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Combined Report : SSE Site, Vastern Road - WAC

Project / Site name:	SSE Site, Vastern Road, Reading	**Samples received on:**	05/02/2018
Your job number:	C5925	**Samples instructed on:**	14/02/2018
Your order number:	C5925	**Analysis completed by:**	23/02/2018
Report Issue Number:	1	**Report issued on:**	07/03/2018
Samples Analysed:	10 10:1 WAC samples		

Signed:

Rexona Rahman
Head of Customer Services
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Waste Acceptance Criteria Analytical Results

Report No:	Combined Report SSE Site Vastern Road - WAC						
					Client: CCGROUND		
Location	SSE Site, Vastern Road, Reading						
Lab Reference (Sample Number)	908247 / 908248				Landfill Waste Acceptance Criteria Limits		
Sampling Date	05/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH1003C						
Depth (m)	0.45						
Solid Waste Analysis							
TOC (%)**	2.1				3%	5%	6%
Loss on Ignition (%) **	4.6				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	150				500	--	--
Total PAH (WAC-17) (mg/kg)	32				100	--	--
pH (units)**	8.8				--	>6	--
Acid Neutralisation Capacity (mol / kg)	20				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0110			0.0769	0.5	2	25
Barium *	0.0179			0.125	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0085			0.059	0.5	10	70
Copper *	0.011			0.078	2	50	100
Mercury *	0.0054			0.0379	0.01	0.2	2
Molybdenum *	0.0022			0.0153	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.017			0.12	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0084			0.058	4	50	200
Chloride *	72			500	800	4000	25000
Fluoride	0.19			1.3	10	150	500
Sulphate *	9.0			63	1000	20000	50000
TDS	190			1300	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.52			24.6	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.5						
Dry Matter (%)	90						
Moisture (%)	10						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
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** = MCERTS accredited

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client: CCGROUND		
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908280 / 908281				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	05/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH1004						
Depth (m)	2.00						
Solid Waste Analysis							
TOC (%)**	2.5				3%	5%	6%
Loss on Ignition (%) **	6.7				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	16				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	4.1				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	0.0074			0.0472	0.5	2	25
Barium *	0.0656			0.416	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0007			0.0046	0.5	10	70
Copper *	0.0054			0.034	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0071			0.0452	0.5	10	30
Nickel *	0.0037			0.023	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0022			0.014	4	50	200
Chloride *	36			230	800	4000	25000
Fluoride	0.53			3.3	10	150	500
Sulphate *	9.7			62	1000	20000	50000
TDS	240			1500	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	12.7			80.6	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	62						
Moisture (%)	38						

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908329 / 908330				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	08/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS013						
Depth (m)	0.60						
Solid Waste Analysis							
TOC (%)**	0.9				3%	5%	6%
Loss on Ignition (%) **	2.8				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	200				500	--	--
Total PAH (WAC-17) (mg/kg)	99				100	--	--
pH (units)**	10.6				--	>6	--
Acid Neutralisation Capacity (mol / kg)	40				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
	mg/l			mg/kg			
Arsenic *	< 0.0011			< 0.0110	0.5	2	25
Barium *	0.0939			0.784	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0043			0.036	0.5	10	70
Copper *	0.0052			0.043	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0028			0.0235	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0080			0.067	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.012			0.10	4	50	200
Chloride *	26			220	800	4000	25000
Fluoride	0.14			1.2	10	150	500
Sulphate *	20			170	1000	20000	50000
TDS	170			1400	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.61			38.5	500	800	1000
Leach Test Information							
Stone Content (%)	63						
Sample Mass (kg)	1.7						
Dry Matter (%)	96						
Moisture (%)	4.3						

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Vastern Road, Reading**						
Lab Reference (Sample Number)	908417 / 908418				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	07/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS1002						
Depth (m)	1.70						
Solid Waste Analysis							
TOC (%)**	7.3				3%	5%	6%
Loss on Ignition (%) **	13.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	12000				500	--	--
Total PAH (WAC-17) (mg/kg)	940				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	11				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0092			0.0658	0.5	2	25
Barium *	0.0334			0.240	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0078			0.056	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.134			0.961	0.5	10	30
Nickel *	0.0040			0.029	0.4	10	40
Lead *	0.0021			0.015	0.5	10	50
Antimony *	0.034			0.24	0.06	0.7	5
Selenium *	0.0069			0.050	0.1	0.5	7
Zinc *	0.0024			0.017	4	50	200
Chloride *	8.1			58	800	4000	25000
Fluoride	0.36			2.6	10	150	500
Sulphate *	49			350	1000	20000	50000
TDS	150			1100	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	9.19			66.0	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.97						
Dry Matter (%)	78						
Moisture (%)	22						

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908420 / 908421				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	09/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP1005						
Depth (m)	0.30						
Solid Waste Analysis							
TOC (%)**	0.7				3%	5%	6%
Loss on Ignition (%) **	2.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	780				500	--	--
Total PAH (WAC-17) (mg/kg)	88				100	--	--
pH (units)**	9.4				--	>6	--
Acid Neutralisation Capacity (mol / kg)	25				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0089			0.0685	0.5	2	25
Barium *	0.0523			0.404	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.021			0.16	0.5	10	70
Copper *	0.0074			0.057	2	50	100
Mercury *	0.0034			0.0266	0.01	0.2	2
Molybdenum *	0.0023			0.0176	0.5	10	30
Nickel *	0.0010			0.0076	0.4	10	40
Lead *	0.089			0.69	0.5	10	50
Antimony *	0.0089			0.069	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.044			0.34	4	50	200
Chloride *	65			500	800	4000	25000
Fluoride	0.23			1.8	10	150	500
Sulphate *	14			110	1000	20000	50000
TDS	230			1800	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.65			28.2	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.9						
Dry Matter (%)	89						
Moisture (%)	11						

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908423 / 908424				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	08/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS1006						
Depth (m)	1.90						
Solid Waste Analysis							
TOC (%)**	1.2				3%	5%	6%
Loss on Ignition (%) **	3.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	3.0				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mol / kg)	17				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0047			0.0293	0.5	2	25
Barium *	0.0212			0.131	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0005			< 0.0040	0.5	10	70
Copper *	0.0052			0.032	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0072			0.0442	0.5	10	30
Nickel *	0.0013			0.0078	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0013			0.0078	4	50	200
Chloride *	4.1			26	800	4000	25000
Fluoride	0.29			1.8	10	150	500
Sulphate *	36			220	1000	20000	50000
TDS	170			1000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	8.15			50.4	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	72						
Moisture (%)	28						

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908461 / 908462				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	13/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH2003						
Depth (m)	3.50						
Solid Waste Analysis							
TOC (%)**	0.3				3%	5%	6%
Loss on Ignition (%) **	1.4				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	700				500	--	--
Total PAH (WAC-17) (mg/kg)	< 0.9				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mol / kg)	5.3				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.0011			< 0.0110	0.5	2	25
Barium *	0.0054			0.0428	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0005			0.0041	0.5	10	70
Copper *	0.0014			0.011	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0102			0.0815	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0012			0.0092	4	50	200
Chloride *	1.6			13	800	4000	25000
Fluoride	0.12			0.97	10	150	500
Sulphate *	12			92	1000	20000	50000
TDS	44			360	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.09			24.7	500	800	1000
Leach Test Information							
Stone Content (%)	43						
Sample Mass (kg)	2.0						
Dry Matter (%)	94						
Moisture (%)	6.5						

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** = MCERTS accrediited

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The results included within the report are representative of the samples submitted for analysis.

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Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	908677 / 908678				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	06/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS1004						
Depth (m)	1.00						
Solid Waste Analysis							
TOC (%)**	1.1				3%	5%	6%
Loss on Ignition (%) **	3.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	2.1				100	--	--
pH (units)**	8.8				--	>6	--
Acid Neutralisation Capacity (mol / kg)	16				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0167			0.129	0.5	2	25
Barium *	0.0061			0.0472	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0016			0.012	0.5	10	70
Copper *	0.0055			0.043	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0070			0.0544	0.5	10	30
Nickel *	0.0012			0.0093	0.4	10	40
Lead *	0.0028			0.022	0.5	10	50
Antimony *	0.0094			0.073	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.021			0.16	4	50	200
Chloride *	30			230	800	4000	25000
Fluoride	0.37			2.9	10	150	500
Sulphate *	5.6			43	1000	20000	50000
TDS	120			930	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	2.54			19.7	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.0						
Dry Matter (%)	88						
Moisture (%)	12						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	909157 / 909158				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	14/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH2005						
Depth (m)	1.90						
Solid Waste Analysis							
TOC (%)**	3.5				3%	5%	6%
Loss on Ignition (%) **	8.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	1300				500	--	--
Total PAH (WAC-17) (mg/kg)	2.1				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mol / kg)	11				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0015			< 0.0110	0.5	2	25
Barium *	0.0355			0.256	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.0090			0.065	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0045			0.0323	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0097			0.070	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.010			0.072	4	50	200
Chloride *	91			660	800	4000	25000
Fluoride	0.44			3.2	10	150	500
Sulphate *	10			74	1000	20000	50000
TDS	250			1800	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	18.7			134	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.8						
Dry Matter (%)	77						
Moisture (%)	23						

Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredited (liquid eluate analysis only)

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Waste Acceptance Criteria Analytical Results

Report No:	**Combined Report SSE Site Vastern Road - WAC**						
					Client:	**CCGROUND**	
Location	**SSE Site, Vastern Road, Reading**						
Lab Reference (Sample Number)	909209 / 909210				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	14/02/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH2006						
Depth (m)	1.80						
Solid Waste Analysis							
TOC (%)**	3.2				3%	5%	6%
Loss on Ignition (%) **	11.4				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg)	200				500	--	--
Total PAH (WAC-17) (mg/kg)	4.1				100	--	--
pH (units)**	8.2				--	>6	--
Acid Neutralisation Capacity (mol / kg)	19				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0024			0.0160	0.5	2	25
Barium *	0.0549			0.370	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0044			0.030	0.5	10	70
Copper *	0.0062			0.042	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0104			0.0698	0.5	10	30
Nickel *	< 0.0003			< 0.0030	0.4	10	40
Lead *	0.0070			0.047	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0094			0.064	4	50	200
Chloride *	34			230	800	4000	25000
Fluoride	0.56			3.8	10	150	500
Sulphate *	13			89	1000	20000	50000
TDS	150			1000	4000	60000	100000
Phenol Index (Monhydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.32			29.1	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	2.0						
Dry Matter (%)	72						
Moisture (%)	28						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
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Combined Report : SSE Site, Vastern Road - WAC

Project / Site name: SSE Site, Vastern Road, Reading

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
908247	BH1003C	None Supplied	0.45	Brown gravelly sand.
908280	BH1004	None Supplied	2.00	Grey clay and sand.
908329	WS013	None Supplied	0.60	Grey gravelly sand with stones and rubble.
908417	WS1002	None Supplied	1.70	Grey clay and sand with gravel.
908420	TP1005	None Supplied	0.30	Brown sand with brick and gravel
908423	WS1006	None Supplied	1.90	Light brown clay and sand.
908461	BH2003	None Supplied	3.50	Light brown clay and sand with stones and gravel.
908463	TP1004	None Supplied	1.00	Brown clay and sand with gravel and brick.
908677	WS1004	None Supplied	1.00	Light brown clay and sand with gravel and rubble.
909157	BH2005	None Supplied	1.90	Grey clay and sand with gravel and chalk.
909209	BH2006	None Supplied	1.80	Brown clay and sand with gravel.

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Combined Report : SSE Site, Vastern Road - WAC

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-UK	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L047-PL	D	MCERTS
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Mineral Oil (Soil) C10 - C40	Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	in-house method	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS

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Combined Report : SSE Site, Vastern Road - WAC

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	NONE
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L088/76-PL	W	MCERTS

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

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Exova Jones Environmental

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Adler and Allan Ltd
4B Lovett Road
Hampton Lovett Trading Estate
Droitwich
WR9 0QG

Attention :	Angela Gomez
Date :	20th July, 2017
Your reference :	CL2637.ai.1
Our reference :	Test Report 17/11978 Batch 1
Location :	Reading
Date samples received :	12th July, 2017
Status :	Final report
Issue :	1

Nine samples were received for analysis on 12th July, 2017 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Adler and Allan Ltd
Reference: CL2637.ai.1
Location: Reading
Contact: Angela Gomez
JE Job No.: 17/11978

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14				LOD/LOR	Units	Method No.
Sample ID	SP1	SP2	SP3	SP4	SP5	Excav1-Base	Stockpile						
Depth													
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J						
Sample Date	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017						
Arsenic #	-	-	-	-	-	-	11.8				<0.5	mg/kg	TM30/PM15
Barium #	-	-	-	-	-	-	47				<1	mg/kg	TM30/PM15
Beryllium	-	-	-	-	-	-	1.1				<0.5	mg/kg	TM30/PM15
Cadmium #	-	-	-	-	-	-	<0.1				<0.1	mg/kg	TM30/PM15
Chromium #	-	-	-	-	-	-	161.5				<0.5	mg/kg	TM30/PM15
Copper #	-	-	-	-	-	-	25				<1	mg/kg	TM30/PM15
Lead #	-	-	-	-	-	-	457				<5	mg/kg	TM30/PM15
Mercury #	-	-	-	-	-	-	0.2				<0.1	mg/kg	TM30/PM15
Nickel #	-	-	-	-	-	-	27.9				<0.7	mg/kg	TM30/PM15
Selenium #	-	-	-	-	-	-	<1				<1	mg/kg	TM30/PM15
Vanadium	-	-	-	-	-	-	38				<1	mg/kg	TM30/PM15
Water Soluble Boron #	-	-	-	-	-	-	<0.1				<0.1	mg/kg	TM74/PM32
Zinc #	-	-	-	-	-	-	55				<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	-	-	-	-	-	-	<0.20 AA				<0.04	mg/kg	TM4/PM8
Acenaphthylene	-	-	-	-	-	-	0.18 AA				<0.03	mg/kg	TM4/PM8
Acenaphthene #	-	-	-	-	-	-	<0.25 AA				<0.05	mg/kg	TM4/PM8
Fluorene #	-	-	-	-	-	-	<0.20 AA				<0.04	mg/kg	TM4/PM8
Phenanthrene #	-	-	-	-	-	-	0.71 AA				<0.03	mg/kg	TM4/PM8
Anthracene #	-	-	-	-	-	-	0.37 AA				<0.04	mg/kg	TM4/PM8
Fluoranthene #	-	-	-	-	-	-	0.73 AA				<0.03	mg/kg	TM4/PM8
Pyrene #	-	-	-	-	-	-	0.57 AA				<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-	-	-	-	-	-	0.53 AA				<0.06	mg/kg	TM4/PM8
Chrysene #	-	-	-	-	-	-	0.34 AA				<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-	-	-	-	-	-	0.56 AA				<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-	-	-	-	-	-	0.28 AA				<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-	-	-	-	-	-	0.24 AA				<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-	-	-	-	-	-	<0.20 AA				<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-	-	-	-	-	-	<0.20 AA				<0.04	mg/kg	TM4/PM8
PAH 16 Total	-	-	-	-	-	-	4.5 AA				<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-	-	-	-	-	-	0.40 AA				<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-	-	-	-	-	-	0.16 AA				<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-	-	-	-	-	-	110 AA				<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Adler and Allan Ltd
Reference: CL2637.ai.1
Location: Reading
Contact: Angela Gomez
JE Job No.: 17/11978

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14				LOD/LOR	Units	Method No.
Sample ID	SP1	SP2	SP3	SP4	SP5	Excav1-Base	Stockpile						
Depth													
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J						
Sample Date	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017	10/07/2017						
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017	12/07/2017						
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	0.6	<0.2	0.9				<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	<4	<4	<4	472	1603	1685				<4	mg/kg	TM5/PM16
>C16-C21 #	<7	<7	<7	<7	3488	12528	17384				<7	mg/kg	TM5/PM16
>C21-C35 #	<7	<7	<7	<7	20	135	54				<7	mg/kg	TM5/PM16
Total aliphatics C5-35	<19	<19	<19	<19	3981	14266	19124				<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1 SV	<0.1 SV				<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	1.3	1.3				<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	<4	<4	<4	88	466	873				<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	<7	<7	10	534	2915	7020				<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	26	22	148	97	113	27				<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	26	22	158	719	3495	7921				<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	<38	<38	158	4700	17761	27045				<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
Benzene #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
Toluene #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5	<5	<5	<5	<5 SV	<5 SV				<5	ug/kg	TM31/PM12
PCB 28 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 52 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 101 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 118 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 138 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 153 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
PCB 180 #	-	-	-	-	-	-	<5				<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	-	-	-	-	-	<35				<35	ug/kg	TM17/PM8
Natural Moisture Content	7.8	25.0	31.3	29.0	20.1	26.9	12.3				<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Adler and Allan Ltd
Reference: CL2637.ai.1
Location: Reading
Contact: Angela Gomez
JE Job No.: 17/11978

Report : Liquid

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

J E Sample No.	15-16	17											
Sample ID	Drums	Drum2											
Depth													
COC No / misc													
Containers	V G	G											
Sample Date	10/07/2017	10/07/2017											
Sample Type	Ground Water	Ground Water											
Batch Number	1	1											
Date of Receipt	12/07/2017	12/07/2017											

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<10 SV	19									<10	ug/l	TM36/PM12
>C6-C8 #	<10 SV	<10									<10	ug/l	TM36/PM12
>C8-C10 #	<10 SV	<10									<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5									<5	ug/l	TM5/PM30
>C12-C16 #	2300	90									<10	ug/l	TM5/PM30
>C16-C21 #	23190	1000									<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10									<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	25490	1109									<10	ug/l	TM5/TM36/PM30/PM12
Aromatics													
>C5-EC7 #	<10 SV	<10									<10	ug/l	TM36/PM12
>EC7-EC8 #	<10 SV	<10									<10	ug/l	TM36/PM12
>EC8-EC10 #	<10 SV	<10									<10	ug/l	TM36/PM12
>EC10-EC12 #	8	<5									<5	ug/l	TM5/PM30
>EC12-EC16 #	4330	190									<10	ug/l	TM5/PM30
>EC16-EC21 #	32970	1530									<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10									<10	ug/l	TM5/PM30
Total aromatics C5-35 #	37308	1720									<10	ug/l	TM5/TM36/PM30/PM12
Total aliphatics and aromatics(C5-35) #	62798	2829									<10	ug/l	TM5/TM36/PM30/PM12
MTBE #	<5 SV	<5									<5	ug/l	TM31/PM12
Benzene #	<5 SV	<5									<5	ug/l	TM31/PM12
Toluene #	<5 SV	<5									<5	ug/l	TM31/PM12
Ethylbenzene #	<5 SV	<5									<5	ug/l	TM31/PM12
m/p-Xylene #	<5 SV	<5									<5	ug/l	TM31/PM12
o-Xylene #	<5 SV	<5									<5	ug/l	TM31/PM12

Client Name: Adler and Allan Ltd
Reference: CL2637.ai.1
Location: Reading
Contact: Angela Gomez

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
17/11978	1	SP1		1-2	No interpretation possible
17/11978	1	SP2		3-4	No interpretation possible
17/11978	1	SP3		5-6	No interpretation possible
17/11978	1	SP4		7-8	PAH's
17/11978	1	SP5		9-10	Linear alkylbenzenes & PAH's
17/11978	1	Excav1-Base		11-12	Linear alkylbenzenes
17/11978	1	Stockpile		13-14	Linear alkylbenzenes

Client Name: Adler and Allan Ltd
Reference: CL2637.ai.1
Location: Reading
Contact: Angela Gomez

Matrix : Liquid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
17/11978	1	Drums		15-16	Linear alkylbenzenes
17/11978	1	Drum2		17	Linear alkylbenzenes

Client Name: Adler and Allan Ltd

Reference: CL2637.ai.1

Location: Reading

Contact: Angela Gomez

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/11978	1	SP1		1-2	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	SP2		3-4	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	SP3		5-6	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	SP4		7-8	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	SP5		9-10	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	Excav1-Base		11-12	GRO	Solid Samples were received at a temperature above 9°C.
17/11978	1	Stockpile		13-14	GRO	Solid Samples were received at a temperature above 9°C.

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

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

Client Name: Adler and Allan Ltd

Reference: CL2637.ai.1

Location: Reading

Contact: Angela Gomez

Matrix : Liquid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/11978	1					Liquid Samples were received at a temperature above 9°C.

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

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

Please include all sections of this report if it is reproduced

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/11978

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 17/11978

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of	PM30/PM12	CWG GC-FID	Yes			

JE Job No: 17/11978

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes

Exova Jones Environmental

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

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Adler and Allan Ltd
4B Lovett Road
Hampton Lovett Trading Estate
Droitwich
WR9 0QG

Attention :	Angela Gomez
Date :	21st July, 2017
Your reference :	CL2637
Our reference :	Test Report 17/12160 Batch 1
Location :	Reading
Date samples received :	15th July, 2017
Status :	Final report
Issue :	1

Five samples were received for analysis on 15th July, 2017 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Adler and Allan Ltd
Reference: CL2637
Location: Reading
Contact: Angela Gomez
JE Job No.: 17/12160

Report : Solid

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

J E Sample No.	1-2	3-4											
Sample ID	EXC1-B-01	EXC1-B-02											
Depth											Please see attached notes for all abbreviations and acronyms		
COC No / misc													
Containers	V J	V J											
Sample Date	13/07/2017	13/07/2017											
Sample Type	Soil	Soil											
Batch Number	1	1									LOD/LOR	Units	Method No.
Date of Receipt	15/07/2017	15/07/2017											
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	15									<4	mg/kg	TM5/PM16
>C16-C21 #	35	180									<7	mg/kg	TM5/PM16
>C21-C35 #	<7	45									<7	mg/kg	TM5/PM16
Total aliphatics C5-35	35	240									<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	<0.1									<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2									<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	<4	16									<4	mg/kg	TM5/PM16
>EC16-EC21 #	<7	184									<7	mg/kg	TM5/PM16
>EC21-EC35 #	<7	66									<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	<19	266									<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38	506									<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5	<5									<5	ug/kg	TM31/PM12
Benzene #	<5	<5									<5	ug/kg	TM31/PM12
Toluene #	<5	<5									<5	ug/kg	TM31/PM12
Ethylbenzene #	<5	<5									<5	ug/kg	TM31/PM12
m/p-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
o-Xylene #	<5	<5									<5	ug/kg	TM31/PM12
Natural Moisture Content	6.1	17.7									<0.1	%	PM4/PM0

Client Name: Adler and Allan Ltd
Reference: CL2637
Location: Reading
Contact: Angela Gomez
JE Job No.: 17/12160

Report : Liquid

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

J E Sample No.	5-6	7-8	9-10									
Sample ID	SW1	SW2	SW3									
Depth												
COC No / misc												
Containers	V G	V G	V G									
Sample Date	13/07/2017	13/07/2017	13/07/2017									
Sample Type	Surface Water	Surface Water	Surface Water									
Batch Number	1	1	1									
Date of Receipt	15/07/2017	15/07/2017	15/07/2017									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5								<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10								<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10								<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10								<10	ug/l	TM5/PM30
Total aliphatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/TM36/PM30/PM12
Aromatics													
>C5-EC7 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5								<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10								<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10								<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10								<10	ug/l	TM5/PM30
Total aromatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/TM36/PM30/PM12
Total aliphatics and aromatics(C5-35) #	<10	<10	<10								<10	ug/l	TM5/TM36/PM30/PM12
MTBE #	<5	<5	<5								<5	ug/l	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/l	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/l	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/l	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12

Client Name: Adler and Allan Ltd
Reference: CL2637
Location: Reading
Contact: Angela Gomez

Matrix : Solid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
17/12160	1	EXC1-B-01		1-2	No interpretation possible
17/12160	1	EXC1-B-02		3-4	Unknown pattern

Client Name: Adler and Allan Ltd

Reference: CL2637

Location: Reading

Contact: Angela Gomez

Matrix : Liquid

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
17/12160	1	SW1		5-6	No interpretation possible
17/12160	1	SW2		7-8	No interpretation possible
17/12160	1	SW3		9-10	No interpretation possible

Client Name: Adler and Allan Ltd
Reference: CL2637
Location: Reading
Contact: Angela Gomez

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 17/12160						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/12160

