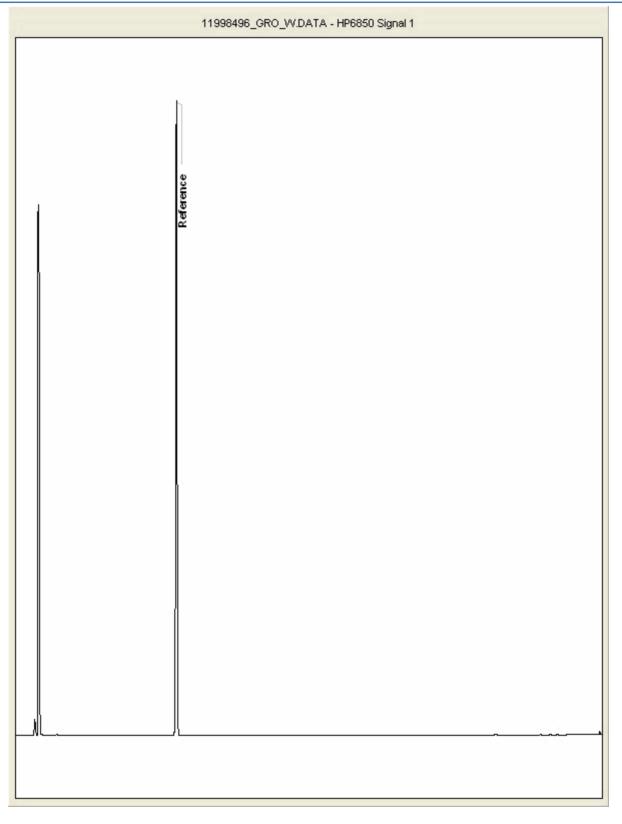
329713

Superseded Report:

Chromatogram

Sample No: 11998496 Depth:

Sample ID : BH3





Validated

**SDG:** 150902-38 **Job:** H\_URS\_WIM

Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall

Order Number: Report Number: Superseded Report:

329713

Client Reference:

H\_URS\_WIM-273

Gary Marshall

Chromatogram

Depth:

Analysis: GRO by GC-FID (W)

Sample No: 11998502 Sample ID: BH4

11998502\_GRO\_W.DATA - Chem 67 FID



Validated

**SDG:** 150902-38 **Job:** H\_URS\_WIM

Client Reference:

150902-38 H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

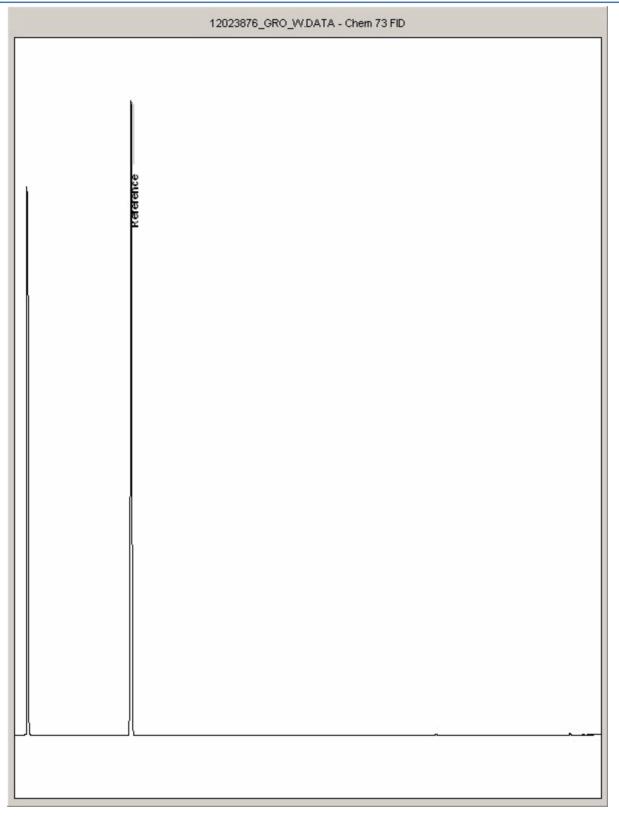
Depth:

329713

Chromatogram

Analysis: GRO by GC-FID (W) Sample No: 12023876

Sample ID: DUP01



 150902-38
 Location:
 Stag Brewery
 Order Number:

 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329713

 erence:
 Attention:
 Gary Marshall
 Superseded Report:

Client Reference:

SDG

Job:

## **Appendix**

 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.
- 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, 2,5 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	DOM	SOXTIHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTIHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
EPH (DRO) D&C		HEXANEACETONE	END OVEREND	GCFID
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE ENDOWEREND		GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	HBKANEACETONE SHWER	
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HBXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSS
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
MINERALOIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 700 NGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERALOIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

<u>Identification of Asbestos in Bulk</u> <u>Materials</u>

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				
Chrysofile	White Asbestos				
Amoste	Brown Asbestos				
Crodddite	Blue Asbestos				
Fibrous Adindite	=				
Fibrous Anthophylite	=				
Fibrous Trentalite	-				

#### 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.

# ALcontrol Laboratories

#### **CERTIFICATE OF ANALYSIS**

 SDG:
 150902-38
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329713

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

# **Appendix**

# General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 month 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 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 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			
Chrysofile	White Asbestos			
Amoste	BrownAsbestos			
Orodobite	Blue Asbestos			
Fibrous Adinoite	-			
Fibrous Anthophylite	-			
Fibrous Trendile	-			

#### 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.

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:
 09 September 2015

 Customer:
 H\_URS\_WIM

 Sample Delivery Group (SDG):
 150903-66

Your Reference:

Location:Stag BreweryReport No:329161

We received 6 samples on Thursday September 03, 2015 and 6 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.

Approved By:

Sonia McWhan
Operations Manager







Order Number:

Validated

329161

SDG: 150903-66 Location: Stag Brewery H\_URS\_WIM-273 AECOM Job: **Customer:** 

Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

**Received Sample Overview** 

Lab Sample No(s)	Customer Sample Ref. BH2	AGS Ref.	Depth (m)	Sampled Date 02/09/2015
12003511	BH7			01/09/2015
12003512	ВН9			02/09/2015
12003513	BH10			01/09/2015
12003515	BH201A			02/09/2015
12003514	BH104B			02/09/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

SDG:

150903-66

## **CERTIFICATE OF ANALYSIS**

Order Number:

Stag Brewery

Location:

Validated

Job: H\_URS\_WIM-273 **Customer: AECOM** Report Number: 329161 Attention: Gary Marshall Superseded Report: Client Reference: **LIQUID** 12003511 12003514 12003516 12003512 12003513 **Results Legend** Lab Sample No(s) X Test No Determination Possible Customer BH104B BH201A BH2 BH7 Sample Reference **AGS Reference** Depth (m) Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE297)
No3 Filtered (ALE
Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml BoD (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml Plastic (ALE2
250ml Plastic (ALE2
10.51 glass bottle (AL
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE21
0.51 glass bottle (AL HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE21
0.51 glass bottle (AL H2SO4 (ALE244)
Dissolved Metals Pr
500ml Plastic (ALE2
250ml BOD (ALE21
0.51 glass botte (AL
Vial (ALE297)
HNO3 Filtered (ALE
H2SO4 (ALE244)
Dissolved Metals Pr
500ml BOD (ALE21
0.51 glass botte (AL
Vial (ALE297) Container Ammoniacal Nitrogen All NDPs: 0 Tests: 6 Anions by Kone (w) All NDPs: 0 Tests: 6 COD Unfiltered All NDPs: 0 Tests: 6 Dissolved Metals by ICP-MS All NDPs: 0 Tests: 6 X All Dissolved W, Nb and Zr by ICP-MS NDPs: 0 Tests: 6 X EPH (DRO) (C10-C40) Aqueous All NDPs: 0 (W) Tests: 6 GRO by GC-FID (W) All NDPs: 0 Tests: 6 X Mercury Dissolved All NDPs: 0 Tests: 6 pH Value All NDPs: 0 Tests: 6 SVOC MS (W) - Aqueous All NDPs: 0 Tests: 6 Total EPH (aq) All NDPs: 0 Tests: 6 VOC MS (W) All NDPs: 0 Tests: 6



Validated

 SDG:
 150903-66
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329161

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

Oliche (Colorellec.		Attention				
LIQUID Results Legend X Test	Lab Sample No(s)					
No Determination Possible	Custome Sample Refer	BH104B				
	AGS Refere	nce				
	Depth (m	)				
	Containe	r	Vial (ALE297) HNO3 Filtered (ALE			
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 6	x			
Dissolved W, Nb and Zr by ICP-MS	All	NDPs: 0 Tests: 6	x			
GRO by GC-FID (W)	All	NDPs: 0 Tests: 6	X			
VOC MS (W)	All	NDPs: 0 Tests: 6	X			

Validated

150903-66 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery Customer: AECOM

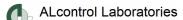
Order Number: Report Number:

329161

Client Reference:

Attention: Gary Marshall Superseded Report:

Results Legend  # ISO17025 accredited.  M mCERTS accredited. aq Aqueous / settled sample.		Customer Sample R	BH2	BH7	BH9	BH10	BH201A	BH104B
diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test.		Depth (m) Sample Type Date Sampled	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 02/09/2015
check the efficiency of the method results of individual compounds w samples aren't corrected for the re	l. The vithin	Sampled Time Date Received SDG Ref	03/09/2015 150903-66 12003516	03/09/2015 150903-66 12003511	03/09/2015 150903-66 12003512	03/09/2015 150903-66 12003513	03/09/2015 150903-66 12003515	03/09/2015 150903-66 12003514
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	1200010	12000011	12000012	12000010	.200010	.2000.
Ammoniosel Nitrogen ee	LOD/Un		0.269	0.707	F 66	<0.2	<b>~</b> 0.2	<b>40.2</b>
Ammoniacal Nitrogen as N	<0.2 m	ıg/l TM099	0.268 #	0.707 #	5.66 #	<0.2 #	<0.2 #	<0.2 #
Ammoniacal Nitrogen as NH4	<0.3 m	ng/l TM099	0.345 #	0.909 #	7.28 #	<0.3	<0.3 #	<0.3 #
COD, unfiltered	<7 m	g/l TM107	<7 #	10.1 #	3330 #	<7 #	<7 #	7.65 #
Antimony (diss.filt)	<0.16 µg/l	5 TM152	0.171	0.681	2.06	0.27	0.306	0.172
Arsenic (diss.filt)	<0.12 μg/l	2 TM152	39.4 #	45.4 #	14.4	3.79 #	6.51 #	17.3
Barium (diss.filt)	<0.03	3 TM152	116	73.4	39.9	15.4	79.1	66
Beryllium (diss.filt)	μg/l <0.07	7 TM152	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
Boron (diss.filt)	μg/l <9.4 μ	g/l TM152	133	138	27.8	82.3	106	140
Cadmium (diss.filt)	<0.1 µ	g/l TM152	<0.1	<0.1	0.228	<0.1	<b>*</b>	<0.1
Chromium (diss.filt)	<0.22	2 TM152	2.23	5.24	7.52	1.21	2.27	1.71
Cobalt (diss.filt)	μg/l <0.06	5 TM152	0.3	3.29	9.27	0.337	# 11.8	1.25
Copper (diss.filt)	μg/l <0.8	5 TM152	# 1.95	1.59	61.3	1.16	# 1.08	1.74
Lead (diss.filt)	μg/l <0.02		0.059	0.072	22.8	<b>*</b>	0.098	0.057
	μg/l		#	#	#	#	#	#
Manganese (diss.filt)	<0.04 µg/l		772 #	1200 #	983 #		1180 #	665
Nickel (diss.filt)	<0.18 µg/l		6.63 #	8.43 #	12.3 #	2.26 #	18.4 #	8.43 #
Selenium (diss.filt)	<0.39 µg/l	9 TM152	9.71 #	1.13 #	1.87 #	1.86 #	1.76 #	7.19 #
Thallium (diss.filt)	<0.96 µg/l	5 TM152	<0.96	<0.96	<0.96	<0.96	<0.96	<0.96
Vanadium (diss.filt)	<0.24 µg/l	1 TM152	0.657 #	2.35 #	7.67 #	0.759 #	0.941 #	0.67 #
Zinc (diss.filt)	<0.4 <sup>-</sup> µg/l	I TM152	15.7 #	11.2 #	280 #	1.27	17.5 #	11.9 #
EPH Range >C10 - C40 (aq)	<46 µ	g/l TM172	<46 #	<46 #	1430 #	<46	<46 #	<46 #
Total EPH (C6-C40) (aq)	<100 µ	ıg/l TM172	<100	<100	1430	<100	<100	<100
Mercury (diss.filt)	<0.0°	I TM183	<0.01	<0.01	0.0171	<0.01	<0.01	<0.01
Sulphate	42 mg/1	g/l TM184	457 #	74.5	<2 #	70.1	# 82.2 #	287
Phosphate (ortho) as PO4	<0.09 mg/l		* <0.05	0.07	14.1	4.46	0.056	<0.05
Nitrate as NO3	<0.3 m		<0.3	0.926	<0.3	18.7	9.17	2.01
pH	<1 pł		7.59	7.9	7.55	7.56	8.09	7.22
Silver (diss.filt)	Units <1.5 µ		<1.5	* <1.5	<1.5	<1.5	* <1.5	<1.5



Validated

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SDG: 150903-66 Location: Stag Brewery Order Number:

Job: H\_URS\_WIM-273 Customer: AECOM Report Number:
Client Reference: Attention: Gary Marshall Superseded Report:

GRO by GC-FID (W)				.,				
GRO by GC-FID (W) Results Legend	0	Customer Sample R	BH2	BH7	BH9	BH10	BH201A	BH104B
# ISO17025 accredited. M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample.		Depth (m) Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
* Subcontracted test.  ** % recovery of the surrogate standa		Date Sampled	02/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	02/09/2015
check the efficiency of the method.	. The	Sampled Time Date Received	03/09/2015	03/09/2015	03/09/2015	03/09/2015	03/09/2015	03/09/2015
samples aren't corrected for the re-		SDG Ref	150903-66 12003516	150903-66 12003511	150903-66 12003512	150903-66 12003513	150903-66 12003515	150903-66 12003514
(F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	12000010	12000011	12000012	1200010	12000010	.2000.1
Component	LOD/Units							
Methyl tertiary butyl ether (MTBE)	<3 µg/l		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Toluene	<4 µg/l		<4 #	<4 #	<4 #	<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l		<8 #	<8 #	<8 #	<8 #	<8 #	<8 #
o-Xylene	<3 µg/l		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Sum of detected BTEX	<28 µg/	TM245	<28	<28	<28	<28	<28	<28
GRO >C5-C10	<10 µg/	TM245	<10	<10	281	<10	<10	<10
EPH (C6-C10)	<100 µg	/I TM245	<100	<100	<100		<100	<100

Validated

150903-66 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery Customer:

Attention:

AECOM Gary Marshall Order Number: Report Number: Superseded Report:

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Client Reference:

SVOC MS (W) - Aqueou	SVOC MS (W) - Aqueous							
Results Legend # ISO17025 accredited.		Customer Sample R	BH2	BH7	ВН9	BH10	BH201A	BH104B
M mCERTS accredited. aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. Subcontracted test. ** % recovery of the surrogate stand.		Depth (m) Sample Type Date Sampled Sampled Time	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 02/09/2015
check the efficiency of the method results of individual compounds w samples aren't corrected for the re (F) Trigger breach confirmed 1-5&+§@ Sample deviation (see appendix)	rithin	Date Received SDG Ref Lab Sample No.(s) AGS Reference	03/09/2015 150903-66 12003516	03/09/2015 150903-66 12003511	03/09/2015 150903-66 12003512	03/09/2015 150903-66 12003513	03/09/2015 150903-66 12003515	03/09/2015 150903-66 12003514
Component	LOD/Uni							
1,2,4-Trichlorobenzene	<1 µg	/I TM176	<1	<1	<4	<1	<1 ,,,	<1 "
1,2-Dichlorobenzene (aq)	<1 µg	/I TM176	**************************************	**************************************	** <4 **	<1 #	*1 *1 *#	** <1 **
1,3-Dichlorobenzene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
1,4-Dichlorobenzene (aq)	<1 µg	/I TM176	<1	<1	<4	<1	<1	<1
2,4,5-Trichlorophenol (aq)	<1 µg	/I TM176	<1 "	<1	<4 #	<1	<1	<1
2,4,6-Trichlorophenol (aq)	<1 µg	/I TM176	* <1	* <1	** <4	* <1	# <1	*1 *1
2,4-Dichlorophenol (aq)	<1 µg	/I TM176	<1 **	<1 **	<4	<1 **	<1 **	<1 "
2,4-Dimethylphenol (aq)	<1 µg	/I TM176	* <1	* <1	* <4	* <1	*1 *1	<1 #
2,4-Dinitrotoluene (aq)	<1 µg	/I TM176	**************************************	*1 *1 *	** <4 **	** <1 **	*1 *1 *#	# <1 #
2,6-Dinitrotoluene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Chloronaphthalene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Chlorophenol (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Methylnaphthalene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Methylphenol (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Nitroaniline (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
2-Nitrophenol (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
3-Nitroaniline (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
4-Bromophenylphenylethe r (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
4-Chloro-3-methylphenol (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
4-Chloroaniline (aq)	<1 µg	/I TM176	<1	<1	<4	<1	<1	<1
4-Chlorophenylphenylethe r (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
4-Methylphenol (aq)	<1 µg	/I TM176	<1 #	<1 #	172 #	<1 #	<1 #	<1 #
4-Nitroaniline (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
4-Nitrophenol (aq)	<1 µg	/I TM176	<1	<1	<4	<1	<1	<1
Azobenzene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Acenaphthylene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Acenaphthene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Anthracene (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
bis(2-Chloroethyl)ether (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
bis(2-Chloroethoxy)metha ne (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
bis(2-Ethylhexyl) phthalate (aq)	<2 µg	/I TM176	<2 #	<2 #	<8 #	<2 #	<2 #	<2 #
Butylbenzyl phthalate (aq)	<1 µg	/I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
<u> </u>			#	. #	. #	. #	#	#

Validated

150903-66 SDG: Location: Stag Brewery Order Number: Job: H\_URS\_WIM-273 Customer: AECOM

Client Reference:

Attention:

Gary Marshall

Report Number: Superseded Report:

329161

SVOC	MS (	(W)	- Aqueous
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SVOC MS (W) - Aqueous								
# ISO17025 accredited. M mCERTS accredited.		Customer Sample R	BH2	BH7	BH9	BH10	BH201A	BH104B
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample. tot.unfilt Total / unfiltered sample. * Subcontracted test.		Depth (m) Sample Type Date Sampled	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 02/09/2015
** % recovery of the surrogate standa check the efficiency of the method.		Sampled Time						
results of individual compounds w	ithin	Date Received SDG Ref	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66
samples aren't corrected for the re-	covery	Lab Sample No.(s)	12003516	12003511	12003512	12003513	12003515	12003514
1-5&+§@ Sample deviation (see appendix)  Component	LOD/Unit	AGS Reference S Method						
Benzo(a)anthracene (aq)	<1 µg/	_	<1	<1	<4	<1	<1	<1
Benzo(b)fluoranthene (aq)	<1 µg/	I TM176	<1	# <1	6.42	* <1	# <1	# <1
Benzo(k)fluoranthene (aq)	<1 µg/	I TM176	<1	<1	# <4	<1	# <1	# <1
Benzo(a)pyrene (aq)	<1 µg/	I TM176	<1	<1	4.69	<1	* <1	<1
Benzo(g,h,i)perylene (aq)	<1 µg/	I TM176	<1	<1	4.05	<1	<1	<1
Carbazole (aq)	<1 µg/	I TM176	<1	<1 **	<4	<1	<1	<1
Chrysene (aq)	<1 µg/	I TM176	<b>*</b>	<1	# <4	<1	# <1	<b>*</b>
Dibenzofuran (aq)	<1 µg/	TM176	<b>*</b>	<b>*</b>	# <4	<b>*</b>	# <1	# <1
n-Dibutyl phthalate (aq)	<1 µg/		# <1	# <1	# <4	# <1	# <1	# <1
Diethyl phthalate (aq)	<1 μg/		# <1	# <1	# <4	# <1	# <1	# <1
Dibenzo(a,h)anthracene	<1 μg/		<b>#</b>	# <1	# <4	# <1	# <1	# <1
(aq) Dimethyl phthalate (aq)	<1 μg/		* <1	# <1	# <4	# <1	# <1	# <1
n-Dioctyl phthalate (aq)	<5 μg/		<b>*</b>	# <5	<20 #	# <5	# <5	# <5
			#	#	#	#	#	#
Fluoranthene (aq)	<1 µg/		<1 #	<1 #	6.12	<1 #	<1 #	<1 #
Fluorene (aq)	<1 µg/		<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Hexachlorobenzene (aq)	<1 µg/		<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Hexachlorobutadiene (aq)	<1 µg/		<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Pentachlorophenol (aq)	<1 µg/		<1	<1	<4	<1	<1	<1
Phenol (aq)	<1 µg/		<1	<1	10.7	<1	<1	<1
n-Nitroso-n-dipropylamine (aq)	<1 µg/		<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Hexachloroethane (aq)	<1 µg/		<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Nitrobenzene (aq)	<1 µg/	I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Naphthalene (aq)	<1 µg/	I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Isophorone (aq)	<1 µg/	I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Hexachlorocyclopentadien e (aq)	<1 µg/	I TM176	<1	<1	<4	<1	<1	<1
Phenanthrene (aq)	<1 µg/	I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Indeno(1,2,3-cd)pyrene (aq)	<1 µg/	I TM176	<1 #	<1 #	<4 #	<1 #	<1 #	<1 #
Pyrene (aq)	<1 µg/	I TM176	<1 #	<1 #	4.78	<1 #	<1 #	<1 #
				·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			

Validated

150903-66 SDG: Job:

H\_URS\_WIM-273 Client Reference:

Location: Stag Brewery Customer: AECOM Attention: Gary Marshall Order Number: 329161 Report Number: Superseded Report:

VOC MS	(W)
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# ISO17025 accredited. M m/CRETS 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 1-58-49© Sample dvaistion (see appendix)    Component   LOD/Units   Method	
Supplicity   Description   D	1104B
Sample   Table   Tab	
2000/2015   2000	(GW/SW)
Consideration of the institution of the instituti	09/2015
Section   Component   Control   Co	09/2015
Ags Reference   Component   LODUchits   Method	903-66 003514
Dibromofiluoromethane**   %   TM208   89.4   87.9   83   117   90.6	
Toluene-d8**	
## Promofluorobenzene**	119
Dichlorodifluoromethane	99.8
Chloromethane	97.4
Winyl chloride	<1
Vinyl chloride	<1 #
Chloroethane	<1 #
Trichlorofluoromethane	<1 #
Trichlorofiluoromethane	<1 #
1,1-Dichloroethene	<1 #
Carbon disulphide   <1 μg/l   TM208   <1	<1 #
Dichloromethane	<1 #
Methyl tertiary butyl ether (MTBE)	<3 #
trans-1,2-Dichloroethene         <1 µg/l	<1 #
# # # # # # # # # # # # # # # # # # #	<1 #
# # # # # # # # # # # # # # # # # # #	<1 #
Bromochloromethane       <1 μg/l	<1 #
H	<1
# # # # # # # # # # # # # # # # # # #	<1 #
# # # # # # # # # # # # # # # # # # #	<1 #
# # # # # # # # #   #   #   #   #   #	<1 #
# # # # # # 1,2-Dichloroethane <1 μg/l TM208 <1 <1 <1 <1 <1	<1 #
	<1 #
Benzene <1 µg/l TM208 <1 <1 <1 <1 <1 <1	<1
# # # # #	<1 #
Trichloroethene <1 μg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 # # # # # # # #	<1 #
1,2-Dichloropropane <1 µg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 # # # # # # # #	<1 #
Dibromomethane <1 μg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 # # # # # # # #	<1 #
Bromodichloromethane <1 μg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 # # # # # # # #	<1 #
cis-1,3-Dichloropropene     <1 μg/l	<1 #
Toluene <1 μg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	<1 #
trans-1,3-Dichloropropene <1 µg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1	<1 #
1,1,2-Trichloroethane <1 μg/l TM208 <1 <1 <1 <1 <1 <1 <1 <1 # # # # # # # #	<1 #

Validated

150903-66 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery Customer: AECOM

Gary Marshall

Attention:

Order Number: Report Number:

329161

Superseded Report:

Client Reference:

VOC MS (W)								
Results Legend		Customer Sample R	BH2	BH7	BH9	BH10	BH201A	BH104B
# ISO17025 accredited.  M mCERTS accredited.								
aq Aqueous / settled sample. diss.filt Dissolved / filtered sample.		Depth (m)						
tot.unfilt Total / unfiltered sample.  * Subcontracted test.		Sample Type Date Sampled	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 02/09/2015
** % recovery of the surrogate stands		Sampled Time						
results of individual compounds w samples aren't corrected for the re	ithin	Date Received SDG Ref	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66	03/09/2015 150903-66
(F) Trigger breach confirmed  1-5&+\$@ Sample deviation (see appendix)	COVERY	Lab Sample No.(s)	12003516	12003511	12003512	12003513	12003515	12003514
Component	LOD/Unit	AGS Reference s Method						
1,3-Dichloropropane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Tetrachloroethene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
D'' 11 "		T14000	#	#	#	#	#	#
Dibromochloromethane	<1 µg/	I TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
1,2-Dibromoethane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
,,= =	"		#	#	#	#	#	#
Chlorobenzene	<1 µg/	I TM208	1.7	1.77	1.89	<1	1.8	<1
			#	#	#	#	#	#
1,1,1,2-Tetrachloroethane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1 µg/	I TM208	<1	# <1	* <1	<b>*</b>	<b>*</b>	# <1
Lutyibetizetie	η η μθ/	1 1111200	#	#	#	#	#	#
m,p-Xylene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
o-Xylene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
Sturono	<1 ua/	I TM208	<1	# <1	# <1	<b>*</b>	# <1	# <1
Styrene	<1 µg/	1 111/200	-1	- " #	- "	- "	- " #	#
Bromoform	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
Isopropylbenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
4.4.0.0 Tetre chlasse of house	.4	T 1000	#	#	#	#	#	#
1,1,2,2-Tetrachloroethane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
1,=,=			#	#	#	#	#	#
Bromobenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
D "		T14000	#	#	#	#	#	#
Propylbenzene	<1 µg/	I TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
2-Chlorotoluene	<1 µg/	I TM208	<1	# <1	<1	<1	<1	<1
			#	#	#	#	#	#
1,3,5-Trimethylbenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
1011		T14000	#	#	#	#	#	#
4-Chlorotoluene	<1 µg/	I TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
tert-Butylbenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
1,2,4-Trimethylbenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
and Data the common	.4	TM000	#	#	#	#	# <1	#
sec-Butylbenzene	<1 µg/	I TM208	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
4-iso-Propyltoluene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
. iso i ropynoidono	. 49		. #	. #	. #	. #	. #	. #
1,3-Dichlorobenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
1,4-Dichlorobenzene	<1 µg/	I TM208	<1	<1 "	<1	<1 ,4	<1	<1 "
n-Butylbenzene	<1 µg/	I TM208	<b>*</b>	# <1	# <1	<b>*</b>	# <1	<b>#</b>
Daty isonizone	. 49		. #	. #	. #	. #	. #	. #
1,2-Dichlorobenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloroprop ane	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
.,2,1 1110/110/000/126/16	, µg/	. 1101200	#	#			#	"
Hexachlorobutadiene	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
			#	#	#	#	#	#
tert-Amyl methyl ether (TAME)	<1 µg/	I TM208	<1	<1	<1	<1	<1	<1
Naphthalene	<1 µg/	I TM208	<1	<b>*</b>	<b>*</b>	<1	<b>*</b>	# <1
	. 49		#	#	#	1#	#	#
						-		



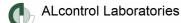
Validated

150903-66 SDG: Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 Customer: AECOM 329161 Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

VOC MS (W)

VOC	MS (W)				-			_	
# M aq diss.filt	Results Legend ISO17025 accredited. mCERTS accredited. Aqueous / settled sample. Dissolved / filtered sample.		Customer Sample R  Depth (m)	BH2	BH7	BH9	BH10	BH201A	BH104B
tot.unfilt	Total / unfiltered sample. Subcontracted test.		Sample Type Date Sampled	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 01/09/2015	Water(GW/SW) 02/09/2015	Water(GW/SW) 02/09/2015
**	% recovery of the surrogate standa check the efficiency of the method.		Sampled Time Date Received	03/09/2015	03/09/2015	03/09/2015	03/09/2015	03/09/2015	03/09/2015
	results of individual compounds wi samples aren't corrected for the red	thin	SDG Ref	150903-66	150903-66	150903-66	150903-66	150903-66	150903-66
(F) 1-5&+§@	(F) Trigger breach confirmed  1-5&+§@ Sample deviation (see appendix)		Lab Sample No.(s) AGS Reference	12003516	12003511	12003512	12003513	12003515	12003514
Compo	Component LOD/Units								
1,2,3-	Trichlorobenzene	<1 µg/	/I TM208	<1	<1	<1	<1	<1	<1
135	Trichlorobenzene	<1 µg/	/I TM208	<b>*</b>	# <1	# <1	# <1	# <1	# <1
1,3,5-	Trichiorobenzene	~1 μg/	1101208	~1	`'		`'		
			-						



Validated

329161

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**Table of Results - Appendix** 

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters		
TM176	EPA 8270D Semi-Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Determination of SVOCs in Water by GCMS		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM283		Determination of Dissolved Niobium, Tungsten, and Zirconium in Water Matrices by ICP-MS		

<sup>&</sup>lt;sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C.

NA = not applicable.