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 17/12160

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM30/PM12	CWG GC-FID	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

JE Job No: 17/12160

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

Exova Jones Environmental

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

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Adler and Allan Ltd
4B Lovett Road
Hampton Lovett Trading Estate
Droitwich
WR9 0QG

Attention :	Angela Gomez
Date :	25th July, 2017
Your reference :	
Our reference :	Test Report 17/12172 Batch 1
Location :	
Date samples received :	15th July, 2017
Status :	Final report
Issue :	1

Eight samples were received for analysis on 15th July, 2017 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Bruce Leslie
Project Co-ordinator

Client Name: Adler and Allan Ltd
Reference:
Location:
Contact: Angela Gomez
JE Job No.: 17/12172

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	9	10	11-12	13-14			LOD/LOR	Units	Method No.
Sample ID	LOCATION 1	LOCATION 2	LOCATION 3	LOCATION 4	LOCATION 5	LOCATION 5	LOCATION 6	LOCATION 7					
Depth	BASE	SIDEWALL	SIDEWALL	SIDEWALL	SIDEWALL	BANK	BASE	SIDEWALL					
COC No / misc													
Containers	V J	V J	V J	V J	V	J	V J	V J					
Sample Date	09/07/2017	09/07/2017	09/07/2017	09/07/2017	09/07/2017	09/07/2017	09/07/2017	09/07/2017					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	15/07/2017	15/07/2017	15/07/2017	15/07/2017	15/07/2017	15/07/2017	15/07/2017	15/07/2017					
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 #	0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10	0.1 SV	<0.1 SV	<0.1	0.1	<0.1 SV	<0.1 SV	0.2	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 #	4.2 ++	<0.2	<0.2	<0.2	1.2	1.6	<0.2	<0.2			<0.2	mg/kg	TM5/PM16
>C12-C16 #	3093 ++	338	61	184	1023	764	452	7			<4	mg/kg	TM5/PM16
>C16-C21 #	26866 ++	3034	594	1768	9076	6875	4403	218			<7	mg/kg	TM5/PM16
>C21-C35 #	131 ++	13	<7	<7	29	29	36	73			<7	mg/kg	TM5/PM16
Total aliphatics C5-35	30094	3385	655	1952	10129	7670	4891	298			<19	mg/kg	TM5/TM36/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	0.1 SV	<0.1 SV	<0.1	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	2.3	<0.2	<0.2	<0.2	1.4	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM16
>EC12-EC16 #	1538	194	68	205	468	522	289	<4			<4	mg/kg	TM5/PM16
>EC16-EC21 #	10725	1354	476	1482	3279	3706	2172	40			<7	mg/kg	TM5/PM16
>EC21-EC35 #	41	<7	<7	<7	11	22	<7	26			<7	mg/kg	TM5/PM16
Total aromatics C5-35 #	12306	1548	544	1687	3759	4250	2461	66			<19	mg/kg	TM5/TM36/PM12/PM16
Total aliphatics and aromatics(C5-35)	42400	4933	1199	3639	13888	11920	7352	364			<38	mg/kg	TM5/TM36/PM12/PM16
MTBE #	<5 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5			<5	ug/kg	TM31/PM12
Benzene #	<5 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5			<5	ug/kg	TM31/PM12
Toluene #	<5 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	91			<5	ug/kg	TM31/PM12
Ethylbenzene #	28 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5			<5	ug/kg	TM31/PM12
m/p-Xylene #	96 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5			<5	ug/kg	TM31/PM12
o-Xylene #	35 SV	<5 SV	<5	<5	<5 SV	<5 SV	<5	<5			<5	ug/kg	TM31/PM12
Natural Moisture Content	17.1	21.1	18.8	11.9	37.7	31.9	6.1	3.0			<0.1	%	PM4/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Adler and Allan Ltd **Matrix : Solid**
Reference:
Location:
Contact: Angela Gomez

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
17/12172	1	LOCATION 1	BASE	1-2	Linear alkylbenzenes
17/12172	1	LOCATION 2	SIDEWALL	3-4	Linear alkylbenzenes
17/12172	1	LOCATION 3	SIDEWALL	5-6	Linear alkylbenzenes
17/12172	1	LOCATION 4	SIDEWALL	7-8	Linear alkylbenzenes
17/12172	1	LOCATION 5	SIDEWALL	9	Linear alkylbenzenes
17/12172	1	LOCATION 5	BANK	10	Linear alkylbenzenes
17/12172	1	LOCATION 6	BASE	11-12	Linear alkylbenzenes
17/12172	1	LOCATION 7	SIDEWALL	13-14	Mineral insulating oil trype product & Trace of possible linear alkylbenzenes

Client Name: Adler and Allan Ltd

Matrix : Solid

Reference:

Location:

Contact: Angela Gomez

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
17/12172	1	LOCATION 1	BASE	1-2	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 2	SIDEWALL	3-4	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 3	SIDEWALL	5-6	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 4	SIDEWALL	7-8	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 5	SIDEWALL	9	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 5	BANK	10	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 6	BASE	11-12	GRO	Solid Samples were received at a temperature above 9°C.
17/12172	1	LOCATION 7	SIDEWALL	13-14	GRO	Solid Samples were received at a temperature above 9°C.

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

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 17/12172

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

ABBREVIATIONS and ACRONYMS USED

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

JE Job No: 17/12172

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B: Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

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Analytical Report Number : 18-78223

Project / Site name:	SSE Site, Vastern Road, Reading	**Samples received on:**	07/03/2018
Your job number:	C5925	**Samples instructed on:**	08/03/2018
Your order number:	C5925	**Analysis completed by:**	16/03/2018
Report Issue Number:	1	**Report issued on:**	16/03/2018
Samples Analysed:	12 water samples		

Signed:

Nicole Fay
Quality Assistant
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	8.3	7.2	7.5	7.7
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1600	3000	1900	1000	840
Sulphate as SO_4	µg/l	45	ISO 17025	97400	161000	134000	47200	39000
Sulphate as SO_4	mg/l	0.045	ISO 17025	97.4	161	134	47.2	39.0
Chloride	mg/l	0.15	ISO 17025	220	470	370	130	71
Ammonium as NH_4	µg/l	15	ISO 17025	1400	2400	1200	1200	830
Alkalinity	mgCaCO3/l	3	ISO 17025	580	670	500	370	500
Dissolved Oxygen	mg/l	1	NONE	8.4	8.9	< 1.0	2.6	7.2
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	11	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.18	6.41	1.56	2.25	1.79
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.03	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	190	280	230	150	93
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	1.6	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.6	< 0.2	< 0.2	0.6
Copper (dissolved)	µg/l	0.5	ISO 17025	9.3	11	3.6	3.0	4.8
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.5	0.8	0.2	0.6
Mercury (dissolved)	µg/l	0.05	ISO 17025	0.13	0.08	0.08	0.06	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.3	12	3.4	2.9	3.8
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.6	51	1.5	0.9	3.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	5.0	4.6	3.4	3.2	8.1

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
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Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND	ND	ND	ND
VOC % Match	%	10	NONE	-	-	-	-	-
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920646	920647	920648	920649	920650
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.16	1.69	2.30	2.13	1.02
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
SVOC % Match	%	N/A	NONE	0	0	0	0	0
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14

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

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.5	7.4	7.4	7.7	7.2
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	870	1000	1100	1400	4400
Sulphate as SO_4	µg/l	45	ISO 17025	63100	60200	36900	45900	40100
Sulphate as SO_4	mg/l	0.045	ISO 17025	63.1	60.2	36.9	45.9	40.1
Chloride	mg/l	0.15	ISO 17025	99	130	150	260	1300
Ammonium as NH_4	µg/l	15	ISO 17025	38	1100	1100	250	2900
Alkalinity	mgCaCO3/l	3	ISO 17025	450	480	490	250	620
Dissolved Oxygen	mg/l	1	NONE	3.4	3.5	1.8	4.7	2.4
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.20	3.39	6.41	1.37	0.53
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	150	140	130	150	250
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	< 0.2	< 0.2	0.7	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	3.4	4.4	1.9	4.0	2.4
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	1.8	< 0.2	0.4	0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.2	1.9	2.5	1.4	2.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.0	0.9	1.4	6.7	5.7
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.4	3.3	2.4	2.4	1.8

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Chloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Bromomethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Vinyl Chloride	µg/l	1	NONE	< 1.0	-	-	-	-
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	-	-	-	-
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Trichloromethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Benzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Trichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Dibromomethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Toluene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Styrene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Tribromomethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
o-Xylene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Bromobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	-	-	-	-
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	-	-

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	-	-	-	-
VOC % Match	%	10	NONE	-	-	-	-	-
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Phenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachloroethane	µg/l	0.05	NONE	< 0.05	-	-	-	-
Nitrobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Isophorone	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	-	-	-	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibenzofuran	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluorene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Azobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	-	-
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	-	-
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Carbazole	µg/l	0.05	NONE	< 0.05	-	-	-	-
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Anthraquinone	µg/l	0.05	NONE	< 0.05	-	-	-	-
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	-	-
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Chrysene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	-	-	-	-

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920651	920652	920653	920654	920655
Sample Reference				WS1019	BH1001	BH1002C	BH1003E	BH1004
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.27	2.30	2.38	2.62	2.17
Date Sampled				07/03/2018	07/03/2018	07/03/2018	07/03/2018	07/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	-	-	-	-
SVOC % Match	%	N/A	NONE	0	-	-	-	-
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 52	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 101	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 118	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 138	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 153	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCB Congener 180	µg/l	0.02	NONE	< 0.02	-	-	-	-
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	-	-	-	-

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

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.5	7.3			
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1500	850			
Sulphate as SO_4	µg/l	45	ISO 17025	36400	23300			
Sulphate as SO_4	mg/l	0.045	ISO 17025	36.4	23.3			
Chloride	mg/l	0.15	ISO 17025	190	41			
Ammonium as NH_4	µg/l	15	ISO 17025	520	130			
Alkalinity	mgCaCO3/l	3	ISO 17025	640	640			
Dissolved Oxygen	mg/l	1	NONE	2.1	< 1.0			
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10			
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16			
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	2.78	1.51			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.03			
Calcium (dissolved)	mg/l	0.012	ISO 17025	140	160			
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2			
Copper (dissolved)	µg/l	0.5	ISO 17025	3.3	1.3			
Lead (dissolved)	µg/l	0.2	ISO 17025	0.4	0.5			
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05			
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.7	2.5			
Selenium (dissolved)	µg/l	0.6	ISO 17025	6.9	1.4			
Zinc (dissolved)	µg/l	0.5	ISO 17025	3.0	6.1			

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0			
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0			
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	ND	ND			
VOC % Match	%	10	NONE	-	-			
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05			
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05			
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05			
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05			
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05			
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05			
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05			
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			

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Analytical Report Number: 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Lab Sample Number				920656	920657			
Sample Reference				BH2001	BH2002			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.39	2.35			
Date Sampled				07/03/2018	07/03/2018			
Time Taken				None Supplied	None Supplied			
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	0	0			
SVOC % Match	%	N/A	NONE	0	0			
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02			
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14			

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

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Analytical Report Number : 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025

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Analytical Report Number : 18-78223

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TPH Chromatogram	TPH Chromatogram.	In-house method	L070-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

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

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Analytical Report Number : 18-78389

Project / Site name:	SSE Site, Vastern Road, Reading	**Samples received on:**	09/03/2018
Your job number:	C5925	**Samples instructed on:**	09/03/2018
Your order number:	C5925	**Analysis completed by:**	19/03/2018
Report Issue Number:	1	**Report issued on:**	19/03/2018
Samples Analysed:	7 water samples		

Signed: CCStone

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.6	7.6	6.9	7.2	7.3
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	810	660	2500	3000	1400
Sulphate as SO_4	µg/l	45	ISO 17025	18700	18500	39000	73500	61900
Sulphate as SO_4	mg/l	0.045	ISO 17025	18.7	18.5	39.0	73.5	61.9
Chloride	mg/l	0.15	ISO 17025	130	61	580	740	280
Ammonium as NH_4	µg/l	15	ISO 17025	250	250	220	320	26
Alkalinity	mgCaCO3/l	3	ISO 17025	400	390	680	620	410
Dissolved Oxygen	mg/l	1	NONE	9.7	9.8	9.3	9.6	8.7
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.91	2.36	3.55	0.93	0.62
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.06	0.09	0.12	< 0.02	0.03
Calcium (dissolved)	mg/l	0.012	ISO 17025	120	120	320	220	170
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.6	0.6	< 0.2	0.3	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	11	8.3	4.4	0.7	3.5
Lead (dissolved)	µg/l	0.2	ISO 17025	0.5	0.8	0.5	3.6	0.4
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.7	4.7	14	3.4	5.2
Selenium (dissolved)	µg/l	0.6	ISO 17025	2.5	2.3	3.0	2.5	1.5
Zinc (dissolved)	µg/l	0.5	ISO 17025	7.8	12	160	13	4.4

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	730	27	47
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	2700	61	120
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	3400	88	170

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	None Detected	None Detected	None Detected	None Detected	-
VOC % Match	%	10	NONE	0	0	0	0	-

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	-

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921465	921466	921467	921468	921469
Sample Reference				BH2003	BH2004	BH2005	BH2006	BH1005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.43	2.52	2.50	1.60	2.56
Date Sampled				08/03/2018	08/03/2018	08/03/2018	08/03/2018	08/03/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	None Detected	None Detected	Benzene, (1-propylnonyl)-	Benzene, (1-butyloctyl)-	-
SVOC % Match	%	N/A	NONE	0	0	97	97	-
SVOCs TICs Compound Name		N/A	NONE	-	-	1H-Isoindole-1,3(2H)-dione	1R-.alpha.-Pinene	-
SVOC % Match	%	N/A	NONE	-	-	96	96	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-butyloctyl)-	Benzene, (1-propylnonyl)-	-
SVOC % Match	%	N/A	NONE	-	-	96	96	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-ethyldecyl)-	Benzene, (1-butylheptyl)-	-
SVOC % Match	%	N/A	NONE	-	-	96	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzenepropanoic acid, .beta.-methyl-, (S)-	Benzene, (1-butylnonyl)-	-
SVOC % Match	%	N/A	NONE	-	-	95	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-butylhexyl)-	Benzene, (1-propyldecyl)-	-
SVOC % Match	%	N/A	NONE	-	-	95	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-butylheptyl)-	Benzene, (1-ethylundecyl)-	-
SVOC % Match	%	N/A	NONE	-	-	95	95	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-pentylheptyl)-	1H-Isoindole-1,3(2H)-dione	-
SVOC % Match	%	N/A	NONE	-	-	95	94	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-butylnonyl)-	Benzene, (1-ethyloctyl)-	-
SVOC % Match	%	N/A	NONE	-	-	95	94	-
SVOCs TICs Compound Name		N/A	NONE	-	-	Benzene, (1-propyldecyl)-	Benzene, (1-pentylheptyl)-	-
SVOC % Match	%	N/A	NONE	-	-	95	94	-
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	-
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	< 0.14	< 0.14	-

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

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	8.1	8.1			
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	680	680			
Sulphate as SO_4	µg/l	45	ISO 17025	54200	54900			
Sulphate as SO_4	mg/l	0.045	ISO 17025	54.2	54.9			
Chloride	mg/l	0.15	ISO 17025	66	64			
Ammonium as NH_4	µg/l	15	ISO 17025	110	270			
Alkalinity	mgCaCO3/l	3	ISO 17025	230	230			
Dissolved Oxygen	mg/l	1	NONE	10	10			
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10			
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16			
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.96	1.27			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.03	0.05			
Calcium (dissolved)	mg/l	0.012	ISO 17025	110	100			
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.6	0.8			
Copper (dissolved)	µg/l	0.5	ISO 17025	6.1	6.7			
Lead (dissolved)	µg/l	0.2	ISO 17025	0.7	0.8			
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05			
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.9	2.5			
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.2	1.2			
Zinc (dissolved)	µg/l	0.5	ISO 17025	4.9	4.5			

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0			
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0			
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0			
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0			
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		10	NONE	None Detected	None Detected			
VOC % Match	%	10	NONE	0	0			

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05			
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05			
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05			
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05			
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05			
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05			
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05			
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05			
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05			
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			

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Analytical Report Number: 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

Your Order No: C5925

Lab Sample Number				921470	921471			
Sample Reference				SW1001	SW1002			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.50			
Date Sampled				08/03/2018	08/03/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	None Detected	None Detected			
SVOC % Match	%	N/A	NONE	0	0			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02			
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02			
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14			

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

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Analytical Report Number : 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE

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Analytical Report Number : 18-78389

Project / Site name: SSE Site, Vastern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

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

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Analytical Report Number : 18-81102

Project / Site name:	SSE Site, Vestern Road, Reading	**Samples received on:**	05/04/2018
Your job number:	C5925	**Samples instructed on:**	05/04/2018
Your order number:	C5925-JI	**Analysis completed by:**	11/04/2018
Report Issue Number:	1	**Report issued on:**	11/04/2018
Samples Analysed:	17 water samples		

Signed:

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.0	8.1	7.3	7.6	7.8
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1700	3400	1500	680	1400
Sulphate as SO_4	µg/l	45	ISO 17025	177000	400000	101000	49300	80300
Sulphate as SO_4	mg/l	0.045	ISO 17025	177	400	101	49.3	80.3
Chloride	mg/l	0.15	ISO 17025	310	810	320	62	88
Ammonium as NH_4	µg/l	15	ISO 17025	840	4300	1200	1400	1500
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	9.71	31.7	5.79	4.86	6.48
Alkalinity	mgCaCO3/l	3	ISO 17025	550	620	460	350	500
Dissolved Oxygen	mg/l	1	NONE	4.3	7.4	8.5	4.9	3.9
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.92	8.62	1.51	2.21	9.48
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	230	82	180	110	41
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	1.0	0.3	0.4	1.0
Copper (dissolved)	µg/l	0.5	ISO 17025	1.8	5.9	2.6	2.4	1.6
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	2.0	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.3	9.0	0.9	< 0.5	11
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.2	9.3	0.8	< 0.6	1.8
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.6	3.7	1.2	2.0	5.2

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	57	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	84	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	140	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	ND	ND	ND	ND
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	5.7	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936887	936888	936889	936890	936891
Sample Reference				WS1006	WS1005	WS1004	WS1003	WS1007
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.91	1.47	2.07	1.91	1.03
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	Benzene, 1,2-dichloro-3-isocyanato-	ND	ND	ND
SVOC % Match	%	N/A	NONE	-	96	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Phenol, 2,4-bis(1,1-dimethylethyl)-	-	-	-
SVOC % Match	%	N/A	NONE	-	96	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Benzophenone	-	-	-
SVOC % Match	%	N/A	NONE	-	96	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Longifolenaldehyde	-	-	-
SVOC % Match	%	N/A	NONE	-	96	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	1H-Cycloprop[e]azulene, decahydro-1,1,7-trimethyl-4-methylene-, [1aR-(1a.alpha.,4a.beta.,7.alpha.,7a.beta.,7b.alpha.)]-	-	-	-
SVOC % Match	%	N/A	NONE	-	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	D-Homoandrostane, (5.alpha.,13.alpha.)-	-	-	-
SVOC % Match	%	N/A	NONE	-	95	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	3-Carene	-	-	-
SVOC % Match	%	N/A	NONE	-	94	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	3a,9-Dimethyldodecahydrocyclohepta[d]inden-3-one	-	-	-
SVOC % Match	%	N/A	NONE	-	94	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	.alpha.-Pinene	-	-	-
SVOC % Match	%	N/A	NONE	-	93	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	Benzenesulfonamide, N-butyl-	-	-	-
SVOC % Match	%	N/A	NONE	-	93	-	-	-
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14

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

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936892	936893	936894	936895	936896
Sample Reference				WS1019	BH1001	BH1003E	BH2004	BH2003
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.04	2.07	2.39	2.28	2.21
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.4	7.4	7.7	7.6	7.6
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	860	710	1100	680	690
Sulphate as SO_4	µg/l	45	ISO 17025	48700	66400	21300	18500	17300
Sulphate as SO_4	mg/l	0.045	ISO 17025	48.7	66.4	21.3	18.5	17.3
Chloride	mg/l	0.15	ISO 17025	120	77	260	75	90
Ammonium as NH_4	µg/l	15	ISO 17025	60	540	38	40	24
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	3.47	3.58	2.69	3.01	2.78
Alkalinity	mgCaCO3/l	3	ISO 17025	380	240	230	370	250
Dissolved Oxygen	mg/l	1	NONE	5.7	5.2	9.3	9.4	9.5
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.24	0.33	2.05	2.12	1.80
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.05	< 0.02	< 0.02	0.04	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	130	110	100	110	97
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	1.2	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	0.5	1.2	0.8	0.8
Copper (dissolved)	µg/l	0.5	ISO 17025	6.4	2.6	4.6	5.5	3.8
Lead (dissolved)	µg/l	0.2	ISO 17025	0.3	< 0.2	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	5.9	2.2	< 0.5	2.4	1.5
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.8	< 0.6	1.7	2.0	1.6
Zinc (dissolved)	µg/l	0.5	ISO 17025	15	7.0	1.2	7.8	6.9

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936892	936893	936894	936895	936896
Sample Reference				WS1019	BH1001	BH1003E	BH2004	BH2003
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.04	2.07	2.39	2.28	2.21
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

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Your Order No: C5925-JI

Lab Sample Number				936892	936893	936894	936895	936896
Sample Reference				WS1019	BH1001	BH1003E	BH2004	BH2003
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.04	2.07	2.39	2.28	2.21
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	-	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	-	-	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	-	-	< 1.0	< 1.0

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936892	936893	936894	936895	936896
Sample Reference				WS1019	BH1001	BH1003E	BH2004	BH2003
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.04	2.07	2.39	2.28	2.21
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	-	-	ND	ND
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	-	-	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	-	-	< 0.01	< 0.01

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936892	936893	936894	936895	936896
Sample Reference				WS1019	BH1001	BH1003E	BH2004	BH2003
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.04	2.07	2.39	2.28	2.21
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	-	-	ND	ND
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 52	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02	-	-	< 0.02	< 0.02
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	-	-	< 0.14	< 0.14

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

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.3	7.4	7.1	6.9
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	620	1400	1000	3200	2300
Sulphate as SO_4	µg/l	45	ISO 17025	16200	21400	47500	79300	33400
Sulphate as SO_4	mg/l	0.045	ISO 17025	16.2	21.4	47.5	79.3	33.4
Chloride	mg/l	0.15	ISO 17025	45	240	180	920	620
Ammonium as NH_4	µg/l	15	ISO 17025	36	180	1000	160	120
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	11.6	14.8	5.13	5.52	26.9
Alkalinity	mgCaCO3/l	3	ISO 17025	430	620	370	650	590
Dissolved Oxygen	mg/l	1	NONE	3.6	6.0	5.6	7.3	6.4
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	< 10
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	3.03	2.18	9.81	3.42	4.96
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Calcium (dissolved)	mg/l	0.012	ISO 17025	120	130	120	210	250
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.2	0.5	0.2	0.3	0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	1.9	2.5	5.4	1.0	5.1
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.8	3.9	1.5	4.5	14
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.5	3.4	0.6	1.2	1.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.7	4.1	2.5	8.8	260

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	79
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	170
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	250

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Vinyl Chloride	µg/l	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
o-Xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
n-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	ND	ND	-	ND	ND
VOC % Match	%	N/A	NONE	-	-	-	-	-

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	-	< 0.01	< 0.01

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936897	936898	936899	936900	936901
Sample Reference				BH2002	BH2001	BH1002C	BH2006	BH2005
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	2.15	2.14	1.52	2.06
Date Sampled				04/04/2018	04/04/2018	04/04/2018	04/04/2018	04/04/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	ND	ND	-	ND	Bicyclo[3.1.1]hept-2-ene, 2,6,6-trimethyl-, (.+/-.)-
SVOC % Match	%	N/A	NONE	-	-	-	-	95
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Cyclopropane, 1,1-dimethyl-2-(3-methyl-1,3-butadienyl)-
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Acetophenone
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	3-Phenylheptanoic acid
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Bromacil
SVOC % Match	%	N/A	NONE	-	-	-	-	93
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Benzene, 1-methyl-2-(1-methylethyl)-
SVOC % Match	%	N/A	NONE	-	-	-	-	92
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	Benzene, tert-butyl-
SVOC % Match	%	N/A	NONE	-	-	-	-	91
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
SVOCs TICs Compound Name		N/A	NONE	-	-	-	-	-
SVOC % Match	%	N/A	NONE	-	-	-	-	-
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 52	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 101	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 118	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 138	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 153	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCB Congener 180	µg/l	0.02	NONE	< 0.02	< 0.02	-	< 0.02	< 0.02
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	< 0.14	< 0.14	-	< 0.14	< 0.14

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

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.3	7.0			
Electrical Conductivity at 20 °C	µS/cm	10	ISO 17025	1500	3900			
Sulphate as SO_4	µg/l	45	ISO 17025	60100	33600			
Sulphate as SO_4	mg/l	0.045	ISO 17025	60.1	33.6			
Chloride	mg/l	0.15	ISO 17025	340	1400			
Ammonium as NH_4	µg/l	15	ISO 17025	58	2100			
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	4.18	4.00			
Alkalinity	mgCaCO3/l	3	ISO 17025	410	440			
Dissolved Oxygen	mg/l	1	NONE	8.7	8.1			
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10			
Speciated PAHs								
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Total PAH								
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16			
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.34	0.44			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.04	< 0.02			
Calcium (dissolved)	mg/l	0.012	ISO 17025	180	220			
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (III)	µg/l	1	NONE	< 1.0	< 1.0			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.3	0.3			
Copper (dissolved)	µg/l	0.5	ISO 17025	2.4	8.4			
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.2			
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05			
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.5	2.6			
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.9	1.4			
Zinc (dissolved)	µg/l	0.5	ISO 17025	3.4	2.4			

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/l	1	ISO 17025	-	-			
Chloroethane	µg/l	1	ISO 17025	-	-			
Bromomethane	µg/l	1	ISO 17025	-	-			
Vinyl Chloride	µg/l	1	NONE	-	-			
Trichlorofluoromethane	µg/l	1	NONE	-	-			
1,1-Dichloroethene	µg/l	1	ISO 17025	-	-			
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	1	ISO 17025	-	-			
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	-	-			
1,1-Dichloroethane	µg/l	1	ISO 17025	-	-			
2,2-Dichloropropane	µg/l	1	ISO 17025	-	-			
Trichloromethane	µg/l	1	ISO 17025	-	-			
1,1,1-Trichloroethane	µg/l	1	ISO 17025	-	-			
1,2-Dichloroethane	µg/l	1	ISO 17025	-	-			
1,1-Dichloropropene	µg/l	1	ISO 17025	-	-			
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	-	-			
Benzene	µg/l	1	ISO 17025	-	-			
Tetrachloromethane	µg/l	1	ISO 17025	-	-			
1,2-Dichloropropane	µg/l	1	ISO 17025	-	-			
Trichloroethene	µg/l	1	ISO 17025	-	-			
Dibromomethane	µg/l	1	ISO 17025	-	-			
Bromodichloromethane	µg/l	1	ISO 17025	-	-			
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	-	-			
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	-	-			
Toluene	µg/l	1	ISO 17025	-	-			
1,1,2-Trichloroethane	µg/l	1	ISO 17025	-	-			
1,3-Dichloropropane	µg/l	1	ISO 17025	-	-			
Dibromochloromethane	µg/l	1	ISO 17025	-	-			
Tetrachloroethene	µg/l	1	ISO 17025	-	-			
1,2-Dibromoethane	µg/l	1	ISO 17025	-	-			
Chlorobenzene	µg/l	1	ISO 17025	-	-			
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	-	-			
Ethylbenzene	µg/l	1	ISO 17025	-	-			
p & m-Xylene	µg/l	1	ISO 17025	-	-			
Styrene	µg/l	1	ISO 17025	-	-			
Tribromomethane	µg/l	1	ISO 17025	-	-			
o-Xylene	µg/l	1	ISO 17025	-	-			
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	-	-			
Isopropylbenzene	µg/l	1	ISO 17025	-	-			
Bromobenzene	µg/l	1	ISO 17025	-	-			
n-Propylbenzene	µg/l	1	ISO 17025	-	-			
2-Chlorotoluene	µg/l	1	ISO 17025	-	-			
4-Chlorotoluene	µg/l	1	ISO 17025	-	-			
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	-	-			
tert-Butylbenzene	µg/l	1	ISO 17025	-	-			
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	-	-			
sec-Butylbenzene	µg/l	1	ISO 17025	-	-			
1,3-Dichlorobenzene	µg/l	1	ISO 17025	-	-			
p-Isopropyltoluene	µg/l	1	ISO 17025	-	-			
1,2-Dichlorobenzene	µg/l	1	ISO 17025	-	-			
1,4-Dichlorobenzene	µg/l	1	ISO 17025	-	-			
Butylbenzene	µg/l	1	ISO 17025	-	-			
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	-	-			
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	-	-			
Hexachlorobutadiene	µg/l	1	ISO 17025	-	-			
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	-	-			

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs TICs								
VOCs TICs Compound Name		N/A	NONE	-	-			
VOC % Match	%	N/A	NONE	-	-			

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Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	µg/l	0.05	NONE	-	-			
Phenol	µg/l	0.05	NONE	-	-			
2-Chlorophenol	µg/l	0.05	NONE	-	-			
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	-	-			
1,3-Dichlorobenzene	µg/l	0.05	NONE	-	-			
1,2-Dichlorobenzene	µg/l	0.05	NONE	-	-			
1,4-Dichlorobenzene	µg/l	0.05	NONE	-	-			
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	-	-			
2-Methylphenol	µg/l	0.05	NONE	-	-			
Hexachloroethane	µg/l	0.05	NONE	-	-			
Nitrobenzene	µg/l	0.05	NONE	-	-			
4-Methylphenol	µg/l	0.05	NONE	-	-			
Isophorone	µg/l	0.05	NONE	-	-			
2-Nitrophenol	µg/l	0.05	NONE	-	-			
2,4-Dimethylphenol	µg/l	0.05	NONE	-	-			
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	-	-			
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	-	-			
Naphthalene	µg/l	0.01	ISO 17025	-	-			
2,4-Dichlorophenol	µg/l	0.05	NONE	-	-			
4-Chloroaniline	µg/l	0.05	NONE	-	-			
Hexachlorobutadiene	µg/l	0.05	NONE	-	-			
4-Chloro-3-methylphenol	µg/l	0.05	NONE	-	-			
2,4,6-Trichlorophenol	µg/l	0.05	NONE	-	-			
2,4,5-Trichlorophenol	µg/l	0.05	NONE	-	-			
2-Methylnaphthalene	µg/l	0.05	NONE	-	-			
2-Chloronaphthalene	µg/l	0.05	NONE	-	-			
Dimethylphthalate	µg/l	0.05	NONE	-	-			
2,6-Dinitrotoluene	µg/l	0.05	NONE	-	-			
Acenaphthylene	µg/l	0.01	ISO 17025	-	-			
Acenaphthene	µg/l	0.01	ISO 17025	-	-			
2,4-Dinitrotoluene	µg/l	0.05	NONE	-	-			
Dibenzofuran	µg/l	0.05	NONE	-	-			
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	-	-			
Diethyl phthalate	µg/l	0.05	NONE	-	-			
4-Nitroaniline	µg/l	0.05	NONE	-	-			
Fluorene	µg/l	0.01	ISO 17025	-	-			
Azobenzene	µg/l	0.05	NONE	-	-			
Bromophenyl phenyl ether	µg/l	0.05	NONE	-	-			
Hexachlorobenzene	µg/l	0.05	NONE	-	-			
Phenanthrene	µg/l	0.01	ISO 17025	-	-			
Anthracene	µg/l	0.01	ISO 17025	-	-			
Carbazole	µg/l	0.05	NONE	-	-			
Dibutyl phthalate	µg/l	0.05	NONE	-	-			
Anthraquinone	µg/l	0.05	NONE	-	-			
Fluoranthene	µg/l	0.01	ISO 17025	-	-			
Pyrene	µg/l	0.01	ISO 17025	-	-			
Butyl benzyl phthalate	µg/l	0.05	NONE	-	-			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	-	-			
Chrysene	µg/l	0.01	ISO 17025	-	-			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	-	-			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	-	-			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	-	-			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	-	-			
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	-	-			
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	-	-			

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

Analytical Report Number: 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

Your Order No: C5925-JI

Lab Sample Number				936902	936903			
Sample Reference				BH1005	BH1004			
Sample Number				None Supplied	None Supplied			
Depth (m)				2.33	1.95			
Date Sampled				04/04/2018	04/04/2018			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs TICs								
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
SVOCs TICs Compound Name		N/A	NONE	-	-			
SVOC % Match	%	N/A	NONE	-	-			
PCBs by GC-MS								
PCB Congener 28	µg/l	0.02	NONE	-	-			
PCB Congener 52	µg/l	0.02	NONE	-	-			
PCB Congener 101	µg/l	0.02	NONE	-	-			
PCB Congener 118	µg/l	0.02	NONE	-	-			
PCB Congener 138	µg/l	0.02	NONE	-	-			
PCB Congener 153	µg/l	0.02	NONE	-	-			
PCB Congener 180	µg/l	0.02	NONE	-	-			
PCBs by GC-MS								
Total PCBs	µg/l	0.14	NONE	-	-			

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

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

Analytical Report Number : 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Alkalinity in Water	Determination of Alkalinity by discreet analyser (colorimetry). Accredited matrices: SW, PW, GW.	In house method based on MEWAM & USEPA Method 310.2.	L082-PL	W	ISO 17025
Ammonium as NH4 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Chloride in water	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Dissolved Oxygen in water	Determination of dissolved oxygen.	In-house method	L086-PL	W	NONE
Electrical conductivity at 20oC of water	Determination of electrical conductivity in water by electrometric measurement. Accredited Matrices SW, GW, PW	In-house method	L031-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
PCB's By GC-MS in water	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L028-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-81102

Project / Site name: SSE Site, Vestern Road, Reading

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Tentatively identified compounds (SVOC) in water	Determination of semi-volatile organic compounds total ion count in water by extraction with hexane followed by GC-MS followed by a full library scan.	In-house method based on USEPA 8270	L070-PL	W	NONE
Tentatively identified compounds (VOC) in water	Determination of volatile organic compounds total ion count in water by headspace GC-MS followed by a full library scan.	In-house method based on USEPA8260	L073B-PL	W	NONE
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

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

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

Exova Jones Environmental

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Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Attention :	Adrian King
Date :	19th April, 2018
Your reference :	A10967
Our reference :	Test Report 18/5668 Batch 1
Location :	Vastern Road, Reading
Date samples received :	17th April, 2018
Status :	Final report
Issue :	2

Seven samples were received for analysis on 17th April, 2018 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Adrian King
JE Job No.: 18/5668

Report : Liquid

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

J E Sample No.	9-12	17-20	26-30									
Sample ID	WS1003 WS1	WS1005A WS1	WS1019WS1									
Depth	2.12-5.01	1.10-2.04	2.26-4.98									
COC No / misc												
Containers	V P G	V P G	V HN P G									
Sample Date	16/04/2018	16/04/2018	16/04/2018									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1									
Date of Receipt	17/04/2018	17/04/2018	17/04/2018									

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5								<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	90	<10								<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	90	<10								<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	180	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5								<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	180	<10								<10	ug/l	TM5/TM36/PM12/PM16/PM30
MTBE #	<5	<5	<5								<5	ug/l	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/l	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/l	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/l	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12

Client Name: Omnia **Matrix : Liquid**
Reference: A10967
Location: Vastern Road, Reading
Contact: Adrian King

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/5668	1	WS1003 WS1	2.12-5.01	9-12	No interpretation possible
18/5668	1	WS1005A WS1	1.10-2.04	17-20	Dissolved phase compounds
18/5668	1	WS1019WS1	2.26-4.98	26-30	No interpretation possible

Client Name: Omnia

Matrix : Liquid

Reference: A10967

Location: Vastern Road, Reading

Contact: Adrian King

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/5668	1	-	-	-	Samples : 9-12,17-20,26-30	Liquid Samples were received at a temperature above 9°C.

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

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/5668

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/5668

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			

Exova Jones Environmental

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Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Attention :	Adrian King
Date :	24th April, 2018
Your reference :	A10967
Our reference :	Test Report 18/5703 Batch 1
Location :	Vastern Road, Reading
Date samples received :	17th April, 2018
Status :	Final report
Issue :	1

Nine samples were received for analysis on 17th April, 2018 of which four were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Adrian King
JE Job No.: 18/5703

Report : Liquid

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

J E Sample No.	1-5	26-29	30-35	36-40							LOD/LOR	Units	Method No.
Sample ID	BH2003 WS1	BH2006 WS1	BH2005 WS1	BH1005 WS1									
Depth	2.39-4.01	1.53-2.03	2.08-3.01	2.49-7.14									
COC No / misc													
Containers	V HN P G	V P G	V P G	V HN P G									
Sample Date	13/04/2018	13/04/2018	13/04/2018	13/04/2018									
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water									
Batch Number	1	1	1	1									
Date of Receipt	17/04/2018	17/04/2018	17/04/2018	17/04/2018									
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	20	<10	<10							<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	90	50	40							<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	110	50	40							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10	<10							<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5							<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	30	40	20							<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	160	190	70							<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10	<10							<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	190	230	90							<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	300	280	130							<10	ug/l	TM5/TM36/PM12/PM16/PM30
MTBE #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
Benzene #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
Toluene #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
Ethylbenzene #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
m/p-Xylene #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
o-Xylene #	<5	<5	<5	<5							<5	ug/l	TM31/PM12
PCB 28	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 52	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 101	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 118	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 138	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 153	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
PCB 180	-	-	<0.1	-							<0.1	ug/l	TM17/PM30
Total 7 PCBs	-	-	<0.7	-							<0.7	ug/l	TM17/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia

Matrix : Liquid

Reference: A10967

Location: Vastern Road, Reading

Contact: Adrian King

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/5703	1	BH2003 WS1	2.39-4.01	1-5	No interpretation possible
18/5703	1	BH2006 WS1	1.53-2.03	26-29	Linear alkylbenzenes
18/5703	1	BH2005 WS1	2.08-3.01	30-35	Linear alkylbenzenes
18/5703	1	BH1005 WS1	2.49-7.14	36-40	Linear alkylbenzenes

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Adrian King

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 18/5703						

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/5703

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/5703

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			

Exova Jones Environmental

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

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Deeside Industrial Park
Deeside
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Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Attention :	Lee McDonald
Date :	24th April, 2018
Your reference :	A10967
Our reference :	Test Report 18/5726 Batch 1
Location :	Vastern Road, Reading
Date samples received :	18th April, 2018
Status :	Final report
Issue :	1

Twenty seven samples were received for analysis on 18th April, 2018 of which eleven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Phil Sommerton BSc
Project Manager

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

J E Sample No.	3-4	9-10	21-22	23-24	25-26	31-32	39-40	41-42	43-44	45-46	LOD/LOR	Units	Method No.
Sample ID	WS101	WS101	WS102	WS102	WS103	WS103	WS104	WS104	WS104	WS105			
Depth	0.45-0.80	1.30-1.50	1.50-2.00	2.00-2.40	0.40-0.70	1.60-1.70	1.55-1.75	1.75-2.00	2.00-2.40	0.60-0.90			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	17/04/2018	17/04/2018	17/04/2018	17/04/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018			
Arsenic	8.2	-	-	-	24.4	-	-	-	-	13.3	<0.5	mg/kg	TM30/PM62
Barium	130	-	-	-	368	-	-	-	-	137	<1	mg/kg	TM30/PM62
Beryllium	2.5	-	-	-	2.6	-	-	-	-	0.7	<0.5	mg/kg	TM30/PM62
Cadmium	0.2	-	-	-	0.5	-	-	-	-	<0.1	<0.1	mg/kg	TM30/PM62
Chromium	18.2	-	-	-	22.6	-	-	-	-	14.3	<0.5	mg/kg	TM30/PM62
Copper	31	-	-	-	102	-	-	-	-	61	<1	mg/kg	TM30/PM62
Lead	29	-	-	-	2019	-	-	-	-	141	<5	mg/kg	TM30/PM62
Mercury	<0.1	-	-	-	1.9	-	-	-	-	0.3	<0.1	mg/kg	TM30/PM62
Nickel	30.1	-	-	-	36.4	-	-	-	-	15.6	<0.7	mg/kg	TM30/PM62
Selenium	<1	-	-	-	<1	-	-	-	-	<1	<1	mg/kg	TM30/PM62
Vanadium	57	-	-	-	44	-	-	-	-	34	<1	mg/kg	TM30/PM62
Water Soluble Boron	3.8	-	-	-	4.7	-	-	-	-	1.4	<0.1	mg/kg	TM74/PM61
Zinc	60	-	-	-	301	-	-	-	-	74	<5	mg/kg	TM30/PM62
PAH MS													
Naphthalene #	0.11	-	-	-	0.19	-	-	-	-	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.03	-	-	-	0.59	-	-	-	-	0.03	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	-	-	-	0.08	-	-	-	-	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	-	-	-	0.10	-	-	-	-	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.36	-	-	-	1.87	-	-	-	-	0.13	<0.03	mg/kg	TM4/PM8
Anthracene #	0.10	-	-	-	0.70	-	-	-	-	0.06	<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.60	-	-	-	5.45	-	-	-	-	0.44	<0.03	mg/kg	TM4/PM8
Pyrene #	0.58	-	-	-	4.98	-	-	-	-	0.39	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.33	-	-	-	3.73	-	-	-	-	0.30	<0.06	mg/kg	TM4/PM8
Chrysene #	0.33	-	-	-	2.89	-	-	-	-	0.29	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.60	-	-	-	6.92	-	-	-	-	0.56	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.30	-	-	-	3.89	-	-	-	-	0.27	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.21	-	-	-	2.78	-	-	-	-	0.18	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.04	-	-	-	0.53	-	-	-	-	0.06	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.21	-	-	-	2.78	-	-	-	-	0.18	<0.04	mg/kg	TM4/PM8
PAH 16 Total	3.8	-	-	-	37.5	-	-	-	-	2.9	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.43	-	-	-	4.98	-	-	-	-	0.40	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.17	-	-	-	1.94	-	-	-	-	0.16	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	-	-	-	93	-	-	-	-	91	<0	%	TM4/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

J E Sample No.	3-4	9-10	21-22	23-24	25-26	31-32	39-40	41-42	43-44	45-46	LOD/LOR	Units	Method No.
Sample ID	WS101	WS101	WS102	WS102	WS103	WS103	WS104	WS104	WS104	WS105			
Depth	0.45-0.80	1.30-1.50	1.50-2.00	2.00-2.40	0.40-0.70	1.60-1.70	1.55-1.75	1.75-2.00	2.00-2.40	0.60-0.90			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	17/04/2018	17/04/2018	17/04/2018	17/04/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018			
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	0.3 SV	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	2.9 SV	0.7	1.2	<0.1	<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	101.0	72.1	27.2	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4	<4	<4	<4	<4	<4	1113	241	90	<4	<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7	<7	<7	<7	<7	<7	2336	331	116	<7	<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7	<7	<7	<7	11	<7	393	57	20	<7	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19	<19	<19	<19	<19	<19	3946	702	254	<19	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	12.9	18.3	7.0	<0.2	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4	<4	<4	<4	<4	<4	233	67	27	<4	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	18	<7	<7	<7	26	<7	657	92	35	<7	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	49	<7	<7	<7	155	<7	333	<7	<7	23	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	67	<19	<19	<19	181	<19	1236	177	69	23	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	67	<38	<38	<38	181	<38	5182	879	323	<38	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE #	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5	<5	<5	ug/kg	TM31/PM12
Benzene #	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5	<5	<5	ug/kg	TM31/PM12
Toluene #	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	<5	<5	<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	12	<5	<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 SV	<5	<5	<5	<5 SV	<5	24 SV	16	26	<5	<5	ug/kg	TM31/PM12
o-Xylene #	<5 SV	<5	<5	<5	<5 SV	<5	<5 SV	<5	29	<5	<5	ug/kg	TM31/PM12
PCB 28 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	-	-	-	-	-	-	<5	-	<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	-	-	-	-	-	-	<35	-	<35	ug/kg	TM17/PM8
Total Phenols HPLC	<0.15	-	-	-	<0.15	-	-	-	-	<0.15	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	-	51.8	20.1	56.7	-	14.5	38.8	63.8	52.6	-	<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	11.0	-	-	-	11.9	-	-	-	-	4.8	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	-	-	-	<0.3	-	-	-	-	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)	0.3374	-	-	-	0.1798	-	-	-	-	0.1028	<0.0015	g/l	TM38/PM60

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

J E Sample No.	3-4	9-10	21-22	23-24	25-26	31-32	39-40	41-42	43-44	45-46	LOD/LOR	Units	Method No.
Sample ID	WS101	WS101	WS102	WS102	WS103	WS103	WS104	WS104	WS104	WS105			
Depth	0.45-0.80	1.30-1.50	1.50-2.00	2.00-2.40	0.40-0.70	1.60-1.70	1.55-1.75	1.75-2.00	2.00-2.40	0.60-0.90			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	16/04/2018	17/04/2018	17/04/2018	17/04/2018	17/04/2018			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018	18/04/2018			
Chromium III	NDP	-	-	-	NDP	-	-	-	-	NDP	<0.5	mg/kg	NONE/NONE
Chromium III	18.2	-	-	-	22.6	-	-	-	-	14.3	<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	-	-	-	0.7	-	-	-	-	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	-	8.20	-	-	-	-	-	1.07	-	<0.02	%	TM21/PM24
pH #	8.10	-	-	-	8.20	-	-	-	-	8.25	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

J E Sample No.	53-54												
Sample ID	WS105												
Depth	2.00-2.30												
COC No / misc													
Containers	V J												
Sample Date	17/04/2018												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	18/04/2018												
												LOD/LOR	Units	Method No.
Arsenic	-											<0.5	mg/kg	TM30/PM62
Barium	-											<1	mg/kg	TM30/PM62
Beryllium	-											<0.5	mg/kg	TM30/PM62
Cadmium	-											<0.1	mg/kg	TM30/PM62
Chromium	-											<0.5	mg/kg	TM30/PM62
Copper	-											<1	mg/kg	TM30/PM62
Lead	-											<5	mg/kg	TM30/PM62
Mercury	-											<0.1	mg/kg	TM30/PM62
Nickel	-											<0.7	mg/kg	TM30/PM62
Selenium	-											<1	mg/kg	TM30/PM62
Vanadium	-											<1	mg/kg	TM30/PM62
Water Soluble Boron	-											<0.1	mg/kg	TM74/PM61
Zinc	-											<5	mg/kg	TM30/PM62
PAH MS														
Naphthalene #	-											<0.04	mg/kg	TM4/PM8
Acenaphthylene	-											<0.03	mg/kg	TM4/PM8
Acenaphthene #	-											<0.05	mg/kg	TM4/PM8
Fluorene #	-											<0.04	mg/kg	TM4/PM8
Phenanthrene #	-											<0.03	mg/kg	TM4/PM8
Anthracene #	-											<0.04	mg/kg	TM4/PM8
Fluoranthene #	-											<0.03	mg/kg	TM4/PM8
Pyrene #	-											<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	-											<0.06	mg/kg	TM4/PM8
Chrysene #	-											<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	-											<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	-											<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	-											<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	-											<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	-											<0.04	mg/kg	TM4/PM8
PAH 16 Total	-											<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	-											<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	-											<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	-											<0	%	TM4/PM8