Validated

150903-66 SDG: Location: Stag Brewery Order Number: H\_URS\_WIM-273 Customer: AECOM Job:

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329161 Report Number: Superseded Report:

## **Test Completion Dates**

Lab Sample No(s)	12003516	12003511	12003512	12003513	12003515	12003514
Customer Sample Ref.	BH2	BH7	ВН9	BH10	BH201A	BH104B
AGS Ref.						
Depth						
Туре	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015
Anions by Kone (w)	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	09-Sep-2015
COD Unfiltered	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015	05-Sep-2015
Dissolved Metals by ICP-MS	06-Sep-2015	08-Sep-2015	06-Sep-2015	07-Sep-2015	08-Sep-2015	06-Sep-2015
Dissolved W, Nb and Zr by ICP-MS	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015
EPH (DRO) (C10-C40) Aqueous (W)	07-Sep-2015	07-Sep-2015	08-Sep-2015	07-Sep-2015	07-Sep-2015	08-Sep-2015
GRO by GC-FID (W)	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015
Mercury Dissolved	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015	08-Sep-2015
Nitrite by Kone (w)	06-Sep-2015	06-Sep-2015	06-Sep-2015	06-Sep-2015	06-Sep-2015	09-Sep-2015
pH Value	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015	07-Sep-2015
SVOC MS (W) - Aqueous	07-Sep-2015	07-Sep-2015	08-Sep-2015	07-Sep-2015	07-Sep-2015	08-Sep-2015
Total EPH (aq)	08-Sep-2015	08-Sep-2015	08-Sep-2015	09-Sep-2015	08-Sep-2015	09-Sep-2015
VOC MS (W)	07-Sep-2015	07-Sep-2015	07-Sep-2015	09-Sep-2015	07-Sep-2015	09-Sep-2015

Validated

150903-66 SDG: Job:

H\_URS\_WIM-273

Location: Stag Brewery AECOM **Customer:** Attention: Gary Marshall Order Number: Report Number: Superseded Report:

329161

## **ASSOCIATED AQC DATA**

#### Ammoniacal Nitrogen

Client Reference:

Component	Method Code	QC 1214	QC 1207
Ammoniacal Nitrogen as	TM099	<b>102.8</b>	<b>104.4</b>
N		91.84 : 108.16	91.84 : 108.16

#### Anions by Kone (w)

Component	Method Code	QC 1269	QC 1243
Chloride	TM184	99.4	
		94.64 : 106.82	94.23 : 107.50
Phosphate (Ortho as	TM184		102.4
PO4)		96.40 : 108.40	96.41 : 109.80
Sulphate (soluble)	TM184	101.2	
		96.47 : 104.74	94.38 : 108.93
TON as NO3	TM184	98.5	
		93.05 : 112.12	93.93 : 110.49

#### COD Unfiltered

Component	Method Code	QC 1200	QC 1252
COD	TM107	<b>97.91</b> 95.90 : 102.57	<b>100.38</b> 95.90 : 102.57

#### Dissolved Metals by ICP-MS

Component	Method Code	QC 1282	QC 1276
Aluminium	TM152	103.33	100.53
		88.58 : 117.87	88.58 : 117.87
Antimony	TM152	100.4	100.53
		87.01 : 109.33	87.01 : 109.33
Arsenic	TM152	99.87	100.67
		89.45 : 113.51	89.45 : 113.51
Barium	TM152	99.33	98.53
		90.47 : 113.85	90.47 : 113.85
Beryllium	TM152	102.13	102.4
		84.68 : 120.26	84.68 : 120.26
Boron	TM152	98.93	99.73
		82.95 : 121.47	82.95 : 121.47
Cadmium	TM152	102.93	101.73
		90.40 : 113.29	90.40 : 113.29
Chromium	TM152	102.27	102.27
		90.01 : 114.05	90.01 : 114.05
Cobalt	TM152	102.0	100.8
		87.14 : 117.85	87.14 : 117.85
Copper	TM152	97.6	100.53
		88.43 : 114.27	88.43 : 114.27
Lead	TM152	96.67	96.53
		89.53 : 109.90	89.53 : 109.90

Validated

SDG: 150903-66 Location: Stag Brewery Order Number: Job:

H\_URS\_WIM-273 AECOM 329161 **Customer:** Report Number: Client Reference: Attention: Gary Marshall Superseded Report:

#### Dissolved Metals by ICP-MS

·	QC 1282	QC 1276
TM152	103.07	102.8
	84.32 : 123.11	84.32 : 123.11
TM152	102.13	102.13
	91.43 : 113.17	91.43 : 113.17
TM152	98.27	98.93
	80.73 : 113.85	80.73 : 113.85
TM152	100.27	100.13
	87.68 : 113.94	87.68 : 113.94
TM152	88.93	100.93
	86.68 : 118.34	86.68 : 118.34
TM152	100.4	100.53
	91.03 : 113.34	91.03 : 113.34
TM152	102.0	100.67
	90.44 : 114.09	90.44 : 114.09
TM152	90.27	85.6
	80.93 : 116.91	80.93 : 116.91
TM152	96.27	98.93
	90.27 : 111.31	90.27 : 111.31
TM152	101.47	99.6
	83.07 : 112.37	83.07 : 112.37
TM152	102.93	101.07
	92.65 : 111.58	92.65 : 111.58
TM152	94.13	94.53
	88.60 : 110.35	88.60 : 110.35
TM152	102.27	102.53
	88.43 : 116.60	88.43 : 116.60
TM152	95.73	101.6
	89.84 : 113.06	89.84 : 113.06
	TM152  TM152	TM152

#### Dissolved W, Nb and Zr by ICP-MS

Component	Method Code	QC 1290
Bismuth	TM283	<b>92.13</b> 66.55 : 123.56
Niobium	TM283	<b>107.6</b> 85.00 : 115.00
Silver	TM283	<b>105.33</b> 81.37 : 112.35
Tungsten	TM283	<b>85.87</b> 85.00 : 115.00
Zirconium	TM283	<b>102.27</b> 85.00 : 115.00

#### EPH (DRO) (C10-C40) Aqueous (W)

Component	Method Code	QC 1284	QC 1280
EPH (DRO) (C10-C40)	TM172	<b>80.5</b> 59.47 : 106.15	<b>72.5</b> 59.22 : 112.78

#### GRO by GC-FID (W)

Validated

 SDG:
 150903-66
 Location:
 Stag Brewery
 Order Number:

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 H\_URS\_WIM-273
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 AECOM
 Report Number

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 329161

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 Attention:
 Gary Marshall
 Superseded Report:

GRO by GC-FID (W)

Component	Method Code	QC 1234
Benzene by GC	TM245	<b>98.0</b> 77.50 : 122.50
Ethylbenzene by GC	TM245	<b>97.5</b> 77.50 : 122.50
m & p Xylene by GC	TM245	<b>97.75</b> 77.50 : 122.50
MTBE GC-FID	TM245	<b>101.0</b> 77.50 : 122.50
o Xylene by GC	TM245	<b>97.0</b> 77.50 : 122.50
QC	TM245	<b>104.67</b> 74.88 : 125.54
Toluene by GC	TM245	<b>98.5</b> 77.50 : 122.50

#### Mercury Dissolved

Component	Method Code	QC 1282	QC 1248
Mercury Dissolved (CVAF)	TM183	<b>108.0</b> 73.51 : 120.83	<b>96.1</b> 73.51 : 120.83

#### pH Value

Component	Method Code	QC 1280	QC 1258
рН	TM256	101.62	101.08
		99.37 : 102.65	99.20 : 102.85

#### SVOC MS (W) - Aqueous

Component	Method Code	QC 1255	QC 1208	QC 1247
4-Bromophenylphenyleth er	TM176	<b>65.28</b> 55.04 : 128.00	<b>87.2</b> 55.04 : 128.00	<b>82.4</b> 65.62 : 120.95
Benzo(a)anthracene	TM176	<b>66.0</b> 52.64 : 123.68	<b>87.2</b> 52.64 : 123.68	<b>82.4</b> 62.83 : 114.26
Benzo(a)pyrene	TM176	<b>58.24</b> 49.60 : 114.40	<b>79.68</b> 49.60 : 114.40	<b>80.8</b> 54.19 : 105.67
Butylbenzyl phthalate	TM176	<b>70.32</b> 49.04 : 127.76	<b>93.6</b> 49.04 : 127.76	<b>82.4</b> 45.10 : 118.90
Hexachlorobutadiene	TM176	<b>59.36</b> 42.80 : 108.20	<b>77.52</b> 42.80 : 108.20	<b>61.28</b> 43.12 : 110.32
Naphthalene	TM176	<b>67.92</b> 47.20 : 116.80	<b>92.0</b> 47.20 : 116.80	<b>85.6</b> 69.48 : 118.94
Nitrobenzene	TM176	<b>69.36</b> 58.70 : 110.90	<b>88.8</b> 58.70 : 110.90	<b>79.52</b> 69.13 : 107.62
Phenol	TM176	<b>38.08</b> 30.25 : 79.75	<b>50.08</b> 30.25 : 79.75	<b>49.12</b> 30.92 : 74.19

Stag Brewery

Gary Marshall

**AECOM** 

#### Validated

**ALcontrol Laboratories** 

150903-66 H\_URS\_WIM-273

Location: **Customer:** Attention: Order Number: Report Number:

329161 Superseded Report:

Client Reference: VOC MS (W)

SDG:

Job:

Component	Method Code	00 4070	QC 1223	00.4000
1,1,1,2-Tetrachloroethan	TM208	QC 1272		QC 1239
e e	1 101200	<b>91.5</b> 84.25 : 114.84	<b>94.5</b> 77.50 : 122.50	<b>100.5</b> 84.25 : 114.84
1,1,1-Trichloroethane	TM208	<b>90.0</b> 84.67 : 111.97	<b>96.5</b> 77.50 : 122.50	<b>96.0</b> 84.67 : 111.97
1,1-Dichloroethane	TM208	<b>92.0</b> 80.19 : 121.45	<b>107.0</b> 77.50 : 122.50	<b>99.5</b> 80.19 : 121.45
1,2-Dichloroethane	TM208	<b>93.0</b> 77.68 : 127.05	<b>98.0</b> 77.50 : 122.50	<b>99.0</b> 77.68 : 127.05
2-Chlorotoluene	TM208	<b>93.0</b> 85.81 : 116.77	<b>97.0</b> 77.50 : 122.50	<b>99.0</b> 85.81 : 116.77
4-Chlorotoluene	TM208	<b>92.5</b> 87.22 : 115.45	<b>97.5</b> 77.50 : 122.50	<b>100.0</b> 87.22 : 115.45
Benzene	TM208	<b>90.5</b> 82.30 : 120.49	<b>103.0</b> 77.50 : 122.50	<b>101.0</b> 82.30 : 120.49
Bromomethane	TM208	<b>99.0</b> 76.16 : 123.35	<b>104.0</b> 75.87 : 132.10	<b>90.0</b> 76.16 : 123.35
Carbontetrachloride	TM208	<b>92.5</b> 83.96 : 117.98	<b>98.5</b> 77.50 : 122.50	<b>99.5</b> 83.96 : 117.98
Chlorobenzene	TM208	<b>94.5</b> 85.75 : 114.88	<b>99.5</b> 77.50 : 122.50	<b>100.0</b> 85.75 : 114.88
Chloroform	TM208	<b>94.0</b> 84.84 : 119.97	<b>103.0</b> 77.50 : 122.50	<b>104.5</b> 84.84 : 119.97
Chloromethane	TM208	<b>96.0</b> 53.63 : 141.38	<b>131.0</b> 77.12 : 138.43	<b>113.5</b> 53.63 : 141.38
Cis-1,2-Dichloroethene	TM208	<b>102.5</b> 81.65 : 120.44	<b>111.0</b> 77.50 : 122.50	<b>111.0</b> 81.65 : 120.44
Dichloromethane	TM208	<b>93.5</b> 79.31 : 122.56	<b>113.0</b> 77.50 : 122.50	<b>104.0</b> 79.31 : 122.56
Ethylbenzene	TM208	<b>89.5</b> 80.74 : 110.74	<b>96.0</b> 78.88 : 104.73	<b>94.0</b> 80.74 : 110.74
Hexachlorobutadiene	TM208	<b>101.5</b> 68.91 : 121.59	<b>81.5</b> 72.12 : 118.38	<b>91.5</b> 68.91 : 121.59
o-Xylene	TM208	<b>91.0</b> 85.43 : 113.21	<b>96.0</b> 82.27 : 108.61	<b>95.0</b> 85.43 : 113.21
p/m-Xylene	TM208	<b>90.0</b> 80.94 : 113.51	<b>97.0</b> 74.83 : 118.29	<b>95.0</b> 80.94 : 113.51
Tert-butyl methyl ether	TM208	<b>102.5</b> 59.77 : 129.51	<b>87.0</b> 75.13 : 130.32	<b>88.5</b> 59.77 : 129.51
Tetrachloroethene	TM208	<b>91.5</b> 83.21 : 115.40	<b>95.0</b> 82.93 : 109.54	<b>101.5</b> 83.21 : 115.40
Toluene	TM208	<b>90.0</b> 86.02 : 114.04	<b>96.5</b> 80.95 : 110.35	<b>98.5</b> 86.02 : 114.04
Trichloroethene	TM208	<b>92.0</b> 83.50 : 113.50	<b>96.5</b> 82.90 : 111.55	<b>96.5</b> 83.50 : 113.50
Vinyl Chloride	TM208	<b>84.5</b> 63.71 : 124.88	<b>105.5</b> 64.36 : 126.94	<b>82.0</b> 63.71 : 124.88

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.

Validated

150903-66 Location: Stag Brewery SDG: Order Number: H\_URS\_WIM-273 Job:

Client Reference:

AECOM **Customer:** Attention: Gary Marshall

Report Number: Superseded Report:

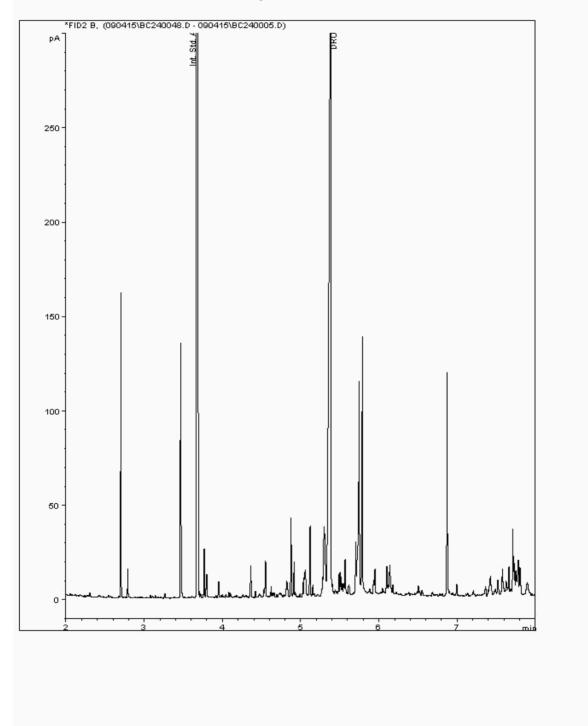
329161

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12008285 Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11385279Date Acquired : 07/09/2015 18:32:19 PM
Units : mg/1



Validated

150903-66 Location: Stag Brewery SDG: Order Number: Job: H\_URS\_WIM-273

Client Reference:

**Customer:** AECOM Attention: Gary Marshall

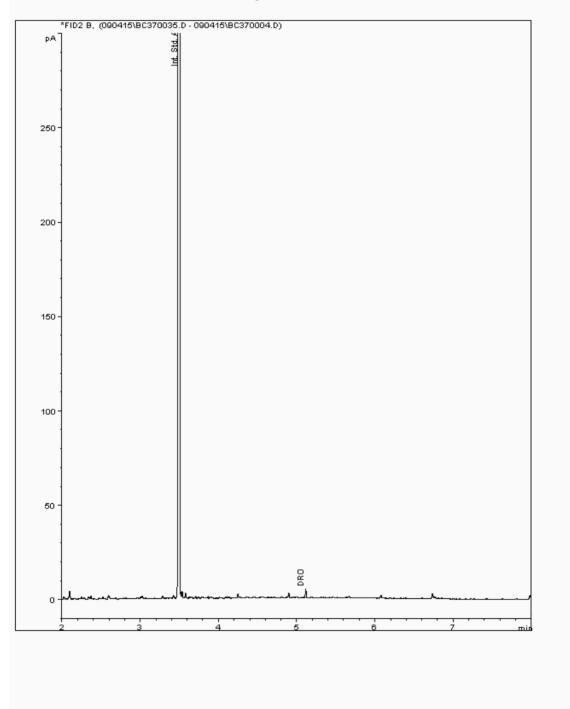
Report Number: Superseded Report: 329161

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) 12008287 Sample No : Depth: Sample ID :