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

J E Sample No.	53-54										LOD/LOR	Units	Method No.
Sample ID	WS105												
Depth	2.00-2.30												
COC No / misc													
Containers	V J												
Sample Date	17/04/2018												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	18/04/2018												
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1										<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1										<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1										<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2										<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 #	<4										<4	mg/kg	TM5/PM8/PM16
>C16-C21 #	<7										<7	mg/kg	TM5/PM8/PM16
>C21-C35 #	<7										<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35	<19										<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 #	<0.1										<0.1	mg/kg	TM36/PM12
>EC7-EC8 #	<0.1										<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1										<0.1	mg/kg	TM36/PM12
>EC10-EC12 #	<0.2										<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 #	<4										<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 #	<7										<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 #	<7										<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 #	<19										<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35)	<38										<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE #	<5										<5	ug/kg	TM31/PM12
Benzene #	<5										<5	ug/kg	TM31/PM12
Toluene #	<5										<5	ug/kg	TM31/PM12
Ethylbenzene #	<5										<5	ug/kg	TM31/PM12
m/p-Xylene #	<5										<5	ug/kg	TM31/PM12
o-Xylene #	<5										<5	ug/kg	TM31/PM12
PCB 28 #	-										<5	ug/kg	TM17/PM8
PCB 52 #	-										<5	ug/kg	TM17/PM8
PCB 101 #	-										<5	ug/kg	TM17/PM8
PCB 118 #	-										<5	ug/kg	TM17/PM8
PCB 138 #	-										<5	ug/kg	TM17/PM8
PCB 153 #	-										<5	ug/kg	TM17/PM8
PCB 180 #	-										<5	ug/kg	TM17/PM8
Total 7 PCBs #	-										<35	ug/kg	TM17/PM8
Total Phenols HPLC	-										<0.15	mg/kg	TM26/PM21
Natural Moisture Content	79.0										<0.1	%	PM4/PM0
Moisture Content (% Wet Weight)	-										<0.1	%	PM4/PM0
Hexavalent Chromium #	-										<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-										<0.0015	g/l	TM38/PM60

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald
JE Job No.: 18/5726

Report : Solid

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

J E Sample No.	53-54												
Sample ID	WS105												
Depth	2.00-2.30												
COC No / misc													
Containers	V J												
Sample Date	17/04/2018												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	18/04/2018												

Please see attached notes for all abbreviations and acronyms

											LOD/LOR	Units	Method No.
Chromium III	-										<0.5	mg/kg	NONE/NONE
Chromium III	-										<0.5	mg/kg	NONE/NONE
Total Cyanide #	-										<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-										<0.02	%	TM21/PM24
pH #	-										<0.01	pH units	TM73/PM11

Client Name: Omnia **Matrix : Solid**
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
18/5726	1	WS101	0.45-0.80	3-4	PAH's
18/5726	1	WS101	1.30-1.50	9-10	No interpretation possible
18/5726	1	WS102	1.50-2.00	21-22	No interpretation possible
18/5726	1	WS102	2.00-2.40	23-24	No interpretation possible
18/5726	1	WS103	0.40-0.70	25-26	PAH's
18/5726	1	WS103	1.60-1.70	31-32	No interpretation possible
18/5726	1	WS104	1.55-1.75	39-40	Possible Degraded diesel & PAH's
18/5726	1	WS104	1.75-2.00	41-42	Degraded diesel
18/5726	1	WS104	2.00-2.40	43-44	Degraded diesel
18/5726	1	WS105	0.60-0.90	45-46	No interpretation possible
18/5726	1	WS105	2.00-2.30	53-54	No interpretation possible

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Lee McDonald

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

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

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

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
18/5726	1	WS101	0.45-0.80	4	20/04/2018	**General Description (Bulk Analysis)**	Soil-Clay/Brick/Stone
					20/04/2018	**Asbestos Fibres**	Fibre Bundles
					20/04/2018	**Asbestos ACM**	NAD
					20/04/2018	**Asbestos Type**	Chrysotile
					20/04/2018	**Asbestos Level Screen**	less than 0.1%
18/5726	1	WS103	0.40-0.70	26	20/04/2018	**General Description (Bulk Analysis)**	Soil-Clay/Brick/Stone
					20/04/2018	**Asbestos Fibres**	Fibre Bundles
					20/04/2018	**Asbestos ACM**	NAD
					20/04/2018	**Asbestos Type**	Chrysotile
					20/04/2018	**Asbestos Level Screen**	Asbestos level cannot be determined from Screen. Quantification required.
18/5726	1	WS105	0.60-0.90	46	20/04/2018	**General Description (Bulk Analysis)**	Soil-Clay/Brick/Stone
					20/04/2018	**Asbestos Fibres**	Fibre Bundles
					20/04/2018	**Asbestos ACM**	NAD
					20/04/2018	**Asbestos Type**	Chrysotile
					20/04/2018	**Asbestos Level Screen**	less than 0.1%

Client Name: Omnia

Matrix : Solid

Reference: A10967

Location: Vastern Road, Reading

Contact: Lee McDonald

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
18/5726	1	WS101	0.45-0.80	3-4	Asbestos detected in sample
18/5726	1	WS103	0.40-0.70	25-26	Asbestos detected in sample
18/5726	1	WS105	0.60-0.90	45-46	Asbestos detected in sample

Client Name: Omnia

Matrix : Solid

Reference: A10967

Location: Vastern Road, Reading

Contact: Lee McDonald

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
18/5726	1	WS101	0.45-0.80	3-4	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS101	1.30-1.50	9-10	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS102	1.50-2.00	21-22	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS102	2.00-2.40	23-24	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS103	0.40-0.70	25-26	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS103	1.60-1.70	31-32	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS104	1.55-1.75	39-40	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS104	1.75-2.00	41-42	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS104	2.00-2.40	43-44	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS105	0.60-0.90	45-46	GRO	Solid Samples were received at a temperature above 9°C.
18/5726	1	WS105	2.00-2.30	53-54	GRO	Solid Samples were received at a temperature above 9°C.

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

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

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 18/5726

SOILS

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

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

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

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

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

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

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

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

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

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

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

DEVIATING SAMPLES

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

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 18/5726

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes

JE Job No: 18/5726

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes

JE Job No: 18/5726

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes

APPENDIX VI

EXPLORATORY HOLE LOGS

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1001**

Sheet 1 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471576 N 174181	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.39mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 29/01/2018 End: 31/01/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B	0.20 - 0.40				MADE GROUND: Grey ASPHALT.	0.10	38.29	
		ES	0.20				MADE GROUND: Dark grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick with low cobble content.	0.40	37.99	
		B	0.40 - 0.60					0.60	37.79	
		ES	0.50				MADE GROUND: Brown sandy silty angular fine to coarse GRAVEL of siliceous material and brick with medium cobble content of brick.	0.70	37.69	
		B	0.70 - 1.20							
1							MADE GROUND: Grey CONCRETE.	(0.80)		1
		ES	1.20	S 4			MADE GROUND: Soft dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and brick.			
	2	SPT	1.20 - 1.65					1.50	36.89	
							Soft becoming very soft green slightly sandy CLAY with a moderate organic odour. (ALLUVIUM)			
2		D	2.00							2
		ES	2.00 - 2.45							
		UT100								
		D	2.50							
								(2.50)		
3		D	3.00	S<1						3
	1	SPT	3.00 - 3.45							
							Loose grey silty very sandy angular to subangular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.00	34.39	
4		B	4.00 - 4.45	S 5						4
		D	4.00							
		SPT C	4.00 - 4.45							
								(1.00)		
							Medium dense grey sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	5.00	33.39	
5		B	5.00 - 5.45	C 25						5
		D	5.00							
		SPT C	5.00 - 5.45							
								(1.50)		
6		D	6.00							6
							Medium dense light brown sandy becoming very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	6.50	31.89	
		SPT C	6.50 - 6.95	C 27						
7		D	7.00							7
	2							(2.50)		
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-1.70m and 200mm diameter clay cutter and bailer 1.70-12.00m.
CASING: 250mm diameter to 1.70m. 200mm diameter to 10.50m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was sealed with bentonite pellets: 7.00-12.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.20m. Flush 150mm steel cover set in concrete: Flush cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Borehole was installed on 31/1/18. Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.20m - 0.10ppm; 0.50m -0.20ppm; 1.20m - 0.20.ppm; 2.00m - 0.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
30/01/18	4.00	4.00	3.40
30/01/18	8.00	7.60	1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
29/01/2018 17:00	0.05		
30/01/2018 08:00	0.05		

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BOREHOLE LOG

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Borehole No. **BH1001**

Sheet 2 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471576 N 174181	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.39mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 29/01/2018 End: 31/01/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		D SPT	8.00 8.00 - 8.45	S 10			Medium dense light brown sandy becoming very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)* 8.00m: Firm grey gravelly sandy clay. Gravel angular to sub-rounded fine to medium.			
9		D	9.00				CHALK recovered as: light brown and off white slightly sandy slightly silty angular to sub-angular fine to coarse GRAVEL and COBBLES of weak low to medium density chalk. (WHITE CHALK SUBGROUP)	9.00	29.39	9
		SPT	9.50 - 9.95	S 6						
10		D	10.00					(3.00)		10
11		D SPT	11.00 11.00 - 11.45	S 12						11
12		D	12.00				Borehole completed at 12.00m	12.00	26.39	12
13										13
14										14
15										15
16										16
17										17

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
30/01/2018 17:00	12.00	10.50	3.60
31/01/2018 08:00	12.00	10.50	

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INSPECTION PIT LOG

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Pit No **BH1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174164 Level: 38.30mAOD	Date 29/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m Depth 0.80m 0.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
		B ES	0.10 - 0.15 0.15		MADE GROUND: Dark grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick.	0.10	38.20	
					MADE GROUND: Grey CONCRETE.	0.15	38.15	
						(0.65)		
					Inspection pit completed at 0.80m	0.80	37.50	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1002A. PID readings taken on all environmental samples. Results: 0.15m - 0.20ppm.

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INSPECTION PIT LOG

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Pit No **BH1002A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471600 N 174161 Level: 38.28mAOD	Date 30/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.80m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Grey to brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick with low cobble content and rare possible asbestos containing material.	0.10	38.18	
		ES	0.50			(0.70)		
					0.80m: Concrete across base of pit.	0.80	37.48	
					Inspection pit completed at 0.80m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1002B. PID readings taken on all environmental samples. Results: 0.50m - 0.00ppm.

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INSPECTION PIT LOG

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Pit No **BH1002B**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471592 N 174149 Level: 38.37mAOD	Date 30/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m Depth 0.45m 0.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Red brick MASONRY.	0.10	38.27	
						(0.25)		
					MADE GROUND: Grey CONCRETE.	0.35	38.02	
						(0.10)		
					0.450m: 1no. metal pipe approximately 50mm diameter, broken with surround of light grey to brown sandy slightly silty angular fine gravel of siliceous material.	0.45	37.92	
					Inspection pit completed at 0.45m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.45m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Metal pipe in base of pit. Relocated as BH1002C.

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BOREHOLE LOG

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Borehole No. **BH1002C**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing: No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B ES	0.10 - 0.50 0.20				MADE GROUND: Grey ASPHALT.	0.10	38.30	
							MADE GROUND: Brown tending to grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and red brick with medium cobble content. Cobbles are angular of brick.	0.30 0.50	38.10 37.90	
		ES B	0.60 0.65 - 1.10				MADE GROUND: Red brick MASONRY. MADE GROUND: Light brown locally grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.65 (0.45)	37.75	
1		ES D	1.00 1.20					1.10	37.30	1
	2	ES SPT	1.50 1.50 - 1.65	S 6			MADE GROUND: Dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and red brick. Very soft dark grey slightly sandy CLAY with occasional partially decomposed organic material (<5mm). (ALLUVIUM)	(1.20)		
2								2.30	36.10	2
		ES UT100	2.50 2.50 - 2.95				Soft to firm greenish grey slightly sandy CLAY. (ALLUVIUM)			
3		D	3.00					(1.50)		3
	1	SPT	3.50 - 3.95	S 31						
	1	B	3.80 - 4.30				Dense grey sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.80	34.60	
4								(1.30)		4
		B SPT C	4.50 - 5.00 4.50 - 4.95	C 34						
5							Medium dense locally dense light brown sandy tending to very sandy slightly silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	5.10	33.30	5
		B SPT C	5.50 - 6.00 5.50 - 5.95	C 27						
6										6
7		B SPT C	7.00 - 7.50 7.00 - 7.45	C 30				(5.00)		7
8	2									8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.20-10.50m and 150mm diameter clay cutter and bailer 10.50-35.00m.
CASING: 250mm diameter to 1.70m, 200mm diameter to 10.50m, 150mm diameter to 24.90m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-2.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.00-0.20m. Flush 150mm steel cover set in concrete: Flush cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.20m - 0.00ppm; 0.60m -1.50ppm; 1.00m - 0.00.ppm; 1.50m - 4.50ppm; 2.50m - 0.30ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
31/01/18	4.00	4.00	3.40
01/02/18	8.00	8.00	1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
31/01/2018 17:00	7.00	6.90	3.20
01/02/2018 08:00	7.00	6.90	

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BOREHOLE LOG

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Borehole No. **BH1002C**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B SPT C	8.50 - 9.00 8.50 - 8.95	C 21			Medium dense locally dense light brown sandy tending to very sandy slightly silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)*			
9										9
10		B SPT C	10.00 - 10.50 10.00 - 10.45	C 8			CHALK recovered as light brown and off white slightly sandy silty angular to sub-angular fine to coarse GRAVEL with rare flints. Clasts are very weak low to medium dense. (Dc) (WHITE CHALK SUBGROUP)	10.10	28.30	10
11		U100	11.50 - 11.95					(1.90)		11
12		D	12.00				CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP)	12.00	26.40	12
13		SPT	13.00 - 13.45	S 8						13
14		D	14.00							14
		U100	14.50 - 14.95							
15		D	15.00							15
16		SPT	16.00 - 16.45	S 33						16
17		D	17.00							17
		U100	17.50 - 17.95							

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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BOREHOLE LOG

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Borehole No. **BH1002C**

Sheet 3 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18		D	18.00				CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
19		SPT	19.00 - 19.45	S 46						
20		U100	20.50 - 20.95							
21		D	21.00							
22		SPT	22.00 - 22.45	S*55						
23		B	23.50 - 24.00					(23.00)		
24										
25		SPT	25.00 - 25.45	S*188						
26		SPT	26.50 - 26.95	S*81						
27										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
01/02/2018 17:00	25.00	24.90	3.80
02/02/2018 08:00	25.00	24.90	3.60

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BOREHOLE LOG

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Borehole No. **BH1002C**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		SPT	28.00 - 28.45	S*176			CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
29		SPT	29.50 - 29.95	S*107						
30										
31		SPT	31.00 - 31.45	S*103						
32		SPT	32.50 - 32.95	S*120						
33										
34		SPT	34.00 - 34.45	S*83						
35		D	35.00				Borehole completed at 35.00m	35.00	3.40	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
02/02/2018 17:00	35.00	34.90	3.60

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INSPECTION PIT LOG

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Pit No **BH1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471556 N 174145 Level: 38.57mAOD	Date 01/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.80m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
		B	0.10 - 0.25		MADE GROUND: Brown to grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.10	38.47	
		D ES	0.20			(0.15)		
					MADE GROUND: Red brick MASONRY.	0.25	38.32	
						(0.20)		
					MADE GROUND: Brown to grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.45	38.12	
						(0.10)		
					MADE GROUND: Grey CONCRETE.	0.55	38.02	
						(0.10)		
		B	0.65 - 0.80		MADE GROUND: Brown to grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.65	37.92	
						(0.15)		
		D ES	0.80		0.80m: Clay pipe in north face of inspection pit. Intact (approximately 100mm). Inspection pit completed at 0.80m	0.80	37.77	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Borehole terminated due to clay pipe at 0.80m. Relocated as BH1003A. PID readings taken on all environmental samples. Results: 0.20m - 0.30ppm; 0.80m -0.20ppm.

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INSPECTION PIT LOG

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Pit No **BH1003A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471557 N 174145 Level: 38.56mAOD	Date 02/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 1.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Brownish grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.10 (0.10)	38.46	
					MADE GROUND: Red brick MASONRY.	0.20 (0.20)	38.36	
					MADE GROUND: Brownish grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.40 (0.30)	38.16	
					MADE GROUND: Grey CONCRETE.	0.70 (0.20)	37.86	
		B	0.90 - 1.20		MADE GROUND: Loose brownish grey gravelly slightly silty (ashy) SAND with low cobble content. Gravel is angular fine to coarse of siliceous material and brick. Cobbles are angular of brick.	0.90	37.66	
1		D ES	1.00					1
		SPT	1.20 - 1.65		1.20-1.50m: Concrete footing in north face of the pit.	(0.60)		
					Inspection pit completed at 1.50m	1.50	37.06	
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.15m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.20-1.50m

CASING: None used.

GROUNDWATER: Groundwater seepage encountered at 0.50m. No rise is record.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003B. PID readings taken on all environmental samples. Results: 1.00m - 0.30ppm.

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INSPECTION PIT LOG

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Pit No **BH1003B**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174148 Level: 38.71mAOD	Date 02/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m, Depth 0.70m, 0.60m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.05 - 0.70		MADE GROUND: Black ASPHALT.			
					MADE GROUND: Dark grey CONCRETE.	0.08	38.63	
						(0.32)		
					MADE GROUND: Light grey CONCRETE.	0.40	38.31	
						(0.30)		
					Inspection pit completed at 0.70m	0.70	38.01	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m. Borehole advanced using 300mm diameter coring barrel: 0.05-0.70m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with arisings and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003C.

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INSPECTION PIT LOG

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Pit No **BH1003C**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174137 Level: 38.76mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m Depth 0.50m 0.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH/MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.20		MADE GROUND: Dark grey ASPHALT.	(0.10)		
		B	0.10		MADE GROUND: Brown very sandy slightly clayey angular to sub-rounded fine to coarse GRAVEL mixed lithologies including concrete, red brick, chalk and siliceous material.	0.10	38.66	
		D ES	0.20					
		B	0.30 - 0.45			(0.40)		
					0.40-0.47m: Clayey.			
		D ES	0.45					
					0.50m: Concrete across base of pit.	0.50	38.26	
					Inspection pit completed at 0.50m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m. Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.05-0.20m.

Hand dug inspection pit: 0.20-050m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: None used.

REMARKS: Unable to advance hole through concrete at 0.50. Relocated as BH1003D. Inspection pit covered and fenced off to be continued using rotary drilling techniques: See BH2004. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.45m -0.40ppm.

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INSPECTION PIT LOG

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Pit No **BH1003D**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471535 N 174144 Level: 38.72mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.60m × 0.50m Depth 0.05m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT. 0.05m: Concrete across base of inspection pit. Inspection pit completed at 0.05m	0.05	38.67	

DRAFT

EQUIPMENT: Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003E.

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BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1003E**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Black ASPHALT.	0.08	38.63	
		B ES	0.30 - 0.40 0.30				MADE GROUND: Grey sandy angular fine to coarse GRAVEL of igneous material.	0.15 (0.40)	38.56	
		B ES	0.60 - 0.70 0.60				MADE GROUND: Reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material.	0.55	38.16	
1		B ES	1.00 - 1.10 1.00				0.40-0.50m: 2no. clay pipes. Broken and infilled with sediment. Orientation approximately East to West.	0.90	37.81	1
		B ES SPT	1.30 - 1.40 1.30 1.50 - 1.95	S 2			MADE GROUND: Light brown very sandy clayey angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including chalk, red brick, and siliceous material.	1.20 (0.70)	37.51	
2		D ES	2.00				MADE GROUND: Off white and light brown sandy very clayey angular to sub-rounded COBBLES of chalk with some very silty angular to sub-angular fine to coarse gravel of chalk and siliceous material.	1.90	36.81	2
		UT100	2.50 - 2.95				MADE GROUND: Light brown sandy very clayey angular to sub-rounded fine to coarse GRAVEL of red brick, chalk and siliceous material locally tending to slightly sandy gravelly clay with rare bone and clay pot fragments (<100mm). 1.50-1.90m: Very loose.	(0.80) 2.70	36.01	
3							Very soft bluish grey mottled greenish grey silty CLAY with rare shell fragments (<5mm), rare pockets (<30mm) of dark grey peat and a moderate organic odour. (ALLUVIUM)	(0.60) 3.30	35.41	3
		B SPT C	3.50 - 4.00 3.50 - 3.95	C 7			Very soft greyish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse siliceous material. (ALLUVIUM) 3.00-3.30m: Tending to sandy, very clayey gravel.	(1.20)		
4		D	4.00				Loose greyish brown very sandy slightly silty angular to sub-rounded, fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			4
		B SPT C	4.50 - 5.00 4.50 - 4.95	C 30			Dense grey very sandy silty angular to sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.50	34.21	
5		D	5.00							5
		B SPT C	5.50 - 6.00 5.50 - 5.95	C 30						
6		D	6.00					(4.00)		6
7		B D SPT C	7.00 - 7.45 7.00 7.00 - 7.45	C 32			7.00-7.45m: Locally tending to very gravelly silty SAND with low cobble content. Cobbles are sub-rounded siliceous material.			7
8										8

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.50m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.50-10.50m and 150mm diameter clay cutter and bailer 10.50-35.00m..
CASING: 250mm diameter to 1.70m, 200mm diameter to 12.80m, 150mm diameter to 26.50m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-6.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 6.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush 150mm steel cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.40m. PID readings taken on all environmental samples. Results: 0.30m - 1.10ppm; 0.60m -1.60ppm; 1.00m - 1.10.ppm; 1.30m - 0.30ppm; 2.00m - 0.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	1.50		
06/02/2018 08:00	1.50		
08/02/2018 08:00			

CC BH LOG C5925.GPJ CCGI GINT STD AGS 4_0.GDT 9/3/18

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BOREHOLE LOG

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Borehole No. **BH1003E**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		D	8.00				Dense grey very sandy silty angular to sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)*			
		B	8.50 - 8.95	C 22			8.00-8.10m: Light brown slight sandy gravelly silty CLAY. Gravel is angular to sub-rounded fine to coarse chalk.	8.50	30.21	
		SPT C					Medium dense light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material and chalk. (KEMPTON PARK GRAVEL)			
9		D	9.00							9
								(2.60)		
10		D	10.00	C 30						10
		SPT C	10.00 - 10.45							
11		D	11.00							11
							Soft light brown locally light greyish brown slightly sandy gravelly silty CLAY. Gravel is angular to rounded fine to coarse siliceous material and chalk. (KEMPTON PARK GRAVEL)	11.10	27.61	
		SPT	11.50 - 11.95	S 9				(0.75)		
12		D	12.00				Medium dense slightly sandy very silty angular to sub-rounded fine to coarse GRAVEL of siliceous material and chalk. (KEMPTON PARK GRAVEL)	11.85	26.86	12
								(0.65)		
		B	12.50 - 12.80				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse Gravel with rare rinded flints. Clasts are very weak medium and high density. (WHITE CHALK SUBGROUP)	12.50	26.21	
13		B	13.00 - 13.41							13
		D	13.00							
14		D	14.00							14
		SPT	14.50 - 14.95	S 17						
15		D	15.00							15
16		D	16.00							16
		U100	16.00 - 16.45							
17		D	17.00							17
		SPT	17.50 - 17.95	S 19			17.50-17.95m: Occasional flints.			

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Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	11.50	11.50	3.50
07/02/2018 08:00	11.50	11.50	3.00

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BOREHOLE LOG

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Borehole No. **BH1003E**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18		D	18.00				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse Gravel with rare rinded flints. Clasts are very weak medium and high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*	(11.50)		
19		D U100	19.00 19.00 - 19.45							
20		D	20.00				20.00-20.45m: Locally speckled black.			
		SPT	20.50 - 20.95	S 28						
21		D	21.00							
22		B D U100	22.00 - 22.45 22.00 22.00 - 22.45							
23		D	23.00							
		SPT	23.50 - 23.95	S*167						
24		D	24.00				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP)	24.00	14.71	
25		D SPT	25.00 25.00 - 25.45	S*88						
26		D	26.00							
		SPT	26.50 - 26.95	S*185						
27		D	27.00							

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	26.50	26.50	5.90

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BOREHOLE LOG

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Borehole No. **BH1003E**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		D SPT	28.00 28.00 - 28.45	S*130			CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
29		D	29.00							
		SPT	29.50 - 29.95	S*200				(11.00)		
30		D	30.00							
31		D SPT	31.00 31.00 - 31.45	S*115			31.00-34.00m: Occasional rinded flints			
32		D	32.00							
		SPT	32.50 - 32.95	S*88						
33		D	33.00							
34		D SPT	34.00 34.00 - 34.45	S*97						
35		D	35.00				Borehole completed at 35.00m	35.00	3.71	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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BOREHOLE LOG

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Borehole No. **BH1004**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							Black ASPHALT.	0.10	38.21	
		ES	0.30				MADE GROUND: Dark grey mottled black gravelly silty SAND. Gravel is sub-angular, fine to coarse siliceous material and clinker.	0.40	37.91	
		ES	0.60				MADE GROUND: Brown and greyish brown gravelly silty SAND with low cobble content and occasional fragments of wood and ceramics. Gravel is angular fine to coarse of red brick and concrete. Cobbles are angular of red brick.	(0.80)		
1		ES	1.00							1
		ES	1.20				MADE GROUND: Soft black gravelly CLAY. Gravel is angular, fine to medium red brick.	1.20	37.11	
		B	1.30 - 1.70					(0.50)		
		SPT	1.50 - 1.95	S 1						
		ES	1.70				Very soft bluish grey and brownish grey silty CLAY with frequent pockets (<30mm) of partially decomposed organic material and a moderate organic odour. (ALLUVIUM)	1.70	36.61	
2		B	2.00 - 2.40					(0.70)		2
		ES	2.00							
		B	2.50 - 3.00	C 24			Medium dense light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 2.40-8.10m: Partial loss of fines.	2.40	35.91	
		SPT C	2.50 - 2.95							
3										3
		B	3.50 - 4.00	C 21						
		SPT C	3.50 - 3.95							
4										4
		B	4.50 - 5.00	C 22						
		SPT C	4.50 - 4.95							
5								(5.70)		5
		B	5.50 - 6.00	C 29						
		SPT C	5.50 - 5.95							
6										6
7		B	7.00 - 7.50	C 25						7
		SPT C	7.00 - 7.45							
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-2.00m and 200mm diameter clay cutter and bailer 1.20-9.00m, and 150mm diameter clay cutter and bailer 9.00-35.00m.
CASING: 250mm diameter to 2.00m, 200mm diameter to 9.00m, 150mm diameter to 35.00m.
GROUNDWATER: None recorded, however was added to assist drilling.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush 150mm steel cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.40m. PID readings taken on all environmental samples. Results: 0.30m - 0.30ppm; 0.60m -0.20ppm; 1.00m - 0.40ppm; 1.20m - 2.30ppm; 1.70m - 0.20ppm; 2.00m - 1.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	2.50	2.00	
06/02/2018 08:00	2.50	2.00	

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BOREHOLE LOG

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Borehole No. **BH1004**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B	8.20 - 8.50				CHALK off white locally speckled black recovered as very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP)	8.10	30.21	
		B	8.50 - 9.00	S 7						
		SPT	8.50 - 8.95							
9										9
10		U100	10.00 - 10.45							10
		D	10.50							
11										11
		SPT	11.50 - 11.95	S 8						
12										12
		D	12.50							
13		U100	13.00 - 13.45							13
		D	13.50							
14								(12.40)		14
		SPT	14.50 - 14.95	S 19						
15										15
		D	15.50							
16		U100	16.00 - 16.45							16
		D	16.50							
17										17
		SPT	17.50 - 17.95	S 34						

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Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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Borehole No. **BH1004**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18							CHALK off white locally speckled black recovered as very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
		D	18.50							
19		B	19.00 - 19.50							
20										
		SPT	20.50 - 20.95	S*158			CHALK recovered as off white very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak medium and high density. (Dc) (WHITE CHALK SUBGROUP)	20.50	17.81	
21		D	21.00							
22		SPT	22.00 - 22.45	S*75						
23		D	23.00							
		SPT	23.50 - 23.95	S*97						
24		D	24.50							
25		SPT	25.00 - 25.45	S*94						
26		D	26.00							
		SPT	26.50 - 26.95	S*107						
27										

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Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	20.50	20.40	4.80
07/02/2018 08:00	20.50	20.40	

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Borehole No. **BH1004**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		D SPT	28.00 28.00 - 28.45	S*136			CHALK recovered as off white very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak medium and high density. (Dc) (WHITE CHALK SUBGROUP) *(continued from previous sheet)*	(14.50)		
29		D	29.00							
		SPT	29.50 - 29.95	S*150						
30		D	30.50							
31		SPT	31.00 - 31.45	S*120			31.00-35.00m: Occasional rinded flints.			
							32.5m: Rinded flint cobbles.			
32		D	32.00							
		SPT	32.50 - 32.95	S**						
33		B	33.50 - 34.00							
34		SPT	34.00 - 34.45	S*103						
35		D	35.00				Borehole completed at 35.00m	35.00	3.31	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	28.00	28.00	3.10
08/02/2018 08:00	28.00	28.00	
08/02/2018 17:00	35.00	35.00	3.10

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Borehole No. **BH1005**

Sheet 1 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471538 N 174120	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.69mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 01/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Grey ASPHALT.	0.10	38.59	
		B ES	0.20 - 0.40 0.30				MADE GROUND: Dark grey slightly silty angular fine to coarse GRAVEL of siliceous material and brick.	0.20 (0.40)	38.49	
		B ES	0.60 - 0.90 0.70				MADE GROUND: Reddish brown and grey sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick with medium cobble content. Cobbles are angular of brick.	0.60	38.09	
1		B ES SPT	0.90 - 1.20 1.00 1.20 - 1.65	S 1			MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material, sandstone and brick with low cobble content. Cobbles are angular of brick.	0.90	37.79	1
							MADE GROUND: Very soft dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and brick.	(1.00)		
2		D ES UT100 D	2.00 2.00 - 2.45 2.50				Very soft greenish grey slightly sandy silty CLAY. (ALLUVIUM)	1.90 (0.90)	36.79	2
		D	2.80				Very soft grey mottled brown slightly gravelly sandy CLAY. Gravel is sub-angular fine to medium of siliceous material. (ALLUVIUM)	2.80 3.00	35.89 35.69	
3		B SPT C	3.00 - 3.50 3.00 - 3.45	S 11			Medium dense light brown to grey very sandy slightly silty angular to sub-rounded GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			3
4		B SPT C	4.00 - 4.50 4.00 - 4.45	S 25						4
5		B SPT C	5.00 - 5.50 5.00 - 5.45	S 30						5
6								(6.70)		6
		B SPT C	6.50 - 7.00 6.50 - 6.95	S 33			6.50-6.95m: Very dense.			
7										7
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-2.00m and 200mm diameter clay cutter and bailer 1.20-9.00m, and 150mm diameter clay cutter and bailer 9.00-35.00m.
CASING: 250mm diameter to 2.00m, 200mm diameter to 9.00m, 150mm diameter to 35.00m.
GROUNDWATER: None recorded, however was added to assist drilling.
INSTALLATION: Borehole was backfilled with bentonite pellets: 12.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-2.80m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.80-0.20m. Flush 150mm steel cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.30m - 0.00ppm; 0.70m -0.20ppm; 1.00m - 0.50ppm; 2.00m - 0.20ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
31/01/2018 17:00	5.50	4.00	
01/02/2018 08:00	5.50	6.10	

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BOREHOLE LOG

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Borehole No. **BH1005**

Sheet 2 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471538 N 174120	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.69mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 01/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B SPT C	8.00 - 8.45	S 20			Medium dense light brown to grey very sandy slightly silty angular to sub-rounded GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)* 8.50-9.70m: Very sandy.			
		SPT D	9.50 - 9.95 9.70	S 7			CHALK recovered as off white locally speckled black very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP)	9.70	28.99	
		B U100	11.00 - 11.45					(2.30)		
		SPT	11.50 - 11.95	S 36			Borehole completed at 12.00m	12.00	26.69	

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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Borehole No. **BH2001**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471586 N 174141	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.42mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.08	38.34	
								MADE GROUND: Light brown very sandy angular fine to coarse GRAVEL of siliceous material and brick.	0.30	38.12	
								MADE GROUND: Dark grey sandy silty (ashy) GRAVEL with low cobble content. Cobbles are angular of red brick.	0.55	37.87	
		C	0.60 - 1.20		C	100% 33% 33%		MADE GROUND: CONCRETE.	0.80	37.62	
		ES	0.80					MADE GROUND: Dark grey very sandy very clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material.	0.90	37.52	
1		D	0.90						(0.40)		1
		ES	1.00					MADE GROUND: Very soft light greyish brown locally mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of red brick and siliceous material.	1.30	37.12	
		D	1.40					Very soft dark bluish green locally mottled light grey CLAY with rare partially decomposed organic material (<5mm) and occasional comminuted shell fragments (<3mm). (ALLUVIUM)	(1.10)		
2		D	2.00						2.40	36.02	2
								Very soft bluish green mottled brown slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (5mm) and a moderate organic odour. Gravel is sub-rounded to rounded fine to coarse siliceous material. (ALLUVIUM)	(1.20)		
3		D	3.00						3.60	34.82	3
								Light brown very sandy slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.60-3.80m: Very clayey.	(1.40)		
4		B	4.00 - 5.00						5.00	33.42	4
								Borehole completed at 5.00m			
5											5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1008. Waterflush rotary coring (150mm): 0.60-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 140mm diameter to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 5.00-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1008. PID readings taken on all environmental samples. Results: 0.80m - 3.60ppm; 1.00m - 4.70ppm; 1.50m - 4.80ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
13/02/2018 10:30	5.00	4.00	

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Borehole No. **BH2002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471577 N 174143	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.37mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 12/02/2018 End: 12/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.10	38.27	
		C	0.25 - 1.20		C	89% 13% 13%		MADE GROUND: Grey and brown very sandy silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.25	38.12	
								MADE GROUND: CONCRETE. 0.37-1.00m: recovered as very sandy silty angular fine to coarse gravel of concrete.	(0.75)		
1		ES	1.00					MADE GROUND: Off white and dark grey slightly sandy very silty angular GRAVEL of chalk. 1.10m: 1no. bone fragment (<30mm).	1.00	37.37	1
									(0.45)		
		ES	1.50					Very soft dark bluish green CLAY with rare partially decomposed organic material (<5mm) and occasional comminuted shell fragments (<3mm). (ALLUVIUM) 1.45-1.60m: Light brown. Occasional partially decomposed organic material (<5mm).	1.45	36.92	
		D	1.60						(0.65)		
2											2
		ES	2.20					Very soft bluish green mottled light grey slightly sandy silty calcareous CLAY with frequent lenses (<1mm) of light grey silt. (ALLUVIUM)	2.10	36.27	
		D	2.30						(0.80)		
3		D	3.00					Very soft dark bluish green slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm) and a slight organic odour. Gravel is sub-rounded fine to coarse siliceous material. (ALLUVIUM)	2.90	35.47	3
									(0.70)		
								Light brown very sandy slightly slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.60-3.80m: Very clayey.	3.60	34.77	
4		B	4.00 - 5.00						(1.40)		4
5								Borehole completed at 5.00m	5.00	33.37	5
6											6

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1009. Waterflush rotary coring (150mm): 0.25-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00.
CASING: 140mm diameter to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 5.00-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1009. PID readings taken on all environmental samples. Results: 1.00m - 4.00ppm; 1.50m - 3.50ppm; 2.20m - 4.80ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
12/02/2018 17:00	5.00	4.00	

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Borehole No. **BH2003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471557 N 174145	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.56mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 12/02/2018 End: 12/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Grey ASPHALT.	0.10	38.46	
								MADE GROUND: Brownish grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.20	38.36	
								MADE GROUND: Red brick MASONRY.	0.40	38.16	
								MADE GROUND: Brownish grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	(0.30) 0.70	37.86	
								MADE GROUND: Grey CONCRETE.	0.90	37.66	
1								MADE GROUND: Loose brownish grey gravelly slightly silty (ashy) SAND with low cobble content. Gravel is angular fine to coarse of siliceous material and brick. Cobbles are angular of brick.	(0.60)		1
		C	1.50 - 2.00		C	60% 0% 0%		MADE GROUND: CONCRETE recovered as dark grey, grey and reddish brown angular coarse gravel of red brick, siliceous material and concrete with 1no. cobble of angular concrete.	1.50 (0.50)	37.06	
2								MADE GROUND: Brownish grey very sandy silty angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including red brick, concrete and siliceous material.	2.00 2.20	36.56 36.36	2
		D ES	2.30 2.40					Very soft greenish grey CLAY with a moderate hydrocarbon odour, occasional partially decomposed organic material (<5mm) and rare comminuted shell fragments (<5mm). (ALLUVIUM)	(0.80)		
3								2.90-3.00m: Slightly gravelly slightly sandy clay. Gravel is angular to sub-angular fine to coarse siliceous material.	3.00	35.56	3
		ES	3.50					Light brown very sandy very clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material with a moderate hydrocarbon odour and free product (black). (KEMPTON PARK GRAVEL) 3.50-3.80m: Dark grey with a strong hydrocarbon odour.	(0.80)		
		B	3.80 - 4.50					Light brown very sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.80	34.76	
4		ES	4.20						(0.70)		4
								Borehole completed at 4.50m	4.50	34.06	
5											5
6											6

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit and geology to 1.50m: See BH1003A. Waterflush rotary coring (146mm) : 1.50-2.00m. Dynamic sampling using 128mm and 113mm sample barrels: 2.00-4.50m.
CASING: 140mm diameter to 4.50m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 4.50-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of BH1003A. PID readings taken on all environmental samples. Results: 2.40m - 5.70ppm; 3.50m - 5.80ppm; 4.20m - 6.90ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
12/02/2018 17:00	4.50	4.50	

CC ROTARY LOG C5925.GPJ CCGI GINT STD AGS 4_0.GDT 9/3/18

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Borehole No. **BH2004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174137	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.76mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.10	38.66	
								MADE GROUND: Brown very sandy slightly clayey angular to sub-rounded fine to coarse GRAVEL mixed lithologies including concrete, red brick, chalk and siliceous material.	(0.40)		
		C	0.50 - 1.80			100% 21% 0%		MADE GROUND: CONCRETE recovered as light brown very sandy silty angular to sub-angular cobbles of concrete, red brick and siliceous material.	0.50	38.26	
								MADE GROUND: CONCRETE recovered as angular to sub-angular cobbles of concrete with little very sandy angular fine to coarse gravel of red brick, siliceous material and concrete.	(0.40)		
1					C			1.40-1.60m: Red brick masonry recovered as reddish brown very sandy silty angular to sub-angular fine to coarse gravel of red brick.	0.90	37.86	1
		C	1.80 - 2.90			100% 100% 100%		MADE GROUND: Light grey matrix supported CONCRETE. Aggregate is angular to rounded fine to coarse of red brick and siliceous material. 1.80-3.40m: Drill induced discontinuities are horizontal closely to medium spaced undulating and stepped rough.	(0.90)		
2					C				1.80	36.96	2
									(1.70)		
3		C	2.90 - 3.50		C	100% 83% 83%					3
		B	3.50 - 5.00					3.40-3.50m: Recovered non intact as angular fine to carse gravel of red brick and concrete. Light brown very sandy slightly silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.50	35.26	
4		ES	4.00						(1.50)		4
5								Borehole completed at 5.00m	5.00	33.76	5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See BH1003C. Dry drill rotary coring using 150mm coring barrel: 0.50-1.80m. Waterflush rotary coring using T6-116 coring barrel: 1.80-3.50m. Dynamic sampling using 98mm sample barrels: 3.50-5.00m.
CASING: 140mm diameter to 1.80m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: 50mm ID HDPE slotted pipe with washed gravel response zone: 3.80-3.30m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.30-3.10m, bentonite pellet seal: 3.10-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of BH1003C. On completion, hole collapsed to 3.80m as unable to advance casing. PID readings taken on all environmental samples. Results: 4.00m - 0.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
13/02/2018 17:00	5.00	1.80	

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Borehole No. **BH2005**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174113	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.65mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.			
								MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	0.15 (0.35)	38.50	
		C ES B	0.50 - 1.20 0.60 0.70 - 0.95		C	100% 0% 0%		MADE GROUND: Concrete and red brick cobbles recovered as greyish brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of concrete, red brick, siliceous material and asphalt with 2no. angular cobbles of red brick and concrete.	0.50 (0.45)	38.15	
1		ES D	0.95 1.05					MADE GROUND: Very soft slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse chalk, siliceous material and red brick.	0.95 (0.90)	37.70	1
		ES ES	1.75 1.90					MADE GROUND: Dark grey very sandy clayey angular to sub-angular fine to coarse GRAVEL of red brick and siliceous material with visible hydrocarbons.	1.85 (0.30)	36.80	
2		D ES	2.30 2.40					Very soft dark green locally dark grey slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm). Gravel is sub-rounded fine to medium of siliceous material. (ALLUVIUM) 2.50-3.30m: Limited recovery: slightly sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse siliceous material.	2.15 (1.15)	36.50	2
3		D B	3.20 3.30 - 5.00					Light brown very sandy slightly silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.30 (1.70)	35.35	3
4											4
5								Borehole completed at 5.00m	5.00	33.65	5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1018. Dry drill rotary coring using 150mm coring barrel: 0.50-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 150mm diameter casing to 1.20m and 140mm diameter casing to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 3.00-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-1.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 1.00-0.95m and bentonite pellet seal: 0.95-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1018. PID readings taken on all environmental samples. Results: 0.60m - 2.80ppm; 0.95m -4.00ppm; 1.75m - 4.00ppm; 1.90m - 3.40ppm; 2.40m - 2.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
14/02/2018 17:00	5.00		

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ROTARY BOREHOLE LOG

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Borehole No. **BH2006**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471564 N 174107	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.49mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 14/02/2018 End: 14/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 1.20			100% 0% 0%		MADE GROUND: Light grey CONCRETE.	0.12	38.37	
								MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	(0.38)		
		ES	0.60		C				0.50	37.99	
		B	0.70 - 0.90					MADE GROUND: Concrete and red brick cobbles recovered as greyish brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of concrete, red brick, siliceous material and asphalt with 3no. angular cobbles of concrete.	(0.40)		
1		B	0.90 - 1.20						0.90	37.59	1
		ES	1.00					MADE GROUND: Dark grey and off white very sandy very silty angular to sub-angular fine to coarse GRAVEL of chalk, siliceous material, concrete and red brick.	(0.30)		
		ES	1.40					MADE GROUND: Very soft slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse chalk, siliceous material and red brick.	1.20	37.29	
		D	1.50						(0.50)		
		ES	1.80					MADE GROUND: Dark grey very sandy clayey angular to sub-angular fine to coarse GRAVEL of red brick and siliceous material with visible hydrocarbons.	1.70	36.79	
2		ES	2.00					Very soft dark green locally dark grey slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm). Gravel is sub-rounded fine to medium of siliceous material. (ALLUVIUM)	1.95	36.54	2
		D	2.20					2.50-3.00m: Limited recovery: slightly sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse of siliceous material.	(1.05)		
		ES	2.40								
3		B	3.30 - 5.00					Light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.00-3.20m: Very clayey. 3.20-3.30m: Clayey. 3.30-3.40m: Slightly clayey.	3.00	35.49	3
4									(2.00)		4
5								Borehole completed at 5.00m	5.00	33.49	5
6											6

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1019. Dry drill rotary coring using 150mm coring barrel: 0.50-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 140mm diameter casing to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 2.00-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 2.00-1.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 1.00-0.95m and bentonite pellet seal: 0.95-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1017. PID readings taken on all environmental samples. Results: 0.60m - 1.80ppm; 1.00m -1.60ppm; 1.40m - 2.30.ppm; 1.80m - 3.10ppm; 2.00m - 3.20ppm; 2.40m - 2.30ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
14/02/2018 17:00	5.00	4.00	

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471584 N 174194	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.26mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B ES	0.10 - 0.20 0.20				MADE GROUND: Black ASPHALT.	0.10	38.16	
		B	0.30 - 0.50				MADE GROUND: Reddish brown and grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and concrete.	0.20 (0.30)	38.06	
		D ES	0.50				MADE GROUND: Greyish brown very sandy clayey angular fine to coarse GRAVEL of brick and concrete. Cobbles are angular of concrete.	0.50	37.76	
		B	0.80 - 1.00				MADE GROUND: Brown to grey slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to medium of brick, siliceous material and concrete.			
1		D ES SPT	1.00 1.20 - 1.65	S 5				(1.20)		
		ES	1.70				1.70m: Slow groundwater seepage. Borehole completed at 1.70m	1.70	36.56	
2										
3										
4										
5										
6										

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-1.70m.
CASING: None used.
GROUNDWATER: Seepage encountered at 1.70m. No rise after 20 minutes.
BACKFILL: On completion, hole backfilled with arisings and the surface reinstated.
REMARKS: Obstruction encountered at 1.70m. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.50m -0.60ppm; 1.00m -0.70ppm; 1.70m -1.50ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	1.70		1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 00:00	1.70	1.70	

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Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **WS1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174182	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.21mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B D ES	0.10 - 0.30 0.20				MADE GROUND: Dark grey ASPHALT.	0.10	38.11	
							MADE GROUND: Reddish brown slightly sandy angular fine to coarse GRAVEL of brick.	0.12	38.09	
		B D ES	0.40 - 0.60 0.50				MADE GROUND: Dark grey very sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick.	(0.98)		
1		B	0.80 - 1.00							1
		D ES D ES SPT	1.00 1.10 1.20 1.20 - 1.65	S<1			MADE GROUND: Light brown to grey sandy angular slightly silty fine to coarse GRAVEL of siliceous material and brick.	1.10 (0.30)	37.11	
							Very soft brown slightly sandy CLAY. (ALLUVIUM)	1.40 (0.35)	36.81	
		D ES	1.70				Very soft greenish grey silty CLAY with moderate organic odour. (ALLUVIUM)	1.75	36.46	
2		SPT	2.00 - 2.45	S<1						2
								(2.05)		
3	1	SPT	3.00 - 3.45	S<1						3
	1	D	3.80				Very soft dark grey organic sandy CLAY. (ALLUVIUM)	3.80 (0.30)	34.41	
4		B SPT	4.00 - 5.00 4.00 - 4.45	S 10			Medium dense becoming dense grey to brown sandy sub-angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.10	34.11	4
								(1.35)		
5		SPT	5.00 - 5.45	S 44						5
							Borehole completed at 5.45m	5.45	32.76	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.89m and rose to 2.99m after a 20 minute monitoring period.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.50m -0.60ppm; 1.00m -0.70ppm; 1.70m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	3.89	4.00	2.99

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	5.45	5.00	2.42

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471603 N 174169	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.37mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Grey ASPHALT.	0.10	38.27	
		B D ES	0.20 - 0.40 0.20				MADE GROUND: Grey very sandy angular fine to coarse GRAVEL of siliceous material and brick.	(0.40)		
		B D ES	0.50 - 0.70 0.60				MADE GROUND: Grey very sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick.	0.50	37.87	
		B	0.80 - 1.00				MADE GROUND: Very soft brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular of siliceous material and brick.	0.70	37.67	
1		D ES SPT	1.00 1.20 - 1.65	S 2				(0.80)		1
							Very soft brown mottled grey slightly sandy CLAY. (ALLUVIUM)	1.50	36.87	
		D	1.80					(0.50)		
2		ES SPT	2.00 2.00 - 2.45	S 3			Very soft greenish grey mottled brown slightly sandy CLAY with moderate organic odour. (ALLUVIUM)	2.00	36.37	2
	1									
3		D SPT	3.00 3.00 - 3.45	S<1				(1.70)		3
	1	D	3.70				Grey very sandy slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.70	34.67	
4		B D SPT	4.00 - 5.00 4.00 4.00 - 4.45	S 25			Medium dense grey to brown sandy sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.90	34.47	4
								(1.55)		
5		SPT	5.00 - 5.45	S 38						5
							Borehole completed at 5.45m	5.45	32.92	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.71m and rose to 2.67m after a 20 minute monitoring period.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.45-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.60m -0.70ppm; 1.00m -0.90ppm; 2.00m -0.20ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	3.71	4.00	2.67