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11385265-Date Acquired : 05/09/2015 04:02:39 PM Units : mg/l



Validated

150903-66 Location: Stag Brewery SDG: Order Number: H\_URS\_WIM-273 Job:

Client Reference:

AECOM **Customer:** Attention: Gary Marshall

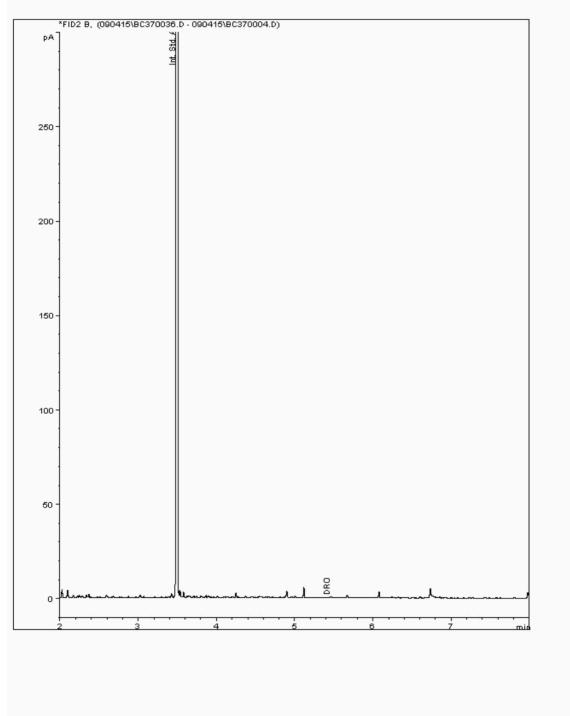
Report Number: Superseded Report: 329161

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12008289 Sample ID : BH201A

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11385324Date Acquired : 05/09/2015 04:25:24 PM
Units : mg/1



Validated

150903-66 Location: Stag Brewery SDG: Order Number: Job:

Client Reference:

H\_URS\_WIM-273

AECOM **Customer:** Attention: Gary Marshall Report Number: Superseded Report:

329161

Chromatogram

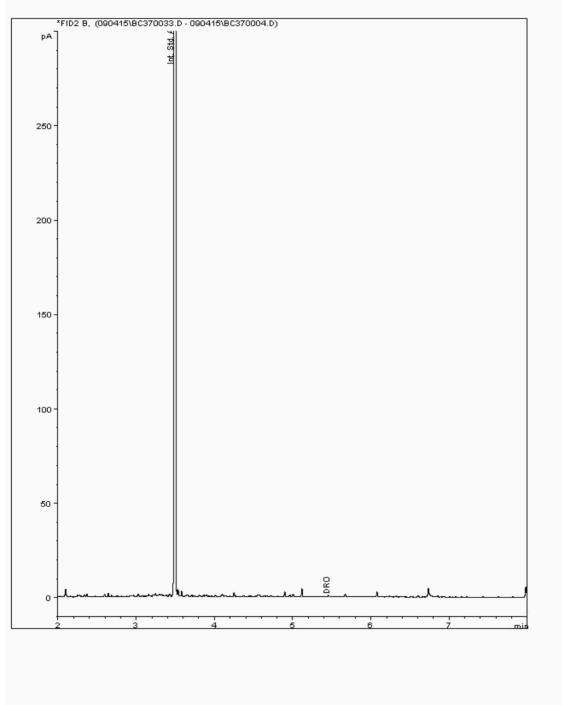
Analysis: EPH (DRO) (C10-C40) Aqueous (W)

Sample No : 12008291 Sample ID :

Depth:

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11385370-Date Acquired : 05/09/2015 03:17:44 PM Units : mg/l



Validated

329161

Superseded Report:

150903-66 Location: Stag Brewery SDG: Order Number: H\_URS\_WIM-273 AECOM Job: **Customer:** Report Number:

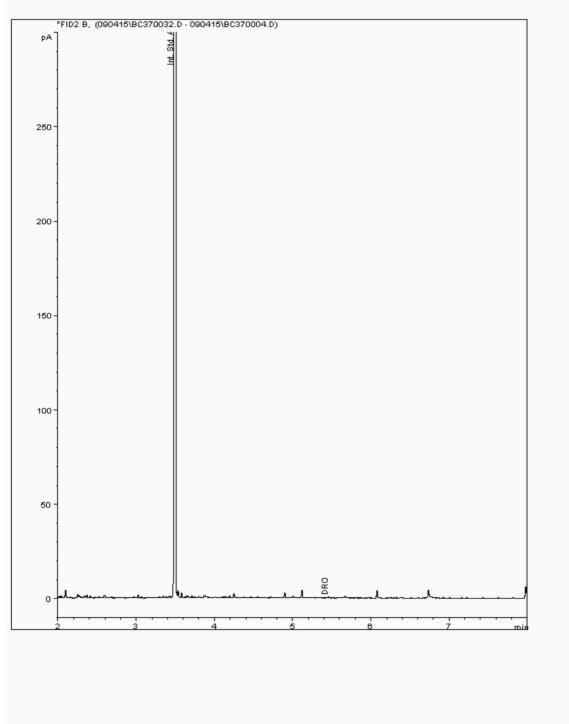
Client Reference: Attention: Gary Marshall

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12008293 Sample ID : BH10

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11385293Date Acquired : 05/09/2015 02:55:03 PM
Units : mg/1



Validated

150903-66 Location: Stag Brewery SDG: Order Number: Job:

Client Reference:

H\_URS\_WIM-273

**Customer:** AECOM Attention: Gary Marshall Report Number: Superseded Report:

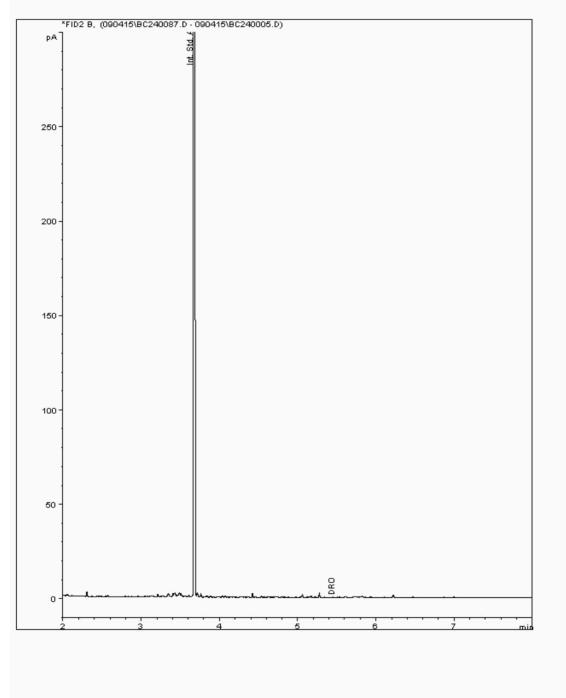
329161

Chromatogram

Analysis: EPH (DRO) (C10-C40) Aqueous (W) Sample No : Depth: 12015642 Sample ID : BH104B

Alcontrol/Geochem Analytical Services EPH Range Organics ( C10 - C40 )

Sample Identity: 11389081-Date Acquired : 08/09/2015 12:08:27 PM Units : mg/l





Stag Brewery

Gary Marshall

AECOM

Validated

**SDG**: 150903-66 **Job**: H\_URS\_WIM-273

Client Reference:

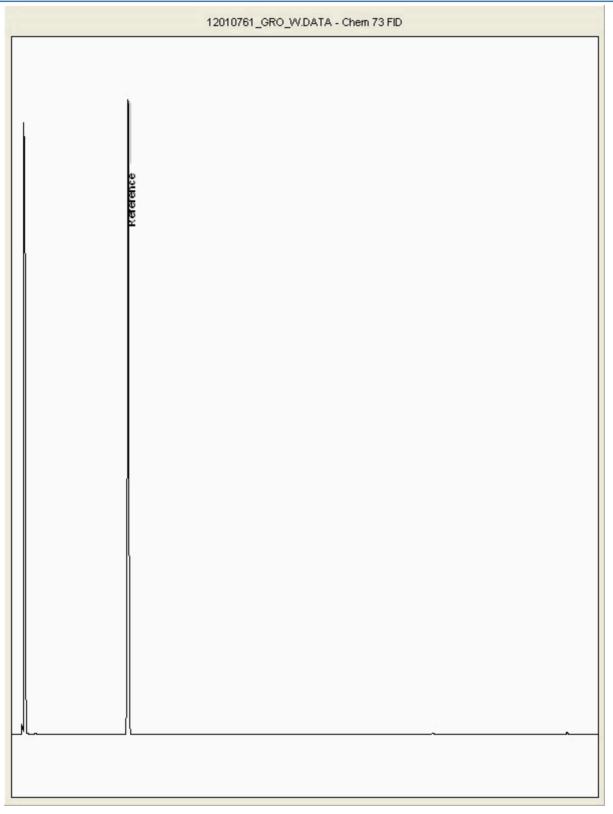
M-273 Location: Customer: Order Number: Report Number: Superseded Report:

329161

Chromatogram

 Analysis:
 GRO by GC-FID (W)
 Sample No: 12010761
 Depth :

Sample ID: BH104B





Validated

**SDG**: 150903-66 **Job**: H\_URS\_WIM-273

Client Reference:

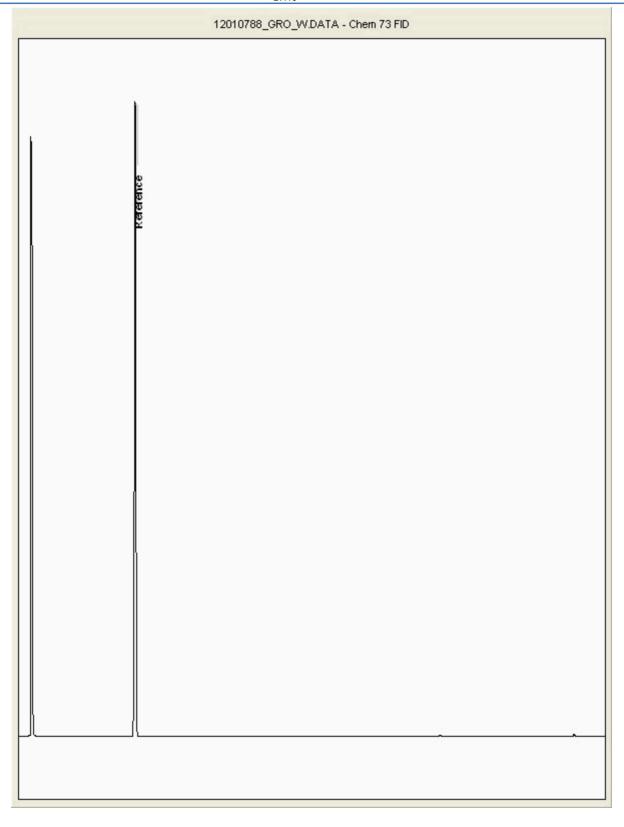
Location: Customer: Attention: Stag Brewery AECOM Gary Marshall Order Number: Report Number: Superseded Report:

329161

Chromatogram

 Analysis:
 GRO by GC-FID (W)
 Sample No: 12010788
 Depth:

Sample ID: BH10





Validated

**SDG**: 150903-66 **Job**: H\_URS\_WIM-273

Client Reference:

Location: Customer: Attention: Order Number: Report Number: Superseded Report:

Depth:

329161

Attention: Gary Marshall

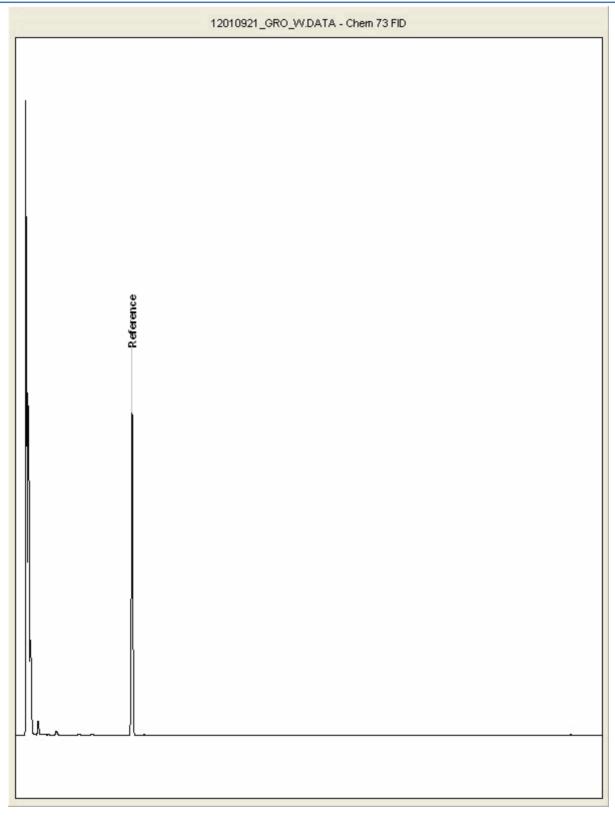
Chromatogram

Stag Brewery

AECOM

Analysis: GRO by GC-FID (W) Sample No: 12010921

Sample ID : BH9





Validated

**SDG:** 150903-66 **Job:** H\_URS\_WIN

Client Reference:

H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

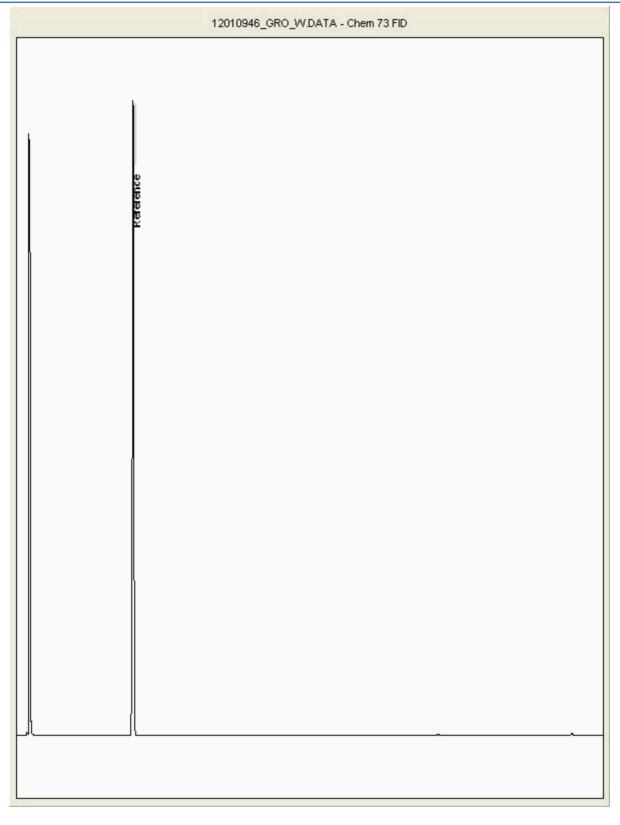
Order Number: Report Number: Superseded Report:

329161

Chromatogram

 Analysis:
 GRO by GC-FID (W)
 Sample No: 12010946
 Depth:

Sample ID : BH7





Validated

**SDG**: 150903-66 **Job**: H\_URS\_WIM-

Analysis: GRO by GC-FID (W)

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

Order Number: Report Number: Superseded Report:

329161

Client Reference:

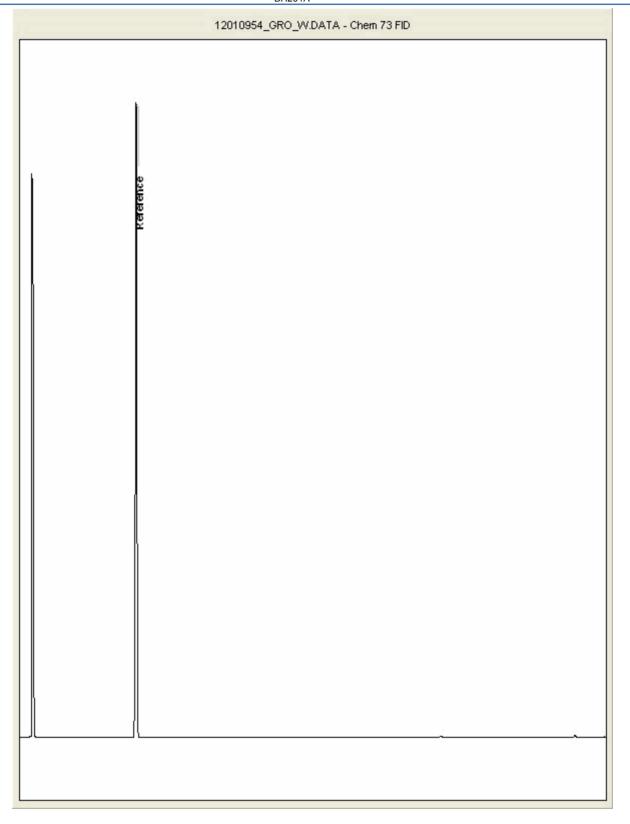
H\_URS\_WIM-273

Chromatogram

Depth:

 Sample No :
 12010954

 Sample ID :
 BH201A





Validated

**SDG**: 150903-66 **Job**: H\_URS\_WIM

Client Reference:

H\_URS\_WIM-273

Location:Stag BreweryCustomer:AECOMAttention:Gary Marshall

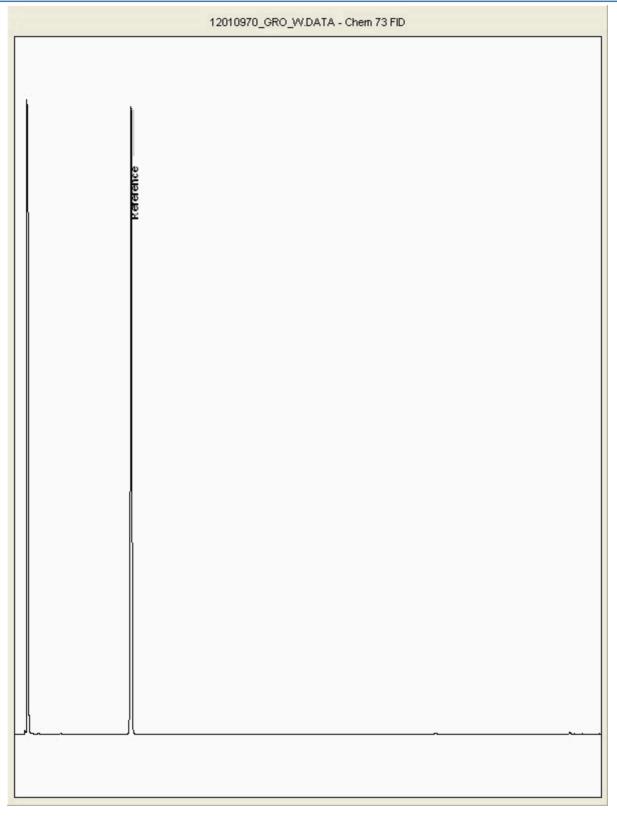
Order Number: Report Number: Superseded Report:

329161

Chromatogram

Analysis: GRO by GC-FID (W) Sample No: 12010970 Depth:

Sample ID: BH2



150903-66 Location: Stag Brewery Order Number: H URS WIM-273 **AECOM Customer:** Report Number: Attention: Gary Marshall Superseded Report:

Job: Client Reference:

Appendix

SDG

- 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 quaranteed 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
- . 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
- monohydric by HPLC include phenol, cresols (2-Methylphenol, bl) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 3-Methylphenol 4-Methylphenol) 2.5 Dimethylphenol. Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
- 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

SOLID MATRICES EXTRACTION SUMMARY

329161

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYS
SOLVENT EXTRACTABLE MATTER	D&C	DOM	SOXTHERM	GRAMMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAMMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DOM	SOXTIHERM	IATROSCAN
ELEMENTALSULPHUR	D&C	DOM	SOXTHERM	HPLC
PHENOLSBYGOMS	WET	DOM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANEACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (MINOL)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH (CLEANED UP)	D&C	HEXANEACETONE	END OVEREND	GCFID
EPH CWG BYGC	D&C	HEXANEACETONE	END OVEREND	GCFID
POB TOT / POB CON	D&C	HEXANEACETONE	END OVEREND	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANEACETONE	MCROWAVE TM218.	GCMS
C8-C40(C6-C40) EZ FLASH	WET	HEXANEACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAFID GC	WET	HEXANEACETONE	SHAKER	GC-EZ
SEM VOLATILEORGANIC COMPOUNDS	WET	DOMACETONE	SONICATE	GCMS

#### LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	extraction Method	SEYJANA
PAHMS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
EPH .	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRREDEXTRACTION(STIR-BAR)	9CFID
MINERALOIL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GC FID
POB 7 CONGENERS	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
POB TOTAL	HEXANE	STIRREDEXTRACTION(STIR-BAR)	GCMS
svoc	DOM	LIQUID/LIQUID SHAKE	GCMS
FREESULPHUR	DOM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DOM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERES	DOM	LIQUID/LIQUID SHAKE	GCMS
PHENOLSMS	DOM	SOLID PHASE EXTRACTION	GCMS
TPH byINFRARED (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

The results for asbestos identification soil samples are obtained from possible Asbestos Containing Material, removed 'Screening of during the soils Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) (Hawarden) method of transmitted/polarised light microscopy and central dispersion staining, based on HSG 248 (2005)

Asbestos Type	Common Name
Chrysofile	WhiteAsbestos
Amoste	BrownAsbestos
Crodddite	Blue Asbestos
Fibrous Adindite	=
Fibrous Anthophylite	-
Fibrous Trentalite	-

#### 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.

## ALcontrol Laboratories

#### **CERTIFICATE OF ANALYSIS**

 SDG:
 150903-66
 Location:
 Stag Brewery
 Order Number:

 Job:
 H\_URS\_WIM-273
 Customer:
 AECOM
 Report Number:
 329161

 Client Reference:
 Attention:
 Gary Marshall
 Superseded Report:

### Appendix General

- 1. Results are expressed on a dry weight basis (dried at  $35^{\circ}$ C) 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 month 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 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 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
Chrysofile	White Asbestos
Amoste	BrownAsbestos
Orodobite	Blue Asbestos
Fibrous Adinoite	-
Fibrous Anhaphylite	-
Fibrous Trendile	=

#### 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.

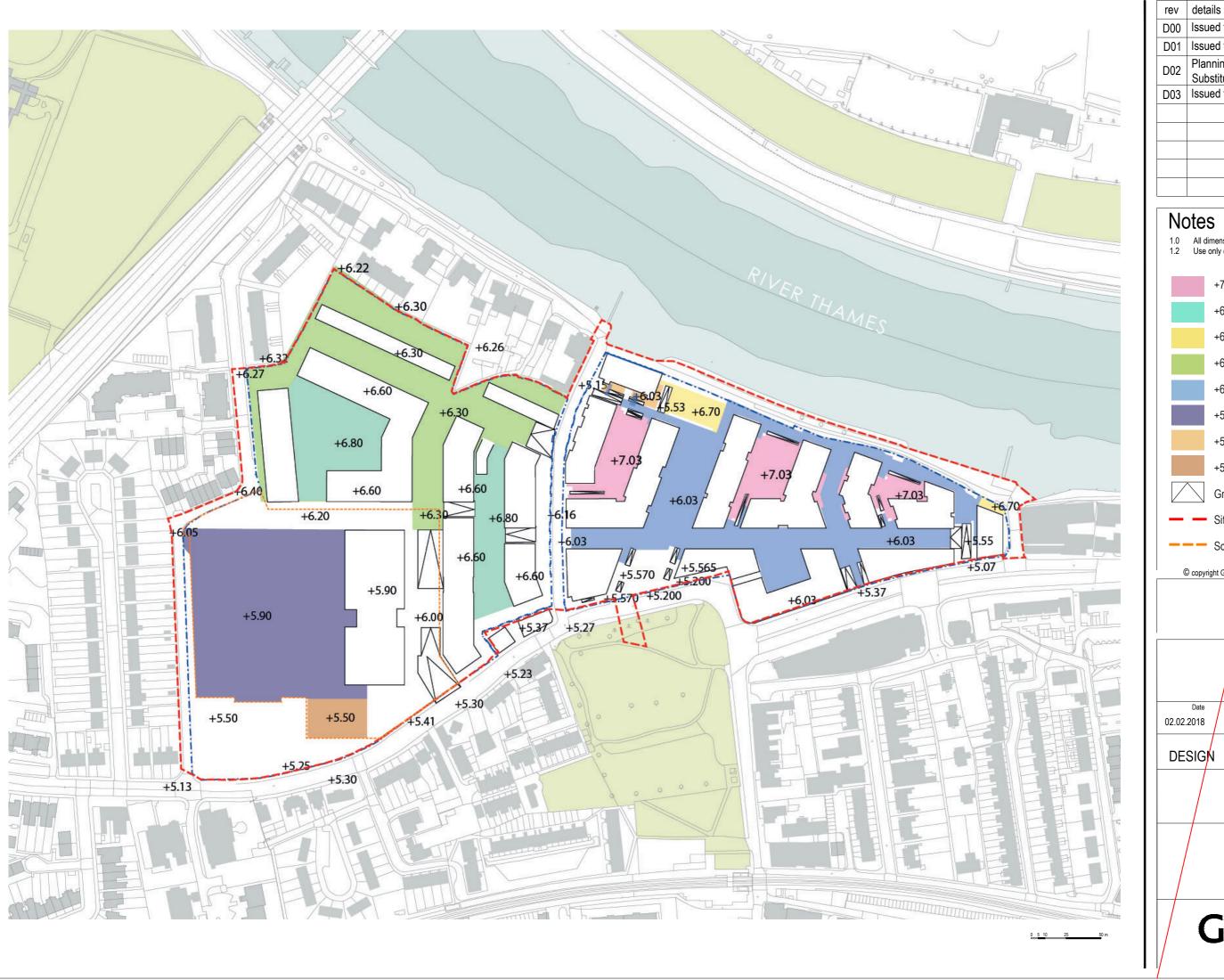
Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

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.



C. Ground level plans current and proposed





rev	details	by	date		
D00	Issued for Planning	RJ	02.02.2018		
D01	Issued for Planning	RJ	09.02.2018		
D02	Planning Substitution	RJ	11.04.2019		
D03	Issued for Planning	RM	24.04.2020		
1.0 1.2	All dimensions in millimeter Use only dimensions shown				
	+7.03				
	+6.80		$\sqrt{N}$		
	+6.70	5			
	+6.30	<del> </del>			
	+6.03	<u> </u>			
	+5.90	!			
	+5.53				
	+5.50				
	.0/				
	Grading				
-	<ul> <li>Site Application</li> </ul>	Bounda	ary		
	Scholapplicat	ion Boui	ndary		
	© copyright GILLESPIES LLP, a	Il rights rese			
	STA	AG BI	REWERY		
			d Site Wide Level Plan		
02.02	Date .2018 1:2500	Scale ) @ A3	Drawn Checked  CL RM		
			ring status Revision		
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## D. Drainage Strategy

Superseded - refer to Appendix E of Basement Impact Assessment for updated Drainage Strategy dated April 2023.



# UK and Ireland Office Locations





#### C. Flood Risk Assessment



# APPENDIX 12.1 FLOOD RISK ASSESSMENT







## Stag Brewery, Mortlake

**Flood Risk Assessment** 

For Reselton Properties

March 2022

#### **EXECUTIVE SUMMARY OF REPORT**

This report documents work undertaken by Hydro-Logic Services for Reselton Properties Limited between 2016 and 2022 in relation to the proposed redevelopment of the former Stag Brewery site at Mortlake. The latter stages of this work have been undertaken through Corylus Planning and Environmental Ltd.

The purpose of the work was to:

- Provide guidance to the Project team on the issues of flood risk and drainage
- Prepare a Flood Risk Assessment (FRA) suitable for submission with the Planning Applications

The key outcomes of the work are summarised in Section 5 of this Report.

The work delivered the following outputs:

- This report, including
- Flood Emergency Plan (Appendix G)
- Drainage Strategy (submitted under separate cover).

This is Revision 5 of the FRA and reflects changes to the layout of the revised Hybrid Scheme that have been finalised in 2022.

#### **Contributors:**

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Dr Paul Webster	Project Manager & Flood Risk Specialist
Rodrigo Magno	Hydraulic modeller
Phil Cannard	Hydrologist

#### **Document Status and Revision History:**

Version	Date	Author(s)	Authorisation	Status/Comment
3 issue	Oct 2019	P Webster	A Corner	Issue version for Original Scheme
4 issue	May 2020	P Webster	A Corner	Issue version for Revised Scheme
5 issue	Feb 2022	P Webster	A Corner	Issue version for hybrid development

#### Limitation of liability and use

The work described in this report was undertaken for the party or parties stated; for the purpose or purposes stated; to the time and budget constraints stated. No liability is accepted for use by other parties or for other purposes, or unreasonably beyond the terms and parameters of its commission and its delivery to normal professional standards.

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#### 1. Introduction

#### 1.1 Planning Background

This Flood Risk Assessment (FRA) has been prepared by Hydro-Logic Services (through Corylus) on behalf of Reselton Properties Limited ("the Applicant") in support of two linked planning applications ("the Applications") for the comprehensive redevelopment of the former Stag Brewery Site in Mortlake ("the Site") within the London Borough of Richmond upon Thames (LBRuT).

#### The Proposals

The Applications seek planning permission for:

**Application A:** "Hybrid application to include the demolition of existing buildings to allow for comprehensive phased redevelopment of the site:

Planning permission is sought in detail for works to the east side of Ship Lane which comprise:

- a) Demolition of existing buildings (except the Maltings and the façade of the Bottling Plant and former Hotel), walls, associated structures, site clearance and groundworks
- b) Alterations and extensions to existing buildings and erection of buildings varying in height from 3 to 9 storeys plus a basement of one to two storeys below ground
- c) Residential apartments
- d) Flexible use floorspace for:
  - Retail, financial and professional services, café/restaurant and drinking establishment uses
  - ii. Offices
  - iii. Non-residential institutions and community use
  - iv. Boathouse
- e) Hotel / public house with accommodation
- f) Cinema
- g) Offices
- h) New pedestrian, vehicle and cycle accesses and internal routes, and associated highway works
- i) Provision of on-site cycle, vehicle and servicing parking at surface and basement level
- j) Provision of public open space, amenity and play space and landscaping
- k) Flood defence and towpath works
- I) Installation of plant and energy equipment

Planning permission is also sought in outline with all matters reserved for works to the west of Ship Lane which comprise:

- a) The erection of a single storey basement and buildings varying in height from 3 to 8 storeys
- b) Residential development
- c) Provision of on-site cycle, vehicle and servicing parking
- d) Provision of public open space, amenity and play space and landscaping
- e) New pedestrian, vehicle and cycle accesses and internal routes, and associated highways works"

**Application B:** "Detailed planning permission for the erection of a three-storey building to provide a new secondary school with sixth form; sports pitch with floodlighting, external MUGA and play space; and associated external works including landscaping, car and cycle parking, new access routes and other associated works"

Together, Applications A and B described above comprise the 'Proposed Development'.