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	5.45	5.00	2.43

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Borehole No. **WS1005A**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471614 N 174146	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.17mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 09/02/2018 End: 09/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Dark grey ASPHALT.			
		B	0.25 - 0.45					0.25	37.92	
		ES	0.30				MADE GROUND: Reddish brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material.	0.45	37.72	
		B	0.45 - 0.60				MADE GROUND: Reddish brown and grey sandy clayey fine to coarse GRAVEL of siliceous material and brick.	0.60	37.57	
		ES	0.50				Very loose greyish brown slightly sandy clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material. (ALLUVIUM)			
		B	0.80 - 1.20							
1		ES	1.00					(1.00)		1
		SPT	1.20 - 1.65	S 4						
		ES	1.50				Very soft bluish grey mottled brown slightly sandy CLAY with occasional shell fragments (<5mm). (ALLUVIUM)	1.60	36.57	
		D	1.90							
2	▽1	SPT	2.00 - 2.45	S 3						2
	▼1							(2.40)		
3		D	2.90							3
		SPT	3.00 - 3.45	S<1						
		D	3.90							
4		SPT	4.00 - 4.45	S 37			Dense brown sandy clayey angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.00	34.17	4
		B	4.30 - 4.65					(0.65)		
		B	4.65 - 5.00				Dense light brown sandy angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.65	33.52	
5		SPT	5.00 - 5.45	S 41				(0.80)		5
							Borehole completed at 5.45m	5.45	32.72	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 2.76m and rose to and levelled out at 2.22m after a 15 minute monitoring period.
INSTALLATION: Bentonite seal 5.45-2.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 2.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.40ppm; 0.50m -0.80ppm; 1.00m -1.40ppm; 1.50m -0.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
09/02/18	2.76	3.00	2.22

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
08/02/2018 17:00	5.45	5.00	2.29

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1006**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471608 N 174137	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.19mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 08/02/2018 End: 08/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Dark grey ASPHALT.			
		B D ES	0.20 - 0.40 0.30 0.40 - 0.60				MADE GROUND: Grey and reddish brown sandy angular fine to coarse GRAVEL of siliceous material.	0.20 (0.40)	37.99	
		B D ES B	0.50 0.60 - 0.90				MADE GROUND: Brown and greyish brown sandy angular to sub-angular fine to coarse GRAVEL of siliceous material, brick and concrete with rare geotextile membrane fragments (<80mm).	0.60	37.59	
1		D ES SPT	1.00 1.20 - 1.65	S 3				(1.00)		1
							Very soft bluish grey mottled brown slightly sandy CLAY. (ALLUVIUM)	1.60	36.59	
2		D ES SPT	1.90 2.00 - 2.45	S<1				(1.40)		2
		D	2.40							
3	▽1	B SPT	3.00 - 3.75 3.00 - 3.45	S 18			Medium dense brown and greyish brown sandy sub-angular to sub-rounded fine to medium GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.00 (0.75)	35.19	3
	▽1						Dense light brown sandy slightly silty sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.75	34.44	
4		SPT	4.00 - 4.45	S 41						4
		B	4.40 - 5.00					(1.70)		
5		SPT	5.00 - 5.45	S 30						5
							Borehole completed at 5.45m	5.45	32.74	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.36m and rose to 2.94 after 20 minutes.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.30m -0.10ppm; 0.50m -0.30ppm; 1.00m -0.20ppm; 1.90m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
07/02/18	3.36		2.94

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	3.45	3.00	3.36
08/02/2018 08:00	3.45	3.00	2.28
08/02/2018 17:00	5.45	5.00	2.32

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1007**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471593 N 174138	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.38mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 05/02/2018 End: 05/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B D ES	0.10 - 0.20 0.15 0.20 - 0.50				MADE GROUND: ASPHALT.	0.10	38.28	
		B D ES	0.45				MADE GROUND: Brown sandy silty angular to sub-rounded fine to medium GRAVEL of siliceous material.	0.20 (0.30)	38.18	
							MADE GROUND: Grey sandy slightly silty angular fine to coarse of GRAVEL of brick, concrete and siliceous material.	0.50	37.88	
							MADE GROUND: Brown sandy clayey GRAVEL of siliceous material and chalk.			
1	1	B D ES SPT	1.00 - 1.20 1.00 1.20 - 1.65	S 1				(1.20)		1
							Grey mottled orangish brown gravelly CLAY. (ALLUVIUM)	1.70	36.68	
2		D ES SPT	2.00 2.00 - 2.45	S 4				(0.60)		2
							Orangish brown and grey sandy clayey GRAVEL. (KEMPTON PARK GRAVEL)	2.30	36.08	
								(1.00)		
3		D SPT	3.00 3.00 - 3.45	S 11			3.00m: Medium dense.			3
		B	3.30 - 3.70				Dense brown sandy GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.30	35.08	
4		B SPT	4.00 - 5.00 4.00 - 4.45	S 30				(2.15)		4
5		SPT	5.00 - 5.45	S 34						5
							Borehole completed at 5.45m	5.45	32.93	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 1.10m. No rise is recorded.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.15m -0.20ppm; 0.45m -0.40ppm; 1.00m -0.30ppm; 2.00m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
05/02/18	1.10		

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	5.45	5.00	2.48

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INSPECTION PIT LOG

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Pit No **WS1008**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471586 N 174141 Level: 38.42mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.55m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.10		MADE GROUND: Dark grey ASPHALT.			
		B	0.10 - 0.25		MADE GROUND: Light brown very sandy angular fine to coarse GRAVEL of siliceous material and brick.	0.08	38.34	
		D ES	0.20			(0.22)		
		B	0.30 - 0.50		MADE GROUND: Dark grey sandy silty (ashy) GRAVEL with low cobble content. Cobbles are angular of red brick.	0.30	38.12	
		D ES	0.45		0.50m: Concrete across base of pit.	(0.25)		
					Inspection pit completed at 0.55m	0.55	37.87	
1								1
2								2

DRAFT

EQUIPMENT: Hand digging tools. Terrier 2002 track mounted rig.

METHOD: Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.00-0.10m. Hand dug inspection pit: 0.10-0.55m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.55-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2001. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.45m -0.10ppm.

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INSPECTION PIT LOG

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Pit No **WS1009**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471577 N 174143 Level: 38.37mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.25m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.10		MADE GROUND: Dark grey ASPHALT.	(0.10)		
		B	0.10 - 0.25		MADE GROUND: Grey and brown very sandy silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.10	38.27	
		D ES	0.20			(0.15)		
					0.25m: Concrete across base of pit. Inspection pit completed at 0.25m	0.25	38.12	
1								1
2								2

DRAFT

EQUIPMENT: Hand digging tools. Terrier 2002 track mounted rig.

METHOD: Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.00-0.10m. Hand dug inspection pit: 0.10-0.25m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.25-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2002. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm.

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INSPECTION PIT LOG

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Pit No **WS1013**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471560 N 174180 Level: 38.54mAOD	Date 08/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.80m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: ASPHALT.	(0.10)		
						0.10	38.44	
		B	0.15 - 0.40		MADE GROUND: Grey angular COBBLES of concrete with some slightly sandy angular fine to coarse gravel of concrete and brick.			
		ES	0.20					
		B	0.40 - 0.70			(0.70)		
		ES	0.60					
					Inspection pit completed at 0.80m	0.80	37.74	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.80-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete cobbles and boulders. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.60m -0.30ppm.

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Pit No **WS1013A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471560 N 174180 Level: 38.54mAOD	Date 09/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.55m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: ASPHALT.	(0.10)		
					MADE GROUND: Grey angular COBBLES of concrete with some slightly sandy angular fine to coarse gravel of concrete and brick.	0.10	38.44	
						(0.45)		
					Inspection pit completed at 0.55m	0.55	37.99	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.55m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.55-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete cobbles and boulders.

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Pit No **WS1017**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471564 N 174107 Level: 38.49mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.50m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B	0.00 - 0.12		MADE GROUND: Light grey CONCRETE.	(0.12)		
		B	0.12 - 0.40		MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	0.12	38.37	
		D ES	0.40			(0.38)		
					Inspection pit completed at 0.50m	0.50	37.99	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.50m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.50-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2006. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm.

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INSPECTION PIT LOG

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Pit No **WS1018**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174113 Level: 38.65mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.50m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B	0.07 - 0.20		MADE GROUND: Dark grey ASPHALT.	(0.15)		
		D ES B	0.15 0.20 - 0.45		MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	0.15	38.50	
		D ES	0.40			(0.35)		
					Inspection pit completed at 0.50m	0.50	38.15	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.50m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.50-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2005. See separate sheet. PID readings taken on all environmental samples. Results: 0.15m -0.20ppm; 0.40m -0.10ppm.

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WINDOWLESS SAMPLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **WS1019**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174069	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.32mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 07/02/2018 End: 07/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B ES B	0.10 - 0.25 0.20 0.25 - 0.50				MADE GROUND: Dark grey ASPHALT.	0.10	38.22	
							MADE GROUND: Grey and reddish brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material.	0.25	38.07	
		ES	0.50				MADE GROUND: Brown and greyish brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of siliceous material, brick and concrete with low cobble content. Cobbles are angular brick.	(0.75)		
1		B D ES SPT	1.00 - 1.20 1.10 1.20 - 1.65	S<1			MADE GROUND: Very soft brown gravelly sandy CLAY. Gravel is angular to sub-angular fine to coarse of siliceous material, brick and concrete.	1.00	37.32	1
								(0.70)		
		D ES	1.80				Very soft firm greenish grey slightly gravelly slightly sandy CLAY. Gravel is sub-angular fine to medium of siliceous material. (ALLUVIUM)	1.70	36.62	
2		SPT	2.00 - 2.45	S<1				(0.78)		2
	1	D	2.40				Medium dense light brown very sandy slightly silty sub-angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	2.48	35.84	
3		SPT	3.00 - 3.45	S 11						3
4		D SPT	4.00 4.00 - 4.45	S 15				(2.97)		4
5		SPT	5.00 - 5.45	S 25						5
							Borehole completed at 5.45m	5.45	32.87	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 2.48m and rose to and leveling out at 2.36m after 15 minutes.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.50m -0.30ppm; 1.10m -0.10ppm; 1.80m - 0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
07/02/18	2.48	3.00	2.36

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	5.45	5.00	2.44

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TRIAL PIT LOG

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Pit No **TP1001**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471567 N 174208 Level: 38.13mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.10m Depth 1.20m, 0.60m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B D ES	0.20		MADE GROUND: Dark brown slightly gravelly sandy silty CLAY with frequent roots and rootlets (<20mm) and rare fragments (<60mm) of pottery. Gravel is angular to sub-angular fine to coarse of siliceous material, concrete and red brick.	(0.40)		
		B ES	0.50		MADE GROUND: Dark greyish brown, grey and reddish brown COBBLES of concrete, red brick and slag with low boulder content and much very gravelly slightly clayey sand. Gravel is angular to sub-angular fine to coarse of mixed lithologies including red brick, concrete and siliceous material. Boulders are angular of concrete and intact red brick masonry (<400mm).	0.40 (0.40)	37.73	
1		B D ES	1.00		MADE GROUND: Firm light brown mottled greyish brown slightly gravelly slightly sandy CLAY with rare roots and rootlets (<5mm). Gravel is angular to sub-rounded fine to coarse of red brick, concrete and siliceous material. 0.80m: Light grey concrete slab with red brick masonry across large are of pit. 1.20m: 1no. black cable (Intact) approximately 50mm diameter orientated approximately Southwest - Northeast. 1.20m: Dry. Trial pit completed at 1.20m	0.80 (0.40) 1.20	37.33 36.93	
2								
3								
4								
5								
6								

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -1.90ppm; 1.50m -2.00ppm; 1.00m - 2.60ppm. Trial pit terminated at 1.20m due to buried service at 1.20m.

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Pit No **TP1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471604 N 174164 Level: 38.36mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.70m Depth 4.00m, 2.00m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing: No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.31	
					MADE GROUND: CONCRETE.	0.15	38.21	
		B ES	0.30		MADE GROUND: Brown very sandy very silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with medium cobble content and rare fragments (<50mm) of metal. Cobbles are angular to sub-angular of red brick and concrete.	0.35	38.01	
						0.50	37.86	
					MADE GROUND: CONCRETE.	(0.60)		
		B ES	0.80		MADE GROUND: Brown, grey and reddish brown COBBLES of red brick and concrete with much very sandy very silty angular to rounded fine to coarse gravel of red brick, siliceous material and concrete.			
1					0.50-1.10m: Intact red brick masonry in Northern pit wall.	1.10	37.26	1
					MADE GROUND: Brown very sandy very clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material, red brick and chalk.	(0.50)		
		B ES	1.40		1.40-1.60m: Tending to slightly sandy gravelly clay.			
						1.60	36.76	
		B D ES	1.70		Very soft dark green slightly sandy silty CLAY with moderate organic odour and rare comminuted shell fragments (<5mm). (ALLUVIUM)			
2						(0.80)		2
						2.40	35.96	
		B D	2.50		Very soft bluish green mottled light grey silty calcareous CLAY with rare partially decomposed organic material (<5mm), occasional comminuted shell fragments (<5mm) and a moderate organic odour. (ALLUVIUM)			
3						(1.60)		3
		B D	3.50					
4	1.1	D	3.90		3.90-4.00m: 1no. lens of light grey and off white very clayey sand with frequent comminuted shell fragments (<5mm).	4.00	34.36	4
					4.00m: Slow groundwater seepage.			
					Trial pit completed at 4.00m			
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Slow groundwater seepage encountered at 4.00m.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -2.50ppm; 0.80m -3.40ppm; 1.40m - 4.10ppm; 1.70m -3.50ppm. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174149 Level: 38.35mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 0.35m, 1.80m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.30	
					MADE GROUND: CONCRETE.	0.10	38.25	
		B ES	0.30		MADE GROUND: Reddish brown very sandy silty angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including concrete, red brick and siliceous material with high cobble content. Cobbles are angular to sub-angular of red brick and concrete. 0.30m: Historic concrete foundations with rolled steel joists (~200mm). 0.30-0.35m: Attempt to break through concrete obstruction. Concrete extending bellow extent of JCB pecker. 0.35m: 1no steel plate (exposed 1.40mx0.80m) - Possible earthing plate. 0.35m: Dry.	0.35	38.00	
					Trial pit completed at 0.35m			

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -1.80ppm. Trial pit terminated at 0.35m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471580 N 174166 Level: 38.29mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 4.20m, 2.10m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing: No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.24	
					MADE GROUND: CONCRETE.	(0.30)		
						0.35	37.94	
		B ES	0.40		MADE GROUND: Brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with a medium cobble content. Cobbles are angular of red brick.	0.50	37.79	
		B ES	0.60		MADE GROUND: Off white and brown sandy very clayey angular to sub-rounded fine to coarse GRAVEL of chalk, red brick and siliceous material.	0.75	37.54	
1		B D ES	1.00		MADE GROUND: Very soft dark green and bluish grey slightly gravelly slightly sandy silty calcareous CLAY with a slight organic odour. Gravel is angular to sub-angular fine to coarse of red brick.	(0.55)		1
		B D ES	1.50		Very soft dark green and dark brownish grey silty calcareous CLAY with rare shell fragments (<5mm) and a strong organic odour. (ALLUVIUM)	1.30	36.99	
						(0.70)		
2					Very soft bluish green mottled light grey silty calcareous CLAY with a strong organic odour and rare partially decomposed organic material (<5mm). (ALLUVIUM)	2.00	36.29	2
		B D	2.50			(1.10)		
3	1				Very soft greenish grey mottled greenish brown and light grey slightly sandy silty calcareous CLAY with occasional comminuted shell fragments (<5mm). (ALLUVIUM)	3.10	35.19	3
		B D	3.50			(1.10)		
4	1				Trial pit completed at 4.20m	4.20	34.09	4
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Groundwater encountered at 3.90m rising to 3.40m after a 10 minute monitoring period.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.40m -0.70ppm; 0.60m -1.30ppm; 1.00m - 1.50ppm; 1.50m - 4.20ppm. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1005**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471567 N 174159 Level: 38.41mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 2.60m Depth 1.10m 2.20m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.36	
					MADE GROUND: CONCRETE.	0.15	38.26	
		B ES	0.30		MADE GROUND: Brown and reddish brown COBBLES of angular red brick and concrete with much very sandy very silty angular to sub-angular fine to coarse gravel of red brick, concrete, slag and siliceous material.	(0.95)		
		B ES	0.70		0.80m: 1no. broken black metal pipe (~80mm diameter) orientated approximately East to West.			
1					Trial pit completed at 1.10m	1.10	37.31	
2								
3								
4								
5								
6								

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -0.40ppm; 0.70m -2.00ppm. Trial pit terminated at 1.10m due to buried service at 1.20m. Trial pit terminated at 0.35m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1006**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471565 N 174172 Level: 38.44mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 2.40m, 2.00m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.39	
					MADE GROUND: CONCRETE.	0.15	38.29	
		B ES	0.30		MADE GROUND: Brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with a medium cobble content. Cobbles are angular of red brick.	(0.30) 0.45	37.99	
		B ES	0.50		MADE GROUND: Light brown very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material, red and yellow brick.	0.60	37.84	
		B ES	0.70		MADE GROUND: Off white and light brown slightly sandy very silty angular to sub-rounded fine to coarse GRAVEL of chalk and siliceous material with high cobble content. Cobbles are sub-angular to sub-rounded of chalk and siliceous material.			
1					0.90-1.10m: Light brown and reddish brown very sandy clayey angular to sub-angular gravel of siliceous material, red brick and concrete with a high cobble content. Cobbles are angular to sub-angular of red brick.	(1.30)		1
		B ES	1.50		1.10-1.90m: Low cobble content.			
	1				Very soft dark green and dark grey CLAY with strong organic odour. (ALLUVIUM)	1.90	36.54	
2						(0.50)		2
	1	B D ES	2.20		Trial pit completed at 2.40m	2.40	36.04	
3								3
4								4
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Groundwater encountered at 2.40m rising to 2.30m after a ten minute monitoring period. Slow groundwater seepage encountered at 1.90m.

STABILITY: Trial pit collapsing from 1.10-1.90m.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -1.20ppm; 0.50m -1.20ppm; 0.70m - 1.40ppm; 1.50m - 0.70ppm; 2.20m - 1.70ppm. Trial pit terminated at 2.40m due to undermining of surface hardstanding. Surface reinstated on 13/02/2018.

CC GROUND INVESTIGATIONS LTD

TRIAL PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **TP1007**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471545 N 174170 Level: 38.70mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 2.80m Depth 0.70m 2.20m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.65	
					MADE GROUND: CONCRETE.	0.10	38.60	
		B ES	0.20		MADE GROUND: Brown very sandy very silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with medium cobble content and rare fragments (<50mm) of metal. Cobbles are angular to sub-angular of red brick and concrete.	(0.40)		
		B ES	0.50		0.30m: Historic concrete foundations.	0.50	38.20	
					MADE GROUND: Firm light brown slightly gravelly sandy silty CLAY with a moderate hydrocarbon odour. Gravel is angular to sub-angular fine to coarse of red brick, siliceous material, chalk and concrete.	0.70	38.00	
					Trial pit completed at 0.70m			

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pits excavated using 0.60m backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -3.20ppm; 0.70m -5.20ppm. Trial pit terminated at 0.70m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

CC GROUND INVESTIGATIONS LTD

TRIAL PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **TP1008**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471546 N 174157 Level: 38.69mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.10m Depth 1.70m, 1.50m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.64	
					MADE GROUND: CONCRETE.	(0.30)		
						0.35	38.34	
		B ES	0.40		MADE GROUND: Gray and light brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of mixed lithologies including concrete, red brick and siliceous material with high cobble content. Cobbles are angular to sub-angular of concrete and red brick.	(0.35)		
						0.70	37.99	
1		B ES	0.80		MADE GROUND: Firm light brown slightly gravelly sandy silty CLAY. Gravel is angular to sub-angular fine to coarse of chalk, siliceous material, red brick and clinker. 0.75-1.10m: 1no. pocket of dark grey and grey ash. 1.00-1.70m: With pockets (<0.5m) of off white slightly sandy very silty angular to sub-angular fine to coarse gravel of chalk and siliceous material.	(1.00)		
		B D ES	1.50					
					1.70m: Dry. Trial pit completed at 1.70m	1.70	36.99	
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DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally unstable and collapse from 1.20-1.70m.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.40m -1.70ppm; 0.80m -0.60ppm; 1.50m - 1.40ppm. Trial pit terminated at 1.20m due to buried service at 1.20m. Trial pit terminated at 1.70m due to undermining surface hardstanding. Surface reinstated on 13/02/2018.

Omnia Environmental Consulting
10 Manor Court
2 Barnes Wallis Road
Fareham
PO15 5TH

Borehole Log

Borehole No.
WS101
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=4	0.40			MADE GROUND Concrete.
		0.40 - 0.45	ES		0.45			MADE GROUND Soft dark grey slightly silty CLAY. Black staining present.
		0.45 - 0.80	ES	PID=4				MADE GROUND Dark grey SAND AND GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse concrete, brick and asphalt.
				PID=4	0.80			
		0.80 - 1.00	ES					MADE GROUND Dark grey/black slightly silty slightly gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse brick and concrete.
		1.00 - 1.30	ES	PID=10				
				PID=9	1.30			MADE GROUND Soft brown slightly sandy slightly gravelly CLAY. Sand is medium to coarse. Gravel is subangular to subrounded fine to coarse chalk, asphalt and clinker.
		1.30 - 1.50	ES					
				PID=8	1.50			CLAY Soft brown slightly gravelly CLAY. Gravel is subangular to subrounded fine shell fragments.
		1.50 - 1.70	ES					
				PID=6	1.70			CLAY Firm green with black speckling slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to medium chalk, flint and organic matter.
		1.70 - 1.80	ES		1.80			End of borehole at 1.80 m

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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	# Borehole Log	Borehole No. **WS102** Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=4	0.38			MADE GROUND Concrete.
		0.40 - 0.60	ES					
				PID=4	0.60			MADE GROUND Black gravely medium to coarse SAND. Gravel of subangular to subrounded fine to coarse concrete, clinker, asphalt and PACM.
		0.60 - 0.90	ES					MADE GROUND Multicoloured gravelly medium to coarse SAND. Gravel of subangular to subrounded fine to medium clinker, concrete and brick.
				PID=7	0.95			MADE GROUND Light grey SAND AND GRAVEL. Sand is medium to coarse. Gravel is angular to subrounded fine to coarse brick concrete and clinker.
		0.95 - 1.50	ES					
				PID=9				
		1.50 - 2.00	ES					
				PID=10	2.00			CLAY Soft green slightly gravelly slightly silty CLAY. Gravel of subangular to subrounded fine chalk and shell fragments.
		2.00 - 2.40	ES					
					2.40			End of borehole at 2.40 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

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Borehole Log

Borehole No.
WS103
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.70	ES	PID=5	0.40			MADE GROUND Concrete.
		1.20 - 1.40	ES	PID=4				MADE GROUND Grey and SAND AND GRAVEL. Sand is fine to coarse with frequent cobble content of brick, ceramic, clinker asphalt, chalk and concrete.
		1.60 - 1.70	ES	PID=6	1.60			MADE GROUND Soft brown slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse brick, chalk, clinker and flint.
		1.70 - 2.00	ES	PID=3	1.70 1.80			CLAY Soft brown slightly gravelly CLAY . Gravel of subangular to subrounded fine chalk.
					2.00			CLAY Soft green slightly gravelly CLAY. Gravel of subangular to subrounded flint, chalk and shell fragments. End of borehole at 2.00 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS104** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 17/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.70	ES		0.30			MADE GROUND Concrete.
		0.70 - 1.55	ES	PID=3	0.70			MADE GROUND Grey sandy GRAVEL. Sand is medium to coarse. Gravel of subangular to subrounded fine to medium concrete and brick.
		1.55 - 1.75	ES	PID=13	1.55			MADE GROUND Soft brown gravelly CLAY. Gravel subangular to subrounded fine to coarse with frequent cobble of brick, concrete, slate, clinker and flint.
		1.75 - 2.00	ES	PID=2307	1.75			MADE GROUND Firm black slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse flint, brick and concrete.
		2.00 - 2.40	ES	PID=368				CLAY Firm greyish green with black staining present slightly gravelly CLAY. Gravel subangular to subrounded fine, chalk and shell fragments.
					2.40			End of borehole at 2.40 m

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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

AGS

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Borehole Log

Borehole No.
WS105
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 17/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND Concrete.
		0.60 - 0.90	ES	PID=4	0.60			MADE GROUND Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel of subangular to subrounded fine to coarse with frequent cobble content brick, clinker and flint.
		0.90 - 1.30	ES	PID=4				
		1.60 - 1.70	ES					
		1.70 - 1.80	ES	PID=8	1.70			MADE GROUND Soft dark brown/black slightly gravelly CLAY. Gravel of subangular to subrounded fine to medium brick, clinker and flint.
		2.00 - 2.30	ES	PID=3	1.85			CLAY Soft greyish green slightly gravelly CLAY. Gravel of subangular to subrounded fine shell fragments chalk and orangic matter.
					2.30			End of borehole at 2.20 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
Groundwater encountered as strike at 2.2m bgl.