#### 1.2 Background to Submission

The current applications follow earlier planning applications which were refused by the Greater London Authority and the GLA. The refused applications were for:

- a) Application A hybrid planning application for comprehensive mixed use redevelopment of the former Stag Brewery site consisting of:
  - i. Land to the east of Ship Lane applied for in detail (referred to as 'Development Area 1' throughout); and
  - ii. Land to the west of Ship Lane (excluding the school) applied for in outline (referred to as 'Development Area 2' throughout).
- b) Application B detailed planning application for the school (on land to the west of Ship Lane).
- c) Application C detailed planning application for highways and landscape works at Chalkers Corner.

The London Borough of Richmond (the Council) originally resolved to grant planning permission for Applications A and B but refuse Application C.

Following the LBRuT's resolution to approve the Applications A and B, the Mayor called-in the Applications and became the determining authority. The Mayor's reasons for calling in the Applications were set out in his Stage II letter (dated 4 May 2020) but specifically related to concerns regarding what he considered was a low percentage of affordable housing being proposed for the Site and the need to secure a highways solution for the scheme following the LBRuT's refusal of Application C.

Working with the Mayor's team, the Applicant sought to meaningfully respond to the Mayor's concerns on the Applications. A summary of the revisions to the scheme made and submitted to the GLA in July 2020 is as follows:

- i. Increase in residential unit provision from up to 813 units to up to 1,250 units;
- ii. Increase in affordable housing provision from (up to) 17%, to 30%;
- iii. Increase in height for some buildings of up to three storeys;
- iv. Change to the layout of Blocks 18 and 19, conversion of Block 20 from a terrace row of housing to two four storey buildings;
- v. Reduction in the size of the western basement, resulting in an overall car parking spaces reduction of 186 spaces and introduction of an additional basement storey under Block 1;
- vi. Internal layout changes and removal of the nursing home and assisted living in Development Area 2;
- vii. Landscaping amendments, including canopy removal of four trees on the north west corner of the Site; and
- viii. Alternative options to Chalkers Corner in order to mitigate traffic impacts through works to highway land only and allow the withdrawal of Application C.

The application was amended to reflect these changes.

Notwithstanding this, and despite GLA officers recommending approval, the Mayor refused the applications in August 2021.

The Mayor's reasons for refusal in respect of Application A were:

- height, bulk and mass, which would result in an unduly obtrusive and discordant form of development in this 'arcadian' setting which would be harmful to the townscape, character and appearance of the surrounding area;
- (ii) heritage impact. The proposals, by reason of its height, scale, bulk and massing would result in less than substantial harm to the significance of several listed buildings and conservation areas in the vicinity. The Mayor considered that the less than substantial harm was not clearly and convincingly outweighed by the public benefits, including Affordable Housing, that the proposals would deliver;
- (iii) neighbouring amenity issues. The proposal, by reason of the excessive bulk, scale and siting of Building 20 and 21 in close proximity to the rear of neighbouring residential properties in Parliament Mews and the rear gardens of properties on Thames Bank, would result in an unacceptable overbearing an unneighbourly impact, including direct overlooking of private amenity spaces. The measures in the Design Code would not sufficiently mitigate these impacts; and
- (iv) no section 106 agreement in place.

Application B was also refused because it is intrinsically linked with Application A and therefore could not be bought forward in isolation.

### 1.3 The Proposed New Scheme

This 3<sup>rd</sup> iteration of the scheme seeks to respond directly to the Mayor's reasons for refusal and in doing so also addresses a number of the concerns raised by the LBRuT.

The amendments can be summarised as follows:

- i. A revised energy strategy is proposed in order to address the London Plan (2021) requirements;
- ii. Several residential blocks have been reduced in height to better respond to the listed buildings along the Thames riverfront and to respect the setting of the Maltings building, identified as a Building of Townscape Merit (BTM) by the LBRuT;
- iii. Reconfiguration of layout of Buildings 20 and 21 has been undertaken to provide lower rise buildings to better respond to the listed buildings along the Thames riverfront; and
- iv. Chalkers Corner light highways mitigation works.

The school proposals (submitted under 'Application B') are unchanged. The Applicant acknowledges LBRuT's identified need for a secondary school at the Site and the applications continue to support the delivery of a school. It is expected that the principles to be agreed under the draft Community Use Agreement (CUA) will be the same as those associated with the refused school application (LBRuT ref: 18/0548/FUL, GLA ref: GLA/4172a/07).

Overall, it is considered that together, the Applications respond successfully to the concerns raised by stakeholders in respect of the previous schemes and during pre-application discussions on the revised Proposed Development. As a result, it is considered that the scheme now represents a balanced development that delivers the principal LBRuT objectives from the Site.

### 1.4 Purpose of this Report

This Report presents a Flood Risk Assessment (FRA) for the Site. The FRA includes the development of a Drainage Strategy. The development of the Drainage Strategy has been undertaken by Waterman Infrastructure & Environment Limited ('Waterman IE'), in conjunction with Hydro-Logic Services and is summarised within this FRA.

The National Planning Policy Framework (NPPF) was published on 2012, revised most recently in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied. Flooding is addressed, principally in paragraphs 159 to 169 of the NPPF. These seek to avoid inappropriate development in areas at risk of flooding by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

A site-specific flood risk assessment must demonstrate the following:

- that the development will be safe for its lifetime taking account of the vulnerability of its users:
- it should not increase flood risk elsewhere;
- it should if possible, reduce flood risk overall.

## 1.5 Sources of Information and Consultation

A Scoping (Level 1) Flood Risk Assessment was prepared for the site in July 2016 (Appendix B). This was submitted to the Environment Agency and London Borough of Richmond upon Thames (LBRuT). Useful responses were obtained from both organisations, as shown in Appendix C. In particular, these have helped to Scope the requirements for this full FRA.

This Report has also been informed by:

- Product 4 flood data provided by the Environment Agency to Waterman IE in February 2016 (Ref KSL 2030);
- Product 7 flood data (The Lower Thames Model) provided to Hydro-Logic Services in January 2017 (Ref KSL 24434);
- Product 4 & 8 flood data, provided by the Environment Agency to Hydro-Logic in July 2017 (Ref KSL 52746);
- Development proposals provided by Squire and Partners throughout the project;
- Landscaping and River wall proposals provided by Gillespies LLP;
- Site visit by Dr Paul Webster on 16<sup>th</sup> June 2016.

## 1.6 Structure of Report

The Report has been structured in order to deal with key flood related issues of the NPPF Practice Guide, for which a checklist has been reproduced as Appendix A of this Report. The principal sections of the Report are as follows:

- Section 2 refers to spatial planning considerations by reference to the proposed land use and flood zoning;
- Section 3 presents an assessment of the existing flood risk at the application sites;
- Section 4 presents an assessment of flood risks associated with the proposed development along with any mitigation that may be required;
- Section 5 presents a summary of the main findings.

Additional Appendices are provided that deal with the following:

- Appendix B is the Scoping Level FRA submitted by Hydro-Logic Services to the Environment Agency and LBRuT;
- Appendix C provides the responses of the Environment Agency and LBRuT to the Scoping Level FRA;
- Appendix D is a Breach Analysis;
- Appendix E shows extracts from sewer maps provided by Thames Water;
- Appendix F provides the Environment Agency Climate Change Allowances (at February 2016);
- Appendix G is the Flood Emergency Plan
- Appendix H provides drawings of the proposed passive defence for Ship Lane;
- Appendix I is the Environment Agency response to tidal defence proposals.

# 2. Spatial Planning Considerations

### 2.1 Location Plan and Site Plan

The "Site" is the former location of the Stag Brewery, located at Mortlake in the London Borough of Richmond upon Thames (LBRuT) plus some surrounding areas, as described in this Section. It is located south west of a large meander on the River Thames which flows to the east. Its general location is shown in Figure 2-1 and an aerial photo of the site is shown in Figure 2-2.

The Site comprises of a parcel of land extending to approximately 9.25 hectare (ha) predominantly occupied by the former Stag Brewery, as well as surrounding highways land including Chalkers Corner junction with the A316 (Clifford Avenue), A3003 (Lower Richmond Road) and A205 (South Circular), Mortlake High Street, and Sheen Lane. The proposed highways works are to be delivered by Section 278 works. There would be no change of land-use or impact on ground levels in this part of the Site. There are, accordingly, no flood risk implications of this part of the Site and it is not considered further in this FRA. The geographical coverage of this FRA covers the parcel of land predominantly occupied by the former Stag Brewery which is considered to be appropriate and robust for the purposes of the assessment.

Table 2-1 Grid reference details for the site (www.streetmap.co.uk)

Reference	Value			
OS X (Eastings)	520341			
OS Y (Northings)	176027			
Nearest Post Code	SW14 7ET			
Lat (WGS84)	N51:28:14 (51.470421)			
Long (WGS84)	W0:16:08 (-0.268803)			
Nat Grid	TQ203760 / TQ2034176027			

Basin

Bulke's Meadows

Sports
Ground
Driving
Chiswids
Bridge
Bri

Figure 2-1 General location of the proposed Development

Reproduced under Licence 100041271

Figure 2-2 Aerial photo of the Site

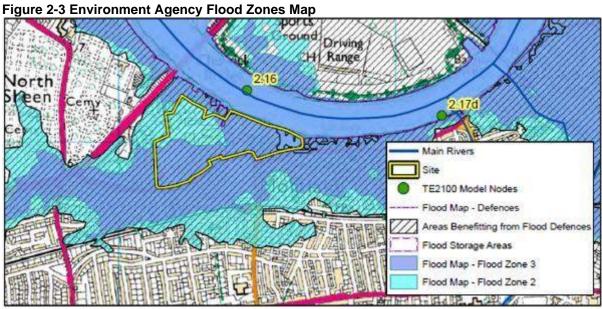


## 2.2 Environment Agency Flood Zone

The definitions of flood zones adopted by PPS25/NPPF are as follows:

- **Zone 1: 'Low Probability'** This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
- Zone 2: 'Medium Probability' This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5%-0.1%) in any year.
- **Zone 3a: 'High Probability'** This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- **Zone 3b:** 'The Functional Floodplain' This zone comprises land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the Environment Agency, including water conveyance routes).

The Environment Agency have provided maps of the flood zones (Figure 2-3). This shows that the east and south of the Site is in flood zone 3 within the 0.5% Annual Exceedance Probability (AEP) flood event. The north east of the Site is located in flood zone 2 in the 0.1% AEP flood event.



Copyright Environment Agency. Note that identical maps were provided in Product 4 data sets in 2016 and 2017. This map shows a site boundary that has now been superseded.

It is also important for planning purposes, to establish if any of the site lies in the functional flood plain (termed flood zone 3b). The Flood Risk Sequential Test (LBRuT Council, 2016a) focuses on the Stag Brewery site and confirms that the site is not located in flood zone 3b (Figure 2-4).

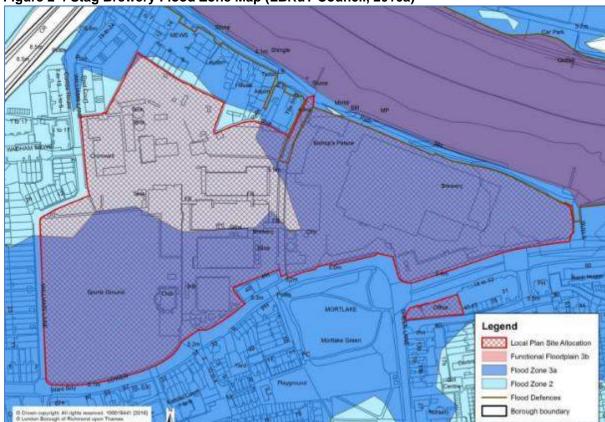


Figure 2-4 Stag Brewery Flood Zone Map (LBRuT Council, 2016a)

This map shows a site boundary that has now been superseded.

## 2.3 The Strategic Flood Risk Assessment and Sequential Test

The Strategic Flood Risk Assessment (SFRA) has been prepared by the London Borough of Richmond upon Thames (LBRuT) Council (2016c). This has provided a useful source of information to guide this FRA. Mortlake is specifically mentioned as having a tidal and fluvial flood risk from the nearby River Thames. Other flood risks are also covered in this SFRA (see section 3.2).

The NPPF includes a table to highlight whether particular types of development are appropriate in each flood zone. This is reproduced as Table 2-2. The proposed development would be classed as a more vulnerable development in accordance with the classification in Table 2-2, since the **most vulnerable use classification class** is used across the development site. More vulnerable developments are considered to be appropriate in flood zone 2 but are subject to the exception test in flood zone 3a (Table 2-3).

### Table 2-2 Flood risk vulnerability classification

#### More Vulnerable (MV)

Hospitals.

Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.

Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels.

Non-residential uses for health services, nurseries and educational establishments.

Landfill and sites used for waste management facilities for hazardous waste.

Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

### Less Vulnerable (LV)

Police, ambulance and fire stations which are not required to be operational during flooding

Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure.

Land and buildings used for agriculture and forestry.

Waste treatment (except landfill and hazardous waste facilities).

Minerals working and processing (except for sand and gravel working).

Water treatment works which do not need to remain operational during times of flood

Table 2 from NPPF Technical Guide (Paragraph 066)

Text in bold italics denotes all land uses proposed for the Site

Table 2-3 Flood risk vulnerability and flood zone compatibility

Flood Zone	Definition	Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
1	T>1,000	<b>✓</b>	<b>~</b>	~	<b>&gt;</b>	~
2	100 <t<sub>fluv&lt;1,000 200<t<sub>tidal&lt;1,000</t<sub></t<sub>	•	•	Exc	<b>&gt;</b>	•
3a	T <sub>fluv</sub> <100 T <sub>tidal</sub> <200	Exc.	•	×	Exc	•
3b (functional floodplain)	T <sub>fluv</sub> <20	Exc	•	×	×	×

Based on Table 3 from the NPPF Technical Guide (Paragraph 067)

### Notes:

development is appropriate
 development should not be permitted
 development should not be permitted
 exception test should be applied

The overall aim of decision-makers should be to steer new development away from Flood Zone 3, ideally to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, then sites would be considered in Flood Zone 2 and then 3. The Sequential Test requires an assessment of available and equivalent sites in the LBRuT area to ascertain if others are available that are at lower risk of flooding. The Stag Brewery site has been commented on in the LBRuT council's Flood Risk Sequential Test (2016a) which states that:

"This is a site for major redevelopment and regeneration as the brewery has closed, and as such, it is not appropriate / possible to accommodate the proposed uses on an alternative site in the borough at lower probability of flooding. The sequential approach should be applied on the site and a site-specific FRA will be required. Flood Hazard and TE2100 levels will need to be taken into account."

The Sequential Test is therefore deemed to have been satisfied, and is confirmed in the preapplication advice from LBRuT subject to review by the Environment Agency (Appendix C.2). The Exception Test now has two parts and the extent to which it satisfies these elements is described below:

(a) That the development supports wider sustainability benefit to the community that outweigh flood risk, informed by the SFRA.

This development meets this criterion, as confirmed from the pre-application advice from LBRuT which states:

- "...the Council can confirm that development of this site in line with the draft Local Plan proposal site (SA23), as supported by the Flood Risk Sequential Test, will provide wider sustainability benefits because it is now a derelict site that is in need of regeneration, and the proposal will create a new village heart for Mortlake with a mix of uses, including enlivening the riverside frontage." (Appendix C.2)
- (b) that the site can be safely developed without increasing flood risk elsewhere

This FRA provides the confirmation in Section 4 that there is no increase in flood risk elsewhere and can be made safe for residents.

Evidence is thus provided, or referred to in this FRA, to demonstrate that both the Sequential and Exception Tests have been satisfied.

## 2.4 Other relevant policies

The **LBRuT Local Development Framework Core Strategy** (LBRuT, 2009) sets out the key planning policies of the borough council. Policy CP3 focusses on climate change and states that this must be accounted for within the development. This includes accounting for climate change in the drainage strategy and the flood risk posed by the River Thames.

The Local Development Management Plan (LBRuT, 2011) expands on the policies from the LBRuT Local Development Framework Core Strategy and includes a focus on sustainability. Policy DM SD 6 sets out the flood risk requirements which includes mitigation measures and states that a Flood Warning and Evacuation Plan would be required. Policy DM SD 7 focusses on Sustainable Drainage and states that wherever possible, Sustainable Drainage Systems (SuDS) must be used and surface water discharge from the site should be reduced to greenfield rates. Policy DM SD 8 considers flood defences and states that flood defences must be maintained and that any development within 16 m of the tidal River Thames will require consent from the Environment Agency.

The **LBRuT Local Plan** (LBRuT, 2018) supersedes the policies in the two preceding documents. The new policies for flood risk and sustainable drainage are covered in policy LP 21.

The tidal areas of the Thames Estuary are covered by the **Thames Estuary 2100** (TE2100) plan. This aims to manage and reduce the tidal flood risk from the estuary over the next 100 years. The site is located within action zone 1 under the Barnes and Kew policy unit. Within this area, the policy is to keep take action to reduce flood risk beyond that predicted by climate change. For the proposed development, it is indicated the floodplain management actions to be taken should be a combination of priority evacuation and building resilience and resistance. This is illustrated for the relevant Flood Plain Management Unit (Barnes and Kew) in Figure 2-5.

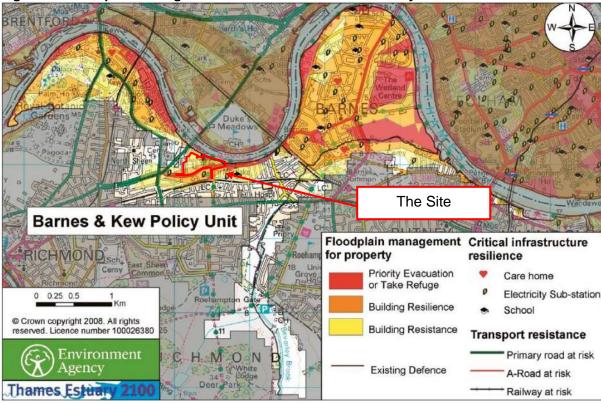


Figure 2-5 Floodplain Management for the Barnes and Kew Policy Unit of the TE2100 Plan

Environment Agency (2012)

The **London Plan** was published in 2021. Through Policy SI 12 (Flood Risk Management), "Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers. .". Through Paragraph 9.12.3, the Plan endorses the Thames Estuary 2100 plan. However, of greatest relevance to this FRA is Policy SI 13 (Sustainable Drainage). This states that:

- [B] Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:
- 1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
- 2. rainwater infiltration to ground at or close to source
- 3. rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
- 4. rainwater discharge direct to a watercourse (unless not appropriate)
- 5. controlled rainwater discharge to a surface water sewer or drain
- 6. controlled rainwater discharge to a combined sewer.

[C] Development proposals for impermeable surfacing should normally be resisted unless they can be shown to be unavoidable, including on small surfaces such as front gardens and driveways.

[D] Furthermore, drainage should be designed and implemented in ways that promote multiple benefits including increased water use efficiency, improved water quality, and enhanced biodiversity, urban greening, amenity and recreation.

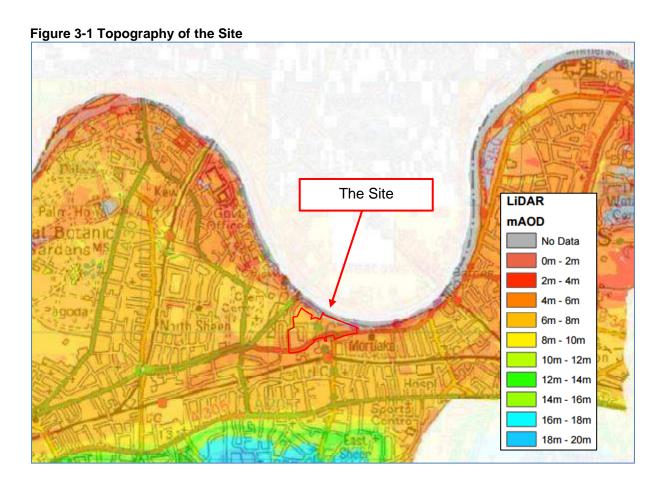
## 3. Flood Hazard for Existing Site

This Section reviews the characteristics of the catchment area that affect the Site. This provides the context for reviewing the sources of flooding to the site and the flood risk.

#### 3.1 Site and Catchment Characteristics

### 3.1.1 Topography

The topography of the Site is relatively flat and is located on low lying land. The LiDAR map (Figure 3-1) indicates that it is lowest to the east of the Site (4 to 6 mAOD) and highest in the north west of the Site (8 to 10 mAOD).



### 3.1.2 Geology and soils

According to the Preliminary Environmental Risk Assessment (PERA) undertaken by Waterman IE, the geology throughout the Site is composed of Hardstanding, underlain by Made Ground, Alluvium, Kempton Park Gravel Formation, London Clay Formation, Lambeth Group, Thanet Formation and Chalk Group (Figure 3-2 shows Kempton Park Gravel as the main superficial deposit). It is anticipated shallow groundwater in the Alluvium and Kempton Park Gravel Formation is in hydraulic continuity with the River Thames directly adjacent to the Site. This presents a risk to the Site of water finding a pathway through the gravel when the River Thames is at a high water level, which could cause groundwater flooding. The Site is located on soils described as Soilscapes 6 which are "Freely draining, slightly acid loamy soils" (Figure 3-3). While this indicates that infiltration drainage techniques could be used, the Site's

proximity to the River Thames indicates that infiltration could be inappropriate due to a high groundwater table.

Figure 3-2 The Geology Attributes at the Site

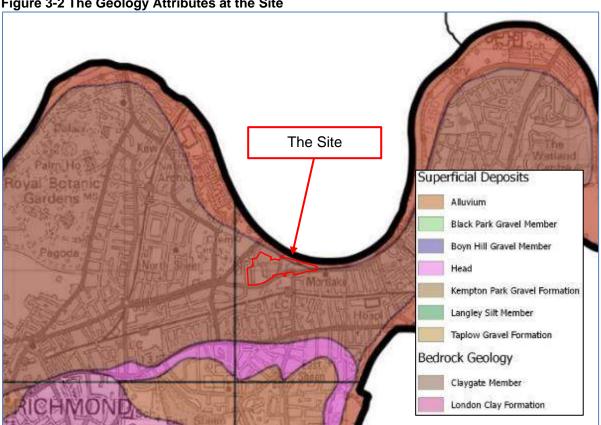
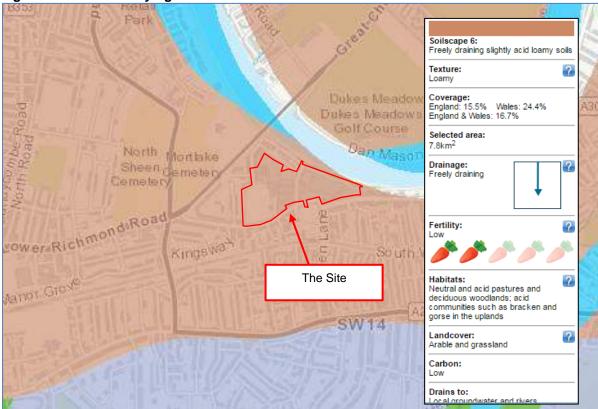


Figure 3-3 Soils underlying the Site



### 3.2 Sources of Flood Risk

The principal sources of flood risk are shown in Table 3-1. More detailed consideration is given in Section 3.3

Table 3-1 Possible sources of flood risk

Key sources of flooding	s of flooding Possibility at Site	
Fluvial (Rivers)	Very low risk as fluvial levels would not overtop defences	
Tidal	Moderate risk since it is located in the River Thames flood zones 3a and 2	
Groundwater	Possible risk from its proximity to the River Thames	
Sewers	Very low risk; No historical records	
Surface water	Very low risk	
Infrastructure failure	Very low risk associated with reservoirs located to west of London, namely Queen Elizabeth II and Queen Mary Reservoirs.	

Based on NPPF Practice Guide

### 3.3 Flood Mechanisms

#### 3.3.1 Tidal

The dominant flood risk to the Site comes from the tides on the River Thames. This can occur from high tides combined with storm surges.

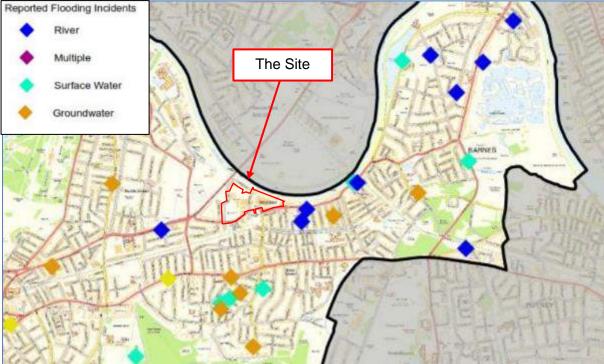
The Site is protected by formal Thames Tidal Flood defences, including the Thames Barrier. This controls the tidal water levels and, in combination with other defences, should limit flooding up to the 0.1% Annual Exceedance probability (AEP) flood event. Apart from the Thames Barrier, these defences are privately owned and it is the responsibility of the riparian owner to manage and maintain them. The boundary wall on the site of the Stag Brewery forms part of the flood defence at this location. In the cases that these defences were breached, different parts of the site would exhibit different hazards, ranging from low to extreme (see section 3.5).

The nearest tidal level station to the site is at Kew, as documented by the Port of London Authority (2016). This shows the following level information:

- Chart datum is 1.07 m below Ordnance Datum
- HAT (Highest astronomical tide) = 5.9 mACD = 4.8 mAOD
- MHWS (Mean High Water Springs) = 5.2 mACD = 4.1 mAOD
- MHWN (Mean High Water Neaps) = 4.2 mACD = 3.1 mAOD

While there are no reported historic flood incidents at the site (LBRuT, 2016a), there have been several flood incidents from the river near to the site (Figure 3-4).





#### 3.3.2 Groundwater

The BGS susceptibility to groundwater flooding map (Figure 3-5) indicates that the eastern and southern areas of the Site are susceptible to groundwater flooding at the surface. The remaining areas of the Site are susceptible to groundwater flooding below the ground. While no groundwater flood incidents have been recorded at the Site, there have been several groundwater flood incidents near the Site (Figure 3-4).

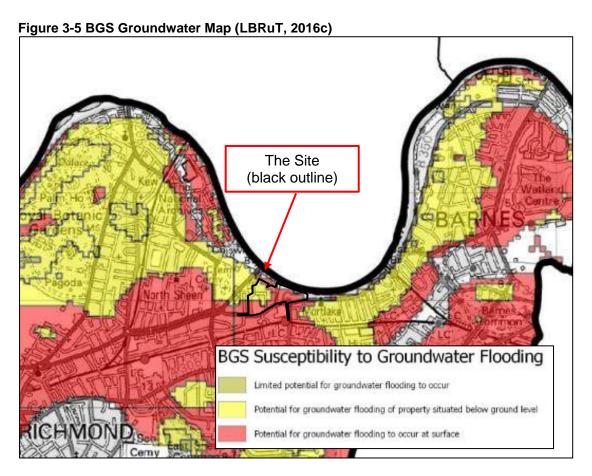
The mechanism for groundwater flooding could occur from two sources and the associated pathways. The first source is from high water levels in the River Thames. Since the Site is located on Kempton Gravel Formation, this could allow water to find a pathway through the gravel into the Site.

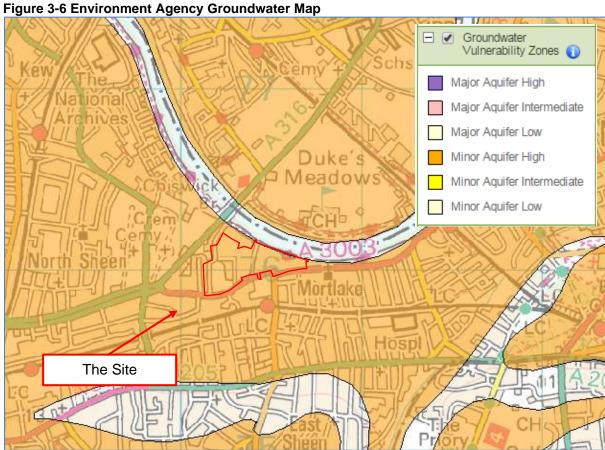
A second mechanism is from the minor aquifer over which the Site is located (Figure 3-6). This indicates a risk from groundwater flooding that could be caused by high seasonal rainfall which increases the groundwater levels in the aquifer. Since some areas of the Site have a low elevation (Figure 3-1), this could increase its susceptibility to groundwater flooding from a high water table.

AECOM was commissioned in 2015 to undertake an Environmental Site Assessment Report in preparation for the proposed planning application (AECOM 2015a and 2015b). This included a collation of available groundwater monitoring information and a new set of observations in September 2015.

The main findings of their investigations were:

 Observed water levels vary over the site from around 2 mAOD in the east of the Site to 1.3 mAOD in the west. The hydraulic gradient is thus downwards to the west in the western part of the Site. However, in the centre, the gradient is downwards to the south-west (Figure 3-7).





- The hydraulic gradient therefore contrasts with the topographic gradient which is downwards to the east across the Site.
- A review of water levels over time confirms that they vary systematically across the Site, with a typical range of about 0.5 m between the highest and lowest values (Figure 3-8).
- The influence of the tidal variation in the Thames was investigated through deployment of monitors at three of the boreholes. The closest borehole to the Thames that was monitored was BH201a, located approximately 20 m from the southern bank of the Thames. The record from BH201A shows a very subdued response to tidal variation centred around 2 mAOD over the time of observations (Figure 3-9), as expected because the borehole is located in the inter-tidal zone.

As part of their Environmental Risk Assessment in 2016 for the east part of the Site (east of Ship Lane), Waterman IE also made measurements of groundwater levels at a new set of boreholes. The locations of the additional boreholes are shown in Figure A.4 and the observations in Appendix D of Waterman IE (2016b). The observed water levels have been annotated in red on Figure 3-7. Based on the findings by AECOM and the observations by Waterman IE (2016b), the following hydrogeological interpretation can be made about the Site:

- Since the hydraulic gradient slopes downwards away from the river, the river appears
  to be acting as a "source" of groundwater flow when considered together with flows
  from existing surface water drainage arrangement (see Section 3.4) under wet weather
  conditions.
- Although the river levels are subject to tidal variation, the effects diminish with distance from the river, such that at 20 m for Borehole 201A, they are very subdued. The head boundary condition imposed by the Thames will therefore approximate to the average recorded water levels. This is logically around 2 mAOD (based on Figure 3-9) and which is consistent with the closest available water level recorders at Richmond (Figure 3-10) and Chelsea (Figure 3-11), for which average water levels are around 2.4 mAOD and 0.7 mAOD respectively.
- AECOM sought to investigate the hydrogeology of the east of the Site by drilling boreholes BH203 and BH203A. The borehole logs show that these had limited success since they encountered concrete (Figure 3-12 and Figure 3-13). The investigations by Waterman IE also sought to better understand the east of the Site through the drilling of additional boreholes, though these also encountered obstructions. These undermine any strong inferences about the hydrogeology of this part of the site.
- The general observations by Waterman IE are broadly consistent with the interpretation by AECOM. However, the picture is varied with some dry wells and other wells showing water levels within 2 to 3 m of the ground level. It seems likely that this variation reflects the complexity of the east of the Site and the numerous anthropogenic and building work interventions over a long period. It is possible (rather than probable) that the observed water levels of around 3 mAOD which were obtained in February 2016 and similar values obtained by Waterman IE in October 2016 represent a perched water table associated with the underlying Palaeogene minor aquifer. However, the relationship between the Palaeogene minor aquifer and the Kempton gravel formation does not support the assumption of a perched water table. The

presence of building work artefacts in the eastern part of the Site may be responsible for the impermeable concrete encountered at various depths through the drilling of BH203 and BH203A as recorded in their borehole logs.