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS106** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND Concrete.
		0.40 - 0.70	ES		0.40			MADE GROUND Red slightly sandy GRAVEL. Sand is medium to coarse. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick.
					0.70			End of borehole at 0.70 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.
Hole terminated due to obstruction at 0.70m bgl.

OMNIA ENVIRONMENTAL CONSULTING Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS107** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.40	ES	PID=0				MADE GROUND Brown slightly silty gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick and concrete.
		0.50 - 1.00	ES	PID=0				
		1.00 - 1.50	ES	PID=1				
					1.50			POOR RECOVERY BETWEEN 1.50- 2.20M BGL.
					2.20			End of borehole at 2.20 m

Remarks
Cleared by Cable Avoidance Tool (CAT)
No groundwater encountered.
Hole terminated due to obstruction at 2.20m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	Borehole Log	Borehole No. **WS108** Sheet 1 of 1

Project Name:	55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location:	SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client:	Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES	PID=0	0.05			MADE GROUND Asphalt cover.
		0.50 - 0.70	ES	PID=0				MADE GROUND Brown slightly clayey gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse brick, concrete and flint.
		0.90 - 1.20	ES	PID=0				
		1.20 - 1.50	ES	PID=3				
		1.50 - 1.70	ES	PID=6	1.50			CLAY Firm greyish green slightly silty slightly gravelly CLAY. Gravel of subangular to subrounded fine flint and orangic material.
		1.80 - 2.00	ES	PID=0				
		2.00 - 2.50	ES					
					2.50			End of borehole at 2.50 m

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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	# Borehole Log	Borehole No. **WS109** Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES	PID=6	0.05			MADE GROUND Asphalt cover.
		0.30 - 0.60	ES	PID=2				MADE GROUND Brown slightly silty gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick, asphalt and concrete.
		0.60 - 0.90	ES	PID=0				
					1.00			End of borehole at 1.00 m

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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.
Hole terminated due to obstruction at 1.00m bgl.

APPENDIX VII

GROUND GAS RESULTS

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH1001	22/02/18	1021	0.0	0.4	17.6	4	0	+0.0/+0.0	2.35	0.2	Standpipe developed by bailing. NAPLs not detected
BH1001	07/03/18	991	0.0	0.5	18.4	1	0	-0.1/+0.0	2.30	0.3	NAPLs detected (film only)
BH1001	22/03/18	1019	0.0	0.8	19.0	2	0	+0.0/+0.0	2.34	1.0	NAPLs not detected
BH1001	04/04/18	989	0.0	1.0	17.8	1	0	+0.0/+0.0	2.07	1.1	NAPLs not detected
BH1001	19/04/18	1020	0.2	0.9	18.9	3	0	+0.0/+0.0	2.29	2.9	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH1002C	22/02/18	1021	1.6	0.3	9.0	0	0	+0.0/+0.2	2.44	0.3	Standpipe developed by bailing. NAPLs not detected
BH1002C	07/03/18	992	0.0	0.2	12.4	0	0	-0.1/-0.0	2.38	0.5	NAPLs not detected
BH1002C	22/03/18	1019	0.0	0.4	13.3	2	0	+0.0/+0.0	2.42	1.3	NAPLs not detected
BH1002C	04/0418	989	0.0	0.2	9.1	5	0	-0.1/-0.0	2.14	1.8	NAPLs not detected. Redish Brown (oxide?) pressent
BH1002C	19/04/18	1020	0.2	0.1	20.9	4	0	+0.0/+0.0	2.37	4.1	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH1003E	22/02/18	1022	0.0	0.2	18.9	5	0	+0.0/+0.0	2.67	0.5	Standpipe developed by bailing. NAPLs not detected
BH1003E	07/03/18	992	0.0	0.3	19.3	4	0	-0.1/+0.0	2.62	0.1	NAPLs detected (film only)
BH1003E	22/03/18	1019	0.0	0.5	20.4	2	0	+0.0/+0.0	2.65	0.7	NAPLs not detected
BH1003E	04/04/18	989	0.0	0.6	19.8	1	0	+0.0/+0.0	2.39	1.0	NAPLs not detected
BH1003E	19/04/18	1021	0.2	0.5	19.5	2	0	+0.0/+0.0	2.61	2.6	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH1004	22/02/18	1020	2.2	4.0	9.3	12	0	-0.3/+0.1	2.22	0.0	Standpipe developed by bailing. NAPLs not detected
BH1004	07/03/18	992	0.2	3.4	14.1	3	0	+0.0/+0.1	2.17	0.1	NAPLs not detected
BH1004	22/03/18	1017	3.0	3.9	6.5	1	0	-0.0/-0.0	2.20	2.6	NAPLs not detected
BH1004	04/04/18	988	1.5	2.4	2.2	1	0	+0.0/+0.0	1.92	0.0	NAPLs not detected
BH1004	19/04/18	1020	0.3	3.5	5.6	3	0	+0.1/+0.0	2.13	4.5	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH1005	22/02/18	1020	0.0	0.3	18.7	4	0	+0.0/+0.0	2.61	0.0	Standpipe developed by bailing. NAPLs not detected
BH1005	08/03/18	991	0.0	0.8	19.0	0	0	-0.5/-0.2	2.56	0.0	Interface meter faulty
BH1005	22/03/18	1016	0.0	1.2	20.1	2	0	-3.1/-0.7	2.60	2.8	NAPLs not detected
BH1005	04/04/18	988	0.0	1.3	19.9	2	0	+4.4/+11.4	2.33	2.6	NAPLs not detected
BH1005	19/04/18	1020	0.2	0.5	21.2	5	0	+0.0/+0.0	2.54	4.7	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2001	22/02/18	1022	0.0	0.0	19.8	1	0	+0.2/+0.5	2.43	0.8	Standpipe developed by bailing. NAPLs not detected
BH2001	07/03/18	992	0.0	0.5	19.7	5	0	-3.7/-1.2	2.39	0.5	NAPLs not detected
BH2001	22/03/18	1018	0.1	1.0	20.7	6	0	-2.8/-0.7	2.41	3.2	NAPLs not detected
BH2001	04/04/18	989	0.1	0.9	20.4	6	0	+4.7/+11.2	2.15	2.9	NAPLs not detected
BH2001	19/04/18										Unable to access due to car parked on top of cover

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2002	22/02/18	1022	0.0	0.0	19.6	4	0	+0.0/+0.0	2.39	2.7	Standpipe developed by bailing. NAPLs not detected
BH2002	07/03/18	991	0.0	0.6	19.6	3	0	-0.1/+0.0	2.35	0.5	NAPLs not detected
BH2002	22/03/18	1018	0.0	0.2	21.1	1	0	+0.0/+0.0	2.38	1.3	NAPLs not detected
BH2002	04/04/18	989	0.0	0.2	20.6	1	0	+0.0/+0.0	2.10	1.4	NAPLs not detected. Redish Brown (oxide?) pressent
BH2002	19/04/18	1020	0.3	0.2	20.9	2	1	-0.1/+0.0	2.15	4.2	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2003	22/02/18	1022	0.0	0.0	19.7	1	0	+0.0/+0.0	2.55	1.9	Standpipe developed by bailing. NAPLs not detected
BH2003	08/03/18	991	0.0	0.2	19.8	4	0	-0.5/-0.3	2.43	0.2	NAPLs not detected
BH2003	22/03/18	1018	0.0	0.6	20.8	4	0	-3.3/-0.9	2.46	3.4	NAPLs not detected
BH2003	04/04/18	989	0.0	0.6	20.7	3	0	+4.7/+11.3	2.21	2.9	NAPLs not detected
BH2003	19/04/18	1021	0.3	0.2	20.4	3	0	+0.1/+0.1	4.53	3.9	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2004	22/02/18	1021	0.0	0.0	19.7	1	0	+0.0/+0.0	2.54	0.5	Standpipe developed by bailing. NAPLs not detected
BH2004	08/03/18	990	0.0	0.3	19.6	4	0	-0.1/-0.0	2.52	0.5	NAPLs detected (film only)
BH2004	22/03/18	1018	0.0	0.6	20.8	3	0	+0.0/+0.0	2.58	1.3	NAPLs not detected
BH2004	04/04/18	989	0.0	0.6	20.6	3	0	+0.0/+0.0	2.25	1.7	NAPLs not detected
BH2004	19/04/18	1021	0.3	0.2	20.5	2	0	-0.0/+0.0	2.53	2.4	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2005	22/02/18	1021	0.0	2.9	11.9	8	0	+0.1/+0.6	2.37	0.6	Standpipe developed by bailing. NAPLs not detected
BH2005	08/03/18	990	0.0	5.4	12.6	4	0	-0.0/+0.0	2.50	1.1	NAPLs not detected
BH2005	22/03/18	1016	0.1	5.3	10.6	1	0	+0.0/+0.0	2.28	1.9	NAPLs not detected
BH2005	04/04/18	989	0.0	6.1	11.3	1	0	-0.0/+0.0	2.06	1.7	NAPLs not detected. Redish Brown (oxide?) pressent
BH2005	19/04/18	1020	0.2	6.8	6.5	4	0	+0.0/+0.1	2.12	6.4	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
BH2006	22/02/18	1021	0.0	0.1	13.1	78	0	+0.0/+0.1	1.63	0.5	Standpipe developed by bailing. NAPLs not detected
BH2006	08/03/18	990	0.0	0.6	12.5	9	0	+0.0	1.60	0.4	NAPLs detected 1.60-2.00m
BH2006	22/03/18	1016	0.0	1.3	11.2	1	0	+0.0/+0.1	1.61	1.7	NAPLs not detected
BH2006	04/04/18	988	0.0	1.9	10.6	1	0	+0.0/+0.0	1.52	1.3	NAPLs not detected
BH2006	19/04/18	1020	0.1	1.6	13.4	8	1	+0.0/+0.1	1.57	5.6	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS1003	22/02/18	1021	0.0	0.6	19.2	0	0	+0.0/+0.1	2.18	0.3	Standpipe developed by bailing. NAPLs not detected
WS1003	07/03/18	990	0.0	0.3	19.8	0	0	+0.0/+0.1	2.13	0.7	NAPLs not detected
WS1003	22/03/18	1019	0.0	1.0	20.6	1	0	+0.0/+0.1	2.17	1.7	NAPLs not detected
WS1003	04/04/18	989	0.0	0.7	20.2	1	0	+0.0/+0.0	1.91	2.7	NAPLs not detected
WS1003	19/04/18	1020	0.2	0.2	21.2	2	0	+0.0/+0.1	2.11	4.6	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS1004	22/02/18	1021	0.0	0.8	19.2	0	0	+0.0/+0.1	2.36	0.6	Standpipe developed by bailing. NAPLs not detected
WS1004	07/03/18	991	0.0	0.6	19.6	0	0	-0.1/-0.0	2.30	1.2	NAPLs not detected
WS1004	22/03/18	1019	0.0	1.0	20.7	0	0	+0.0/+0.0	2.34	1.2	NAPLs not detected
WS1004	04/04/18	989	0.0	1.8	19.0	2	0	-0.0/+0.0	2.07	5.3	NAPLs not detected
WS1004	19/04/18	1020	0.2	0.2	21.5	3	0	+0.0/+0.1	2.30	5.1	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS10005A	22/02/18	1021	0.0	0.0	19.6	1	0	+0.0/+0.1	0.97	0.3	Standpipe developed by bailing. NAPLs not detected
WS10005A	07/03/18	990	0.9	0.0	10.3	0	0	-0.0/+0.0	1.69	0.0	NAPLs not detected
WS10005A	22/03/18	1019	0.0	0.3	15.2	1	0	+0.0/+0.1	1.63	0.9	NAPLs not detected
WS10005A	04/04/18	989	0.0	0.3	9.6	1	0	+0.1/+0.8	1.47	2.9	NAPLs not detected
WS10005A	19/04/18	1020	0.2	0.0	21.6	3	0	-0.0/+0.1	1.37	3.3	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS1006	22/02/18	1021	0.0	0.6	19.1	4	0	+0.0/+0.0	2.22	0.1	Standpipe developed by bailing. NAPLs not detected
WS1006	07/03/18	990	0.0	0.3	19.2	0	0	-0.0/+0.0	2.16	0.1	NAPLs not detected
WS1006	22/03/18	1019	0.0	0.4	21.1	1	0	+0.0/+0.0	1.20	1.1	NAPLs not detected
WS1006	04/04/18	989	0.0	0.5	19.9	4	0	+0.0/+0.0	1.92	2.7	NAPLs not detected
WS1006	19/04/18	1020	0.2	0.1	21.4	3	0	0.0+/+0.1	2.16	3.3	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS1007	22/02/18	1021	0.0	0.3	19.5	5	0	-0.3/-0.1	1.06	0.7	Standpipe developed by bailing. NAPLs not detected
WS1007	07/03/18	990	0.0	0.1	19.6	1	0	-0.3/-0.1	1.02	0.3	NAPLs not detected
WS1007	22/03/18	1018	0.0	0.6	21.2	4	0	-2.2/-0.3	1.06	5.9	NAPLs not detected
WS1007	04/04/18	988	0.0	0.4	21.0	3	0	+0.7/+3.5	1.03	6.2	NAPLs not detected
WS1007	19/04/18	1020	0.3	0.3	21.0	3	0	-0.0/-0.0	1.03	10.3	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

Peak Gas and Groundwater Monitoring

Borehole	Date	Barometric Pressure (mb)	Methane (%)	Carbon Dioxide (%)	Oxygen (min) (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Gas Flow (min/max) (Litres/hour)	Water Level (mbgl)	PID (ppm)	Comments
WS10019	22/02/18	1021	0.0	0.9	18.5	1	0	+0.0/+0.0	2.32	0.7	Standpipe developed by bailing. NAPLs not detected
WS10019	07/03/18	991	0.0	1.5	17.8	1	0	-0.1/-0.0	2.27	0.4	NAPLs not detected
WS10019	22/03/18	1017	0.0	2.0	19.3	1	0	-0.1/+0.0	2.31	1.3	NAPLs not detected
WS10019	04/04/18	989	0.0	0.7	20.5	1	0	-0.1/-0.0	2.04	0.9	NAPLs not detected
WS10019	19/04/18	1021	0.2	1.0	19.6	3	1	+0.1/+0.1	2.27	4.6	NAPLs not detected

CC Ground Investigations Ltd

Contract Name:	SSE Site, Vastern Road, Reading
Contract ID:	C5925
Client:	SSE Plc
Instrument used:	GA5000 Gas Analyser. Geotechnical Instruments dip meter. ATEX approved oil/water interface meter.

APPENDIX VIII

ORIGIN OF GAC VALUES

Constituent	Unit	GAC	Origin of Risk Assessment Value
Arsenic	mg/kg	40	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Arsenic
Boron	mg/kg	11000	LQM CIEH Suitable for Use Levels (S4UL) 2015
Cadmium	mg/kg	85	LQM CIEH Suitable for Use Levels (S4UL) 2015
Chromium VI	mg/kg	6	
Chromium III	mg/kg	910	
Lead	mg/kg	310	Category 4 Screening Level (C4SL) utilising exposure parameters from CLEA SR3 report.
Mercury	mg/kg	56	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Mercury
Nickel	mg/kg	180	LQM CIEH Suitable for Use Levels (S4UL) 2015
Selenium	mg/kg	430	
Copper	mg/kg	7100	
Zinc	mg/kg	40000	
Vanadium	mg/kg	1200	
Phenol	mg/kg	750	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Cyanide	mg/kg	791	CLEA 1.04 OEC Derived Value
Naphthalene	mg/kg	2.3	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM.
Acenaphthylene	mg/kg	2900(Sol)	
Acenaphthene	mg/kg	3000(Sol)	
Fluorene	mg/kg	2800 (sol)	
Phenanthrene	mg/kg	1300 (sol)	
Anthracene	mg/kg	31000(vap)	
Fluoranthene	mg/kg	1500	
Pyrene	mg/kg	3700	
Benzo(a)Anthracene(	mg/kg	11	
Chrysene	mg/kg	30	
Benzo(b)Fluoranthene	mg/kg	3.9	
Benzo(k)Fluoranthene	mg/kg	110	
Benzo(a)Pyrene	mg/kg	3.2	
Indeno(123-cd)Pyrene	mg/kg	45	
Dibenzo(a,h)Anthracene	mg/kg	0.31	
Benzo(ghi)Perylene	mg/kg	360	
Benzene	mg/kg	0.38	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Toluene	mg/kg	869	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM- based on vapour saturation limit.
Ethylbenzene	mg/kg	83	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Xylenes	mg/kg	79	LQM CIEH Suitable for Use Levels (S4UL) 2015 1% SOM p-Xylene
TPH CWG (Speciated)			
Aliphatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as

Constituent	Unit	GAC	Origin of Risk Assessment Value
Aliphatic EC 5-6	mg/kg	42	defined in SR3 (EA 2009) 1% SOM
Aliphatic EC >6-8	mg/kg	100	
Aliphatic EC >8-10	mg/kg	27	
Aliphatic EC >10-12	mg/kg	130(vap)	
Aliphatic EC > 12-16	mg/kg	1100(sol)	
Aliphatic EC > 16-35	mg/kg	65000(sol)	
Aliphatic EC >35-44	mg/kg	65000(sol)	
Aromatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aromatic EC 5-7	mg/kg	370	
Aromatic EC>7-8	mg/kg	860	
Aromatic EC> 8-10	mg/kg	47	
Aromatic EC> 10-12	mg/kg	250	
Aromatic EC> 12-16	mg/kg	1800	
Aromatic EC> 16-21	mg/kg	1900	
Aromatic EC> 21-35	mg/kg	1900	
Aromatic EC> 35-44	mg/kg	1900	
Banded TPH			
Aliphatic EC 5-6	mg/kg	42	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM, utilising the most conservative of the Ali/Aro chain lengths.
Aliphatic EC >6-8	mg/kg	100	
Aliphatic EC >8-10	mg/kg	27	
Aliphatic EC> 10-12	mg/kg	130	
Aliphatic EC> 12-16	mg/kg	1100	
Aromatic EC> 16-21	mg/kg	1900	
Aromatic EC> 21-35	mg/kg	1900	
Aromatic EC> 35-44	mg/kg	1900	

(Sol) - exceeds the solubility saturation limit
(Vap) – exceeds the vapour saturation limit.

Constituent	Unit	GAC	Origin of Risk Assessment Value
Arsenic	mg/kg	640	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Arsenic
Barium	mg/kg	22000	LQM CIEH Suitable for Use Levels (S4UL) 2015
Beryllium	mg/kg	12	
Boron	mg/kg	240000	
Cadmium	mg/kg	190	
Chromium VI	mg/kg	33	
Chromium III	mg/kg	8600	
Lead	mg/kg	2300	Category 4 Screening Level (C4SL) utilising exposure parameters from CLEA SR3 report.
Mercury	mg/kg	1100	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Mercury
Nickel	mg/kg	980	LQM CIEH Suitable for Use Levels (S4UL) 2015
Selenium	mg/kg	12000	
Copper	mg/kg	68000	
Zinc	mg/kg	730000	
Vanadium	mg/kg	9000	
PAH			
Phenol	mg/kg	760	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Cyanide	mg/kg	16200	CLEA 1.04 OEC Derived Value
Naphthalene	mg/kg	190(Sol)	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM.
Acenaphthylene	mg/kg	83,000(Sol)	
Acenaphthene	mg/kg	84,000(Sol)	
Fluorene	mg/kg	63,000(Sol)	
Phenanthrene	mg/kg	22,000	
Anthracene	mg/kg	520,000	
Fluoranthene	mg/kg	23,000	
Pyrene	mg/kg	54,000	
Benzo(a)Anthracene[	mg/kg	170	
Chrysene	mg/kg	350	
Benzo(b)Fluoranthene	mg/kg	44	
Benzo(k)Fluoranthene	mg/kg	1,200	
Benzo(a)Pyrene	mg/kg	35	
Indeno(123-cd)Pyrene	mg/kg	500	
Dibenzo(a,h)Anthracene	mg/kg	3.5	
Benzo(ghi)Perylene	mg/kg	3,900	
Benzene	mg/kg	27	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Toluene	mg/kg	56,000(Vap)	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM- based on vapour saturation limit.
Ethylbenzene	mg/kg	5,700(Vap)	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM- based on vapour saturation limit
Xylenes	mg/kg	5,900(Sol)	LQM CIEH Suitable for Use Levels (S4UL) 2015 1% SOM p-Xylene
TPH CWG (Speciated)			

Constituent	Unit	GAC	Origin of Risk Assessment Value
Aliphatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aliphatic EC 5-6	mg/kg	3,200$^{(Sol)}$	
Aliphatic EC >6-8	mg/kg	7,800$^{(Sol)}$	
Aliphatic EC >8-10	mg/kg	2,000$^{(Sol)}$	
Aliphatic EC >10-12	mg/kg	9,700$^{(Sol)}$	
Aliphatic EC > 12-16	mg/kg	59,000$^{(Sol)}$	
Aliphatic EC > 16-35	mg/kg	1,600,000	
Aliphatic EC >35-44	mg/kg	1,600,000	
Aromatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aromatic EC 5-7	mg/kg	26,000$^{(Sol)}$	
Aromatic EC>7-8	mg/kg	56,000$^{(Vap)}$	
Aromatic EC> 8-10	mg/kg	3,500$^{(Vap)}$	
Aromatic EC> 10-12	mg/kg	16,000$^{(Sol)}$	
Aromatic EC> 12-16	mg/kg	36,000$^{(Sol)}$	
Aromatic EC> 16-21	mg/kg	28,000	
Aromatic EC> 21-35	mg/kg	28,000	
Aromatic EC> 35-44	mg/kg	28,000	
Banded TPH			
Aliphatic EC 5-6	mg/kg	3,200$^{(Sol)}$	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM, utilising the most conservative of the Ali/Aro chain lengths.
Aliphatic EC >6-8	mg/kg	7,800$^{(Sol)}$	
Aliphatic EC >8-10	mg/kg	2,000$^{(Sol)}$	
Aliphatic EC> 10-12	mg/kg	9,700$^{(Sol)}$	
Aliphatic EC> 12-16	mg/kg	36,000$^{(Sol)}$	
Aromatic EC> 16-21	mg/kg	28,000	
Aromatic EC> 21-35	mg/kg	28,000	
Aromatic EC> 35-44	mg/kg	28,000	

(^{Sol}) - exceeds the solubility saturation limit
(^{Vap}) – exceeds the vapour saturation limit.

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.

* The Tier 1 GAC for the hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chainlengths inorder to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(i) Benzo (b) Fluoranthene (3.9mg/kg) Benzo (k) Fluoranthene (110mg/kg)

APPENDIX IX

DQRA INPUT PARAMETERS

DQRA Justification of Input Parameters

Parameter	Value		Data Source
Contaminants Considered	TPH	Aromatic C_{12}-C_{16}	Compounds encountered further to Tier 1 controlled waters assessment
		Aromatic C_{16}-C_{21}	
Target Concentrations (mg/l)	Aromatic C_{12}-C_{16}	9.0E-02	WHO Guidance on Petroleum Products in Drinking Water
	Aromatic C_{16}-C_{21}	9.0E-02	
Air Filled Porosity (fraction)	2.00E-01		estimate based on Domenico & Schwarz, 1990
Water Filled Porosity (fraction)	1.00E-01		estimate based on Domenico & Schwarz, 1990
Bulk Density (g/cm^3)	1.60E+00		Estimate based on mean value for Fluvio-glacial Sediments from Wiedemeir et al, 1995
Henry's Law Constant (dimensionless)	TPH Aromatic		Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 3: Selection of Representative TPH Fractions based on Fate and Transport Considerations, 1997.
	C_{12}-C_{16}	5.58E-02	
	C_{16}-C_{21}	1.34E-02	
Soil water partition co-efficient	N/A		Not applicable for organic compounds.
Fraction of organic carbon (FOC)	1.82E-02 (Made Ground)		Average of values measured for on-site soils.
	2.90E-03 (Kempton Park Gravel)		
Organic carbon partition co-efficient (L/kg)	Aromatic C_{12}-C_{16}	5.01E+03	Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 3: Selection of Representative TPH Fractions based on Fate and Transport Considerations, 1997.
	Aromatic C_{16}-C_{21}	1.58E+04	
Sorption co-efficient	N/A		Not applicable for organic compounds.
Infiltration (m/day)	1.74E-03		Average annual rainfall for Meteorological Office Reading University Weather Station (1981-2010)
Area of contaminant source (m^2)	2.08E+03		Based on site derived information.
Length of contaminant source in direction of groundwater flow (m)	5.50E+01		
Saturated aquifer thickness (m)	6.58E+00		Average saturated thickness of Kempton Park Gravel Formation (KPG) based on Borehole Logs and groundwater monitoring data.