It is therefore concluded that the risk to the Site and the surrounding area from groundwater is low over the majority of the Site. However, in the extreme east, there is some uncertainty over the relative influence of the mechanisms controlling groundwater flow through the Site: flows through the high permeability Kempton gravels and / or groundwater flows in the underlying minor aquifer. The possible impacts of the proposed Development on groundwater risk are reviewed in Section 4. The investigations were commissioned at an early stage in the planning process. The findings have not demonstrated a need for further monitoring and none has been conducted.

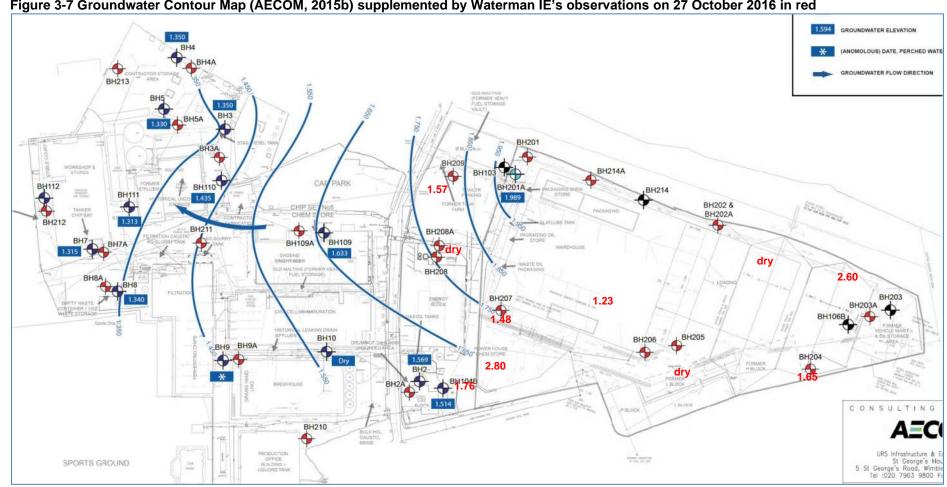


Figure 3-7 Groundwater Contour Map (AECOM, 2015b) supplemented by Waterman IE's observations on 27 October 2016 in red

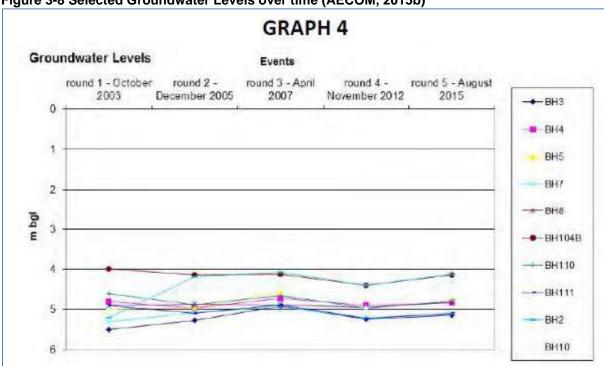


Figure 3-8 Selected Groundwater Levels over time (AECOM, 2015b)



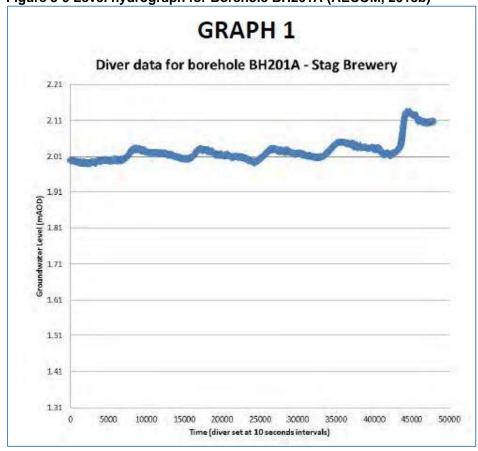


Figure 3-10 Level hydrograph for Richmond (Environment Agency)

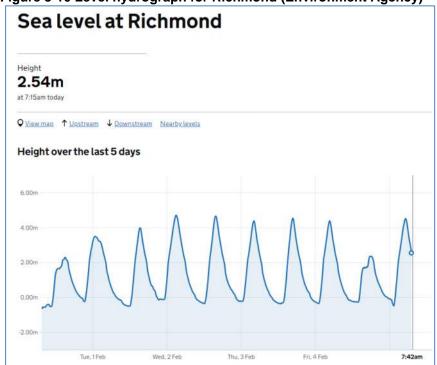


Figure 3-11 Level hydrograph for Chelsea (Environment Agency)

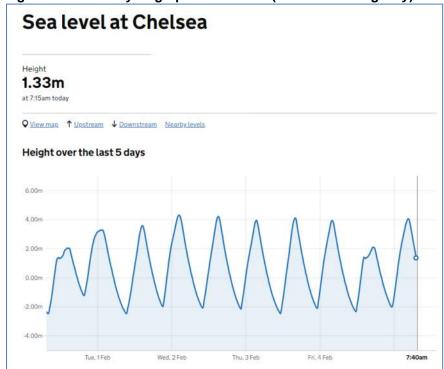
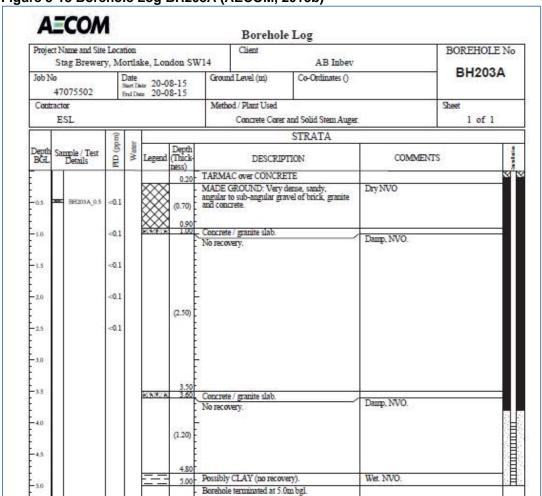


Figure 3-12 Borehole Log BH203 (AECOM, 2015b)

Project Name and Site	Location				Client	_		BOREHOL	E No
Stag Brewery, Mortlake, London SW1				14					
Job No Date Start Date 20-08-15 End Date 20-08-15				Ground Level (m) Co-Ordinates ()			BH203		
Contractor				Metho	od / Plant Used	1		Sheet	
ESL					Concrete Corer a	nd Solid Stem Auger.		1 of 1	
	û.	Т				STRATA			
Depth Sample / Test BGL Details	Mdd Mageria		Depth (Thick- ness)	DESCRIPTION			COMMENTS		hydalata
-0.5	<0.1		(0.70)	MADE ( fine-med yellow a	AC over CONCRE; GROUND: Very S GROUND: Very S sium, angular-suba ind red brick, granit e/possible granite very.	ense, sandy, agular gravel of e and concrete.	Dry NVO		X

Figure 3-13 Borehole Log BH203A (AECOM, 2015b)

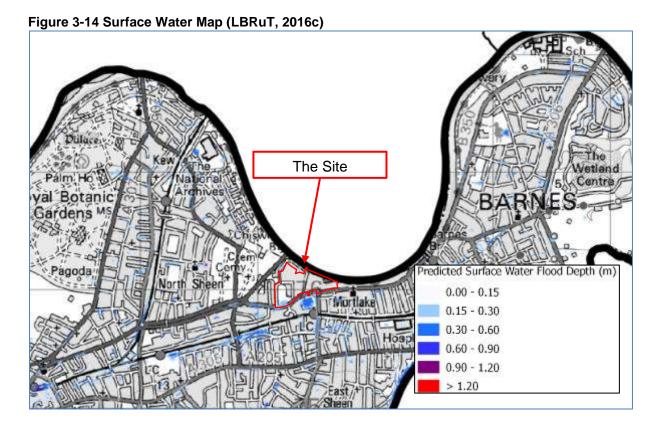


#### 3.3.3 Sewers

Although surface water and foul sewers are laid under the Site, Thames Water have confirmed that there are no recorded historic sewer flooding records at the Site (Reference to their response to Waterman IE dated January 2016), extracts from which are shown in Appendix E

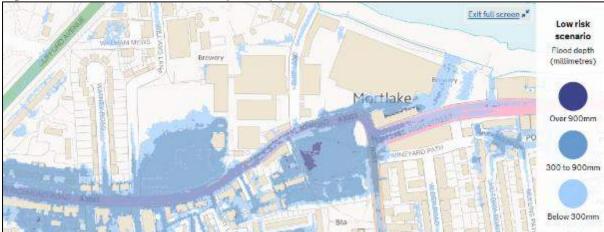
#### 3.3.4 Surface Water

Surface water flooding can occur with ponding in low areas of the Site and surrounding area where the drainage is unable to deal with the incident rainfall. Surface water flood risk is available in the SFRA (LBRuT, 2016c) (Figure 3-14) and from the Environment Agency Web site (Figure 3-15). The latter shows that, for the low-risk scenario, the depths vary from 0 to about 300 mm along the Lower Richmond Road and Mortlake High Street to the east of the existing Sports Ground, as indicated on the map. Greater depths of surface water flooding are predicted in Lower Richmond Road adjacent to the Sports Ground (300 to 900 mm) and in the park, south of the Lower Richmond Road (in excess of 900 mm). Some of the surface water flooding on Lower Richmond Road may be linked to the blocked gully incidents (Figure 3-16). For the high-risk scenario, predicted surface water flooding is restricted to the carriageway of the Upper Richmond Road and the adjacent park and is of shallow depth.



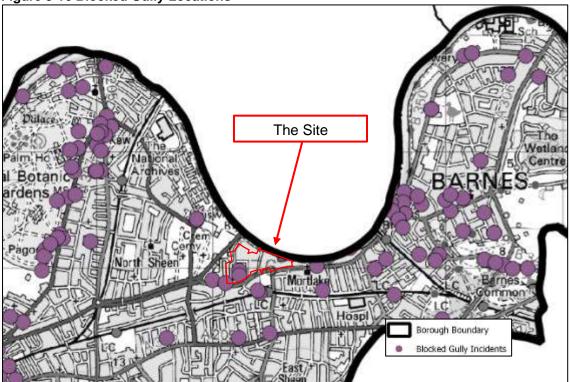
ES Appendix 12.1 FRA - 512\_Stag\_Brewery\_FRA\_v5d\_220303

Figure 3-15 Surface Water Flood Depth Map



Environment Agency Web Site (Accessed 23<sup>rd</sup> October 2017 and identical on 7<sup>th</sup> December 2021))

Figure 3-16 Blocked Gully Locations



### 3.3.5 Infrastructure

The Site has a potential risk of flooding from the Queen Elizabeth II reservoir and the Queen Mary reservoir in Surrey (Figure 3-17). This could occur if the reservoirs were to fail, causing water to flood over the western and southern parts of the Site. However, these reservoirs located over 20 km upstream of the Site, they are managed and maintained by Thames Water and the risk of reservoir flooding is considered to be very low.



## 3.4 Existing Surface Water Drainage Arrangements

During the preliminary investigations for this Site, Waterman IE made a Developer Enquiry to Thames Water in respect of sewers and water mains. Extracts from the response in January 2016 are provided in Appendix E . These drawings show a variety of combined, surface and foul sewers around the Site. Whilst sewers traverse the Site along both Ship Lane and Bull's Alley, none are shown on the operational area of the former brewery.

The on-site drainage measures were inspected during the site visit in 16<sup>th</sup> June 2016. Virtually the entire Site comprises either rooves or hard standing (Figure 3-18). Roof drainage was via downpipes that are believed to outfall to the Thames whilst hard standing drains (Figure 3-19). runoff calculations are presented in the Drainage Strategy (Waterman IE, 2022).

Figure 3-18 General views of The Site



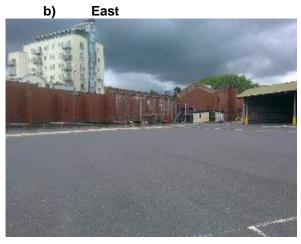


Figure 3-19 Examples of drainage a) Roof





## 3.5 Probability of Site Flooding

The assumed tidal water levels of the River Thames are based on the TE2100 model node 2.16 (Figure 3-20) which is adjacent to the Site. The modelled levels for node 2.16 are assumed to apply along the entire river frontage due to the river's shallow gradient.

The probability of the Site flooding due to the tides is limited by the tidal defences to protect up to a 0.1% Annual Exceedance Probability (AEP) event. However, there remains a risk from flood defences failing, with the outcomes being modelled on behalf of the Environment Agency, which has been provided as Product 4 data. This provides flood levels for the floodplain nodes in Figure 3-21 for different scenarios of flood defence failure.

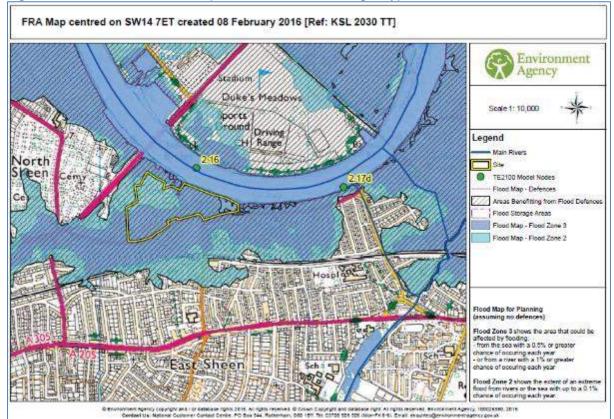


Figure 3-20 Product 4 FRA data (source: Environment Agency)

An identical map was provided with the July 2017 Product 4 data set This map shows a site boundary that has now been superseded.

The relevant levels have been provided by the Environment Agency for a range of return periods and projections. The most recent levels provided by the Environment Agency are from the following sources:

- TE2100 modelled node 2.16;
- Thames Breach Modelling; and
- Thames Tidal Upstream Inundation Modelling.

The TE2100 levels result from a large body of work commissioned by the Environment Agency in relation to flood risk management of the Thames Estuary. The operation of the Thames Barrier is critical in this strategy and the recent modelling addresses the frequency of Thames Barrier operation. The Thames Barrier manages tidal flood events up to a 0.1% AEP event. These TE2100 levels recently provided do not have return periods. The Environment Agency present them as "absolute maximum levels" and clarify this as follows:

"The levels upstream of the barrier are the highest levels permitted by the operation of the Thames Barrier. If levels and flows are forecast to be any higher, the Thames Barrier would shut, ensuring that the tide is blocked and the river maintained to a low level. For this reason, the probability of any given water level upstream of the Barrier is controlled and therefore any associated return period becomes irrelevant. The Thames Barrier and associated defence system has a 1 in 1000 year standard which means it ensures that flood risk is managed up to an event that has a 0.1% annual probability. The probability of water levels upriver is ultimately controlled by the staff at the Thames Barrier."