Hydraulic conductivity (m/day)	5.00E+00		Upper-range literature value for a silty SAND (Freeze & Cherry, 1979)
Hydraulic Gradient (fraction)	2.68E-03		Calculated from on-site data indicating a measured fall of 0.12m over a horizontal distance of 44.82m.
Width of source perpendicular to groundwater flow (m)	4.30E+01		Based on Site-derived measurements
Background concentration of contaminant in groundwater beneath the site.	0.0E+00		In order to adopt a conservative approach OEC have assumed that upgradient groundwater is unaffected by the determinands and that all impact is due to the source present on-site.
Mixing zone depth (m)	N/A		Calculated from P20 sheet.
Soil Concentration (mg/kg)	Aromatic C_{12}-C_{16}	3.60E+03	Maximum Soil Concentrations Recorded
	Aromatic C_{16}-C_{21}	3.90E+03	
Half-life for degradation of contaminant in water (t ½) (Days)	Aromatic C_{12}-C_{16}	6.94E+03	Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 3: Selection of Representative TPH Fractions based on Fate and Transport Considerations, 1997.
	Aromatic C_{16}-C_{21}	1.39E+04	
Width of plume in aquifer (m)	4.30E+01		Assumed plume width is equal to width of source area perpendicular to groundwater flow.
Plume thickness in aquifer (m)	6.58E+00		From Level 2
Bulk density of aquifer material (g/cm^3)	1.59E+00		Estimate based on mid-range value for a Gravelly Sand from Wiedermeier *et. al.* (1995)
Effective porosity of aquifer (%)	2.70E-01		Estimate based on mid-range value for a Gravelly Sand from Wiedermeier *et. al.* (1995)
Hydraulic gradient	2.68E-03		Calculated from on-site data indicating a measured fall of 0.12m over a horizontal distance of 44.82m.
Hydraulic Conductivity (m/day)	5.00E+00		Upper-range literature value for a silty SAND (Freeze & Cherry, 1979)
Distance to compliance point from source (m)	9.00E+01		Compliance point calculated as 90m from eastern limit of source area.

Time since pollutant entered groundwater	9.99E+99	Value recommended in RTM guidance to simulate steady state conditions.

APPENDIX X

P20 SHEETS

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions).

Details to be completed for each assessment

Site Name:	**Vastern Road, Reading**			
Site Address:	**55 Vastern Road, Reading, Berkshire, RG1 8BU**			
Completed by:	**Dr. Adrian King**			
Date:	**24-Apr-18**		**Version:**	**1**
Contaminant	**TPH Aro C12-C16**			
Target Concentration (C_T)	**0.09**	**mg/l**	**Origin of C_T:**	**WHO Petroleum Products in Drinking Water**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

Remedial Targets Worksheet , Release 3.2

Level 1 - Soil

Select the method of calculating the soil water Partition Co-efficient by using the pull down menu below

Calculate for non-polar organic chemicals

Contaminant		TPH Aro C12-C16		
Target concentration	C_T	0.09	mg/l	
Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**
Standard entry				
Water filled soil porosity	θ_W	1.00E-01	fraction	
Air filled soil porosity	θa	2.00E-01	fraction	
Bulk density of soil zone material	ρ	1.60E+00	g/cm^3	
Henry's Law constant	H	5.58E-02	dimensionless	
Entry if specify partition coefficient (option)				
Soil water partition coefficient	Kd		l/kg	
Entry for non-polar organic chemicals (option)				
Fraction of organic carbon (in soil)	foc	1.82E-02	fraction	
Organic carbon partition coefficient	Koc	5.01E+03	l/kg	
Entry for ionic organic chemicals (option)				
Sorption coefficient for neutral species	$K_{oc,n}$		l/kg	
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg	
pH value	pH		pH units	
Acid dissociation constant	pKa			
Fraction of organic carbon (in soil)	foc		fraction	
Soil water partition coefficient used in Level Assessment	**Kd**	**9.12E+01**	**l/kg**	*Calculated value*

This sheet calculates the Level 1 remedial target for soils(mg/kg) based on a selected target concentration and theoretical calculation of soil water partitioning. Three options are included for determining the partition coefficient.

The measured soil concentration as mg/kg should be compared with the Level 1 remedial target to determine the need for further action.

Level 1 Remedial Target

Level 1 Remedial Target	**8.22E+00**	**mg/kg**	**(for comparison with soil analyses)**
	or		
	0.09	**mg/l**	**(for comparison with leachate test results)**

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	24-Apr-18
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 2 - Soil

Contaminant		**TPH Aro C12-C16**		from Level 1
Target concentration	**C_T**	**0.09**	**mg/l**	from Level 1

This sheet calculates the Level 2 remedial target for soils (mg/kg) or for pore water (mg/l).

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 2 remedial target to determine the need for further action. Equations presented in 'Hydrogeological risk assessment for land contamiantion' (Environment Agency 2006)

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**	
Standard entry					
Infiltration	Inf	1.74E-03	m/d	**Reading University (635.4mm/yr) https://www.metoffice.g**	
Area of contaminant source	A	2.08E+03	m^2	**Site measurements**	Not used in calculation
Entry for groundwater flow below site					
Length of contaminant source in direction of groundwater flow	L	5.50E+01	m	**Site measurements**	
Saturated aquifer thickness	da	6.58E+00	m	**aturated Thickness from Site Measurements of Groundw**	
Hydraulic Conductivity of aquifer in which dilution occurs	K	5.00E+01	m/d	**e based on Permeability Tests Undertaken in KPG on Si**	
Hydraulic gradient of water table	i	2.68E-04	fraction	**neasurement of 0.012m drop over 44.82m horizontal dist**	
Width of contaminant source perpendicular to groundwater flow	w	4.30E+01	m	**Site measurements**	Not used in calculation
Background concentration of contaminant in groundwater beneath site	Cu	0.00E+00	mg/l	**Assume Zero Concentration**	
Define mixing zone depth by specifying or calculating depth (using pull down list)		**Calculate**			
Enter mixing zone thickness	Mz		m		
Calculated mixing zone thickness	Mz	6.58E+00	m		

Calculated Parameters

Dilution Factor	**DF**	**1.92E+00**		
Level 2 Remedial Target		**1.73E-01**	**mg/l**	**For comparison with measured pore water concentration. This assumes Level 1 Remedial Target is based on Target Concentration.**
		or		
		1.58E+01	**mg/kg**	**For comparison with measured soil concentration. This assumes Level 1 Remedial Target calculated from soil-water**

Additional option

Calculation of impact on receptor

Concentration of contaminant in contaminated discharge (entering receptor)	Cc	0.00E+00	mg/l	
Calculated concentration within receptor (dilution only)		0.00E+00	mg/l	0

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	24-Apr-18
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 3 - Soil

See Note

Input Parameters	Variable	Value	Unit	Source
Contaminant		TPH Aro C12-C16		from Level 1
Target Concentration	C_T	0.09	mg/l	from Level 1
Dilution Factor	DF	1.92E+00		from Level 2

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

Ogata Banks — Equations in HRA publication

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

Approach for simulating degradation of pollutants: **Apply degradation rate to dissolved pollutants only**

	Variable	Value	Unit	Source of parameter value
Enter source concentration		Soil concentration as mg/kg		
Enter soil concentration		3.60E+03	mg/kg	
Half life for degradation of contaminant in water	$t_{1/2}$	6.94E+03	days	*Total Petroleum Hydrocarbon Criteria Working Gr*
Calculated decay rate	λ	9.99E-05	$days^{-1}$	calculated
Width of plume in aquifer at source	Sz	4.30E+01	m	from Level 2
Plume thickness in aquifer at source	Sy	6.58E+00	m	from Level 2
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	
Effective porosity of aquifer	n	2.70E-01	fraction	
Hydraulic gradient	i	5.59E-04	fraction	from Level 2 (adjusted)
Hydraulic conductivity of saturated aquifer	K	5.00E+01	m/d	from Level 2
Distance to compliance point	x	9.00E+01	m	
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+99	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.000	m	*see options*
Transverse dispersivity	az	0.900	m	*see options*
Vertical dispersivity	ay	0.090	m	*see options*

Parameter values should be checked against Level 1 and 2

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.03E-01	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	1.15E-06	d^{-1}
Hydraulic gradient used in aquifer flow down-gradient	i	5.59E-04	fraction
Rate of contaminant flow due to retardation	u	1.20E-03	m/d
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	7.49E-01	fraction
Attenuation factor (C_0/C_{ED})	**AF**	**1.34E+00**	**fraction**
Calculated soil leachate concentration	Co	3.94E+01	mg/l

Remedial Targets

Level 3 Remedial Target		**2.31E-01**	**mg/l**	For comparison with measured pore water concentration.
Ogata Banks		**or**		This assumes Level 1 Remedial Target is based on Target Concentration.
		2.11E+01	**mg/kg**	For comparison with measured soil concentration. This
Distance to compliance point		**90**	**m**	assumes Level 1 Remedial Target calculated from soil-water partitioning equation.
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	**7.49E-01**	**fraction**	Ogata Banks

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

Enter method of defining partition co-efficient (using pull down list)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
Acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

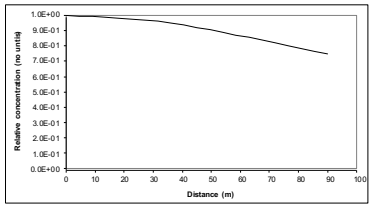
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	m

Note values of dispersivity must be > 0

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

Note
This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by NO_3, SO_4 etc than an alternative solution should be used



Note: 'Relative concentration' is the ratio of calculated concentation at a given position compared to the source concentration. The calculations assume plume disperses from the top of the aquifer. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

This sheet calculates the Level 3 remedial target for soils(mg/kg) or for pore water (mg/l), based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.By setting a long travel time (e.g. 9E99) it will give the steady state solution, which should always be used when calculating remedial targets.

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.9E+99.

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	########
Version:	1

Calculated (relative) concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Relative concentration (No units)	Concentration mg/l
0	1.0E+00	2.05E+01
4.5	9.96E-01	2.04E+01
9.0	9.91E-01	2.03E+01
13.5	9.87E-01	2.03E+01
18.0	9.83E-01	2.02E+01
22.5	9.77E-01	2.01E+01
27.0	9.70E-01	1.99E+01
31.5	9.61E-01	1.97E+01
36.0	9.49E-01	1.95E+01
40.5	9.37E-01	1.92E+01
45.0	9.22E-01	1.89E+01
49.5	9.06E-01	1.86E+01
54.0	8.90E-01	1.83E+01
58.5	8.73E-01	1.79E+01
63.0	8.55E-01	1.75E+01
67.5	8.37E-01	1.72E+01
72.0	8.19E-01	1.68E+01
76.5	8.01E-01	1.64E+01
81.0	7.83E-01	1.61E+01
85.5	7.66E-01	1.57E+01
90.0	7.49E-01	1.54E+01

Remedial Targets Worksheet , Release 3.2

Calculation of contaminant concentration in groundwater from a soil source

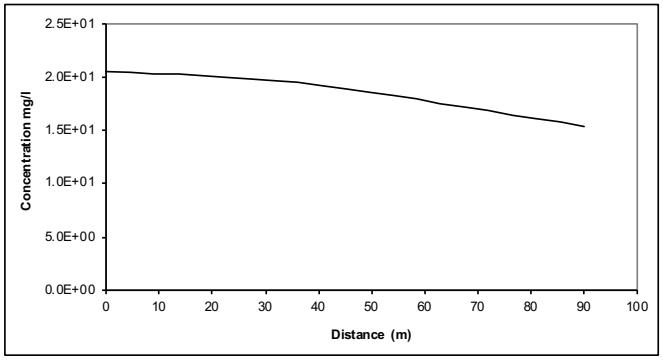
Only input required is Soil Contaminant Concentration

	Input Parameters			
	Soil contaminant concentration	C_0	3.60E+03	mg/kg
Level 1 Parameters				
	Water filled soil porosity	θ_W	1.00E-01	fraction
	Air filled soil porosity	θa	2.00E-01	fraction
	Bulk density	ρ	1.60E+00	g/cm^3
	Henry's Law constant	H	5.58E-02	dimensionless
	Soil water partition coefficient used in Level Assessment	Kd	9.12E+01	l/kg
	Factor (partitioning between soil and water)		9.13E+01	dimensionless
Level 2 Parameters	**Dilution Factor**	DF	1.92E+00	
Level 3 Parameters	**Attenuation factor (C_O/C_{ED})**	AF	1.34E+00	

Predicted concentrations at compliance point

Level 1	C	3.94E+01	mg/l	No dilution or attenuation
Level 2	C	2.05E+01	mg/l	Dilution taken into account
Level 3	C	1.54E+01	mg/l	Dilution and attenuation taken into account

Predicted concentrations between source and compliance point - Level 3



Distance m	Concentration mg/l
0.00	2.05E+01
4.50	2.04E+01
9.00	2.03E+01
13.50	2.03E+01
18.00	2.02E+01
22.50	2.01E+01
27.00	1.99E+01
31.50	1.97E+01
36.00	1.95E+01
40.50	1.92E+01
45.00	1.89E+01
49.50	1.86E+01
54.00	1.83E+01
58.50	1.79E+01
63.00	1.75E+01
67.50	1.72E+01
72.00	1.68E+01
76.50	1.64E+01
81.00	1.61E+01
85.50	1.57E+01
90.00	1.54E+01

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		TPH Aro C12-C16		from Level 1
Target Concentration	C_T	9.00E-02	mg/l	from Level 1

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

Ogata Banks — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

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

Approach for simulating degradation of pollutants: Apply degradation rate to dissolved pollutants only

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	7.30E-01	mg/l	*Maximum Recorded Groundwater Concentration*
Half life for degradation of contaminant in water	$t_{1/2}$	6.94E+03	days	*Total Petroleum Hydrocarbon Criteria Workin*
Calculated decay rate	λ	1.00E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	4.30E+01	m	*Site measurements*
Plume thickness at source	Sy	6.45E+00	m	*From Level 3 Soil*
Saturated aquifer thickness	da	6.58E+00	m	*Average Saturated Thickness from Site Mea*
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	*Estimate based on mid range value for gravelly sand fro*
Effective porosity of aquifer	n	2.70E-01	fraction	*estimate based on mid range value for Gravelly Sand from Wiedemeir et al 1995*
Hydraulic gradient	i	2.68E-04	fraction	*Site measurement of 0.012m drop over 44.82m horizontal distance*
Hydraulic conductivity of aquifer	K	5.00E+01	m/d	*Average value based on Permeability Tests*
Distance to compliance point	x	9.00E+01	m	*Distance to Centre of River Thames from Ea*
Distance (lateral) to compliance point perpendicular to flow direction	z	0.00E+00	m	
Distance (depth) to compliance point perpendicular to flow direction	y	0.00E+00	m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.00E+00	m	*see options*
Transverse dispersivity	az	9.00E-01	m	*see options*
Vertical dispersivity	ay	9.00E-02	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.96E-02	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	1.15E-06	d^{-1}
Rate of contaminant flow due to retardation	u	5.73E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	4.95E-01	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.48E+00**	

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

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	

Note values of dispersivity must be > 0

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

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

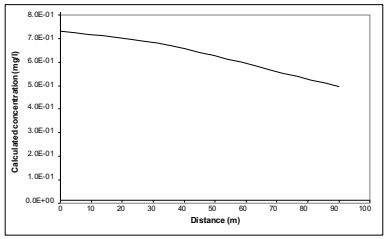
Remedial Targets

Remedial Target		**1.33E-01**	**mg/l**
Ogata Banks			
Distance to compliance point		**90**	**m**
Concentration of contaminant at compliance point	**C_{ED}/C_0**	**4.95E-01**	**mg/l**
after		**1.0E+100**	**days**

For comparison with measured groundwater concentration.

Ogata Banks

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



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

Note

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

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

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

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

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	########
Version:	1

Calculated concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Concentration
	mg/l
0	7.3E-01
4.5	7.24E-01
9.0	7.17E-01
13.5	7.11E-01
18.0	7.04E-01
22.5	6.97E-01
27.0	6.88E-01
31.5	6.78E-01
36.0	6.67E-01
40.5	6.55E-01
45.0	6.41E-01
49.5	6.27E-01
54.0	6.12E-01
58.5	5.97E-01
63.0	5.82E-01
67.5	5.67E-01
72.0	5.52E-01
76.5	5.37E-01
81.0	5.23E-01
85.5	5.09E-01
90.0	4.95E-01

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions).

Details to be completed for each assessment

Site Name:	**Vastern Road, Reading**			
Site Address:	**55 Vastern Road, Reading, Berkshire, RG1 8BU**			
Completed by:	**Dr. Adrian King**			
Date:	**24-Apr-18**		**Version:**	**1**
Contaminant	**TPH Aro C16-C21**			
Target Concentration (C_T)	**0.09**	**mg/l**	**Origin of C_T:**	**WHO Petroleum Products in Drinking Water**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

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Level 1 - Soil

Environment Agency

Select the method of calculating the soil water Partition Co-efficient by using the pull down menu below

Calculate for non-polar organic chemicals

Contaminant		**TPH Aro C16-C21**		
Target concentration	**C_T**	**0.09**	**mg/l**	

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**
Standard entry				
Water filled soil porosity	θ_W	1.00E-01	fraction	Estimate based on Domenico & Schwarz, 1990
Air filled soil porosity	θa	2.00E-01	fraction	Estimate based on Domenico & Schwarz, 1990
Bulk density of soil zone material	ρ	1.60E+00	g/cm^3	
Henry's Law constant	H	1.34E-02	dimensionless	
Entry if specify partition coefficient (option)				
Soil water partition coefficient	Kd		l/kg	
Entry for non-polar organic chemicals (option)				
Fraction of organic carbon (in soil)	foc	1.82E-02	fraction	
Organic carbon partition coefficient	Koc	1.58E+04	l/kg	
Entry for ionic organic chemicals (option)				
Sorption coefficient for neutral species	$K_{oc,n}$		l/kg	
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg	
pH value	pH		pH units	
Acid dissociation constant	pKa			
Fraction of organic carbon (in soil)	foc		fraction	
Soil water partition coefficient used in Level Assessment	**Kd**	**2.88E+02**	**l/kg**	*Calculated value*

This sheet calculates the Level 1 remedial target for soils(mg/kg) based on a selected target concentration and theoretical calculation of soil water partitioning. Three options are included for determining the partition coefficient.

The measured soil concentration as mg/kg should be compared with the Level 1 remedial target to determine the need for further action.

Level 1 Remedial Target

Level 1 Remedial Target	**2.59E+01**	**mg/kg**	**(for comparison with soil analyses)**
	or		
	0.09	**mg/l**	**(for comparison with leachate test results)**

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
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Level 2 - Soil

Contaminant		**TPH Aro C16-C21**		from Level 1
Target concentration	**C_T**	**0.09**	**mg/l**	from Level 1

This sheet calculates the Level 2 remedial target for soils (mg/kg) or for pore water (mg/l).

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 2 remedial target to determine the need for further action. Equations presented in 'Hydrogeological risk assessment for land contamiantion' (Environment Agency 2006)

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**	
Standard entry					
Infiltration	Inf	1.74E-03	m/d		
Area of contaminant source	A	2.08E+03	m^2		Not used in calculation
Entry for groundwater flow below site					
Length of contaminant source in direction of groundwater flow	L	5.50E+01	m		
Saturated aquifer thickness	da	6.58E+00	m		
Hydraulic Conductivity of aquifer in which dilution occurs	K	5.00E+00	m/d		
Hydraulic gradient of water table	i	2.68E-03	fraction		
Width of contaminant source perpendicular to groundwater flow	w	4.30E+01	m		Not used in calculation
Background concentration of contaminant in groundwater beneath site	Cu	0.00E+00	mg/l		
Define mixing zone depth by specifying or calculating depth (using pull down list)		**Calculate**			
Enter mixing zone thickness	Mz		m		
Calculated mixing zone thickness	Mz	6.58E+00	m		

Calculated Parameters

Dilution Factor	**DF**	**1.92E+00**		
Level 2 Remedial Target		**1.73E-01**	**mg/l**	**For comparison with measured pore water concentration. This assumes Level 1 Remedial Target is based on Target Concentration.**
		or		
		4.97E+01	**mg/kg**	**For comparison with measured soil concentration. This assumes Level 1 Remedial Target calculated from soil-water**

Additional option

Calculation of impact on receptor

Concentration of contaminant in contaminated discharge (entering receptor)	Cc	0.00E+00	mg/l	
Calculated concentration within receptor (dilution only)		0.00E+00	mg/l	0

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Level 3 - Soil

See Note

Input Parameters	Variable	Value	Unit	Source
Contaminant		TPH Aro C16-C21		from Level 1
Target Concentration	C_T	0.09	mg/l	from Level 1
Dilution Factor	DF	1.92E+00		from Level 2

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

Ogata Banks — Equations in HRA publication

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

Approach for simulating degradation of pollutants: **Apply degradation rate to dissolved pollutants only**

	Variable	Value	Unit	Source of parameter value
Enter source concentration		Soil concentration as mg/kg		
Enter soil concentration		3.90E+03	mg/kg	
Half life for degradation of contaminant in water	$t_{1/2}$	1.39E+04	days	
Calculated decay rate	λ	4.99E-05	$days^{-1}$	calculated
Width of plume in aquifer at source	Sz	4.30E+01	m	from Level 2
Plume thickness in aquifer at source	Sy	6.58E+00	m	from Level 2
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	
Effective porosity of aquifer	n	2.70E-01	fraction	
Hydraulic gradient	i	5.59E-03	fraction	from Level 2 (adjusted)
Hydraulic conductivity of saturated aquifer	K	5.00E+00	m/d	from Level 2
Distance to compliance point	x	9.00E+01	m	
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+99	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.000	m	*see options*
Transverse dispersivity	az	0.900	m	*see options*
Vertical dispersivity	ay	0.090	m	*see options*

Parameter values should be checked against Level 1 and 2

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.03E-01	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	5.76E-07	d^{-1}
Hydraulic gradient used in aquifer flow down-gradient	i	5.59E-03	fraction
Rate of contaminant flow due to retardation	u	1.20E-03	m/d
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	7.82E-01	fraction
Attenuation factor (C_0/C_{ED})	**AF**	**1.28E+00**	**fraction**
Calculated soil leachate concentration	Co	1.36E+01	mg/l

Remedial Targets

Level 3 Remedial Target		**2.21E-01**	**mg/l**	For comparison with measured pore water concentration.
Ogata Banks		**or**		This assumes Level 1 Remedial Target is based on Target Concentration.
		6.36E+01	**mg/kg**	For comparison with measured soil concentration. This
Distance to compliance point		**90**	**m**	assumes Level 1 Remedial Target calculated from soil-water partitioning equation.
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	**7.82E-01**	**fraction**	Ogata Banks

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

Enter method of defining partition co-efficient (using pull down list)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
Acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

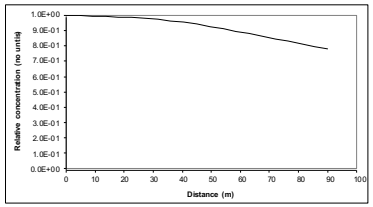
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	m

Note values of dispersivity must be > 0

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

Note
This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by NO_3, SO_4 etc than an alternative solution should be used



Note: 'Relative concentration' is the ratio of calculated concentation at a given position compared to the source concentration. The calculations assume plume disperses from the top of the aquifer. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

This sheet calculates the Level 3 remedial target for soils(mg/kg) or for pore water (mg/l), based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.By setting a long travel time (e.g. 9E99) it will give the steady state solution, which should always be used when calculating remedial targets.

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.9E+99.

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	########
Version:	1

Calculated (relative) concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Relative concentration	Concentration
	(No units)	mg/l
0	1.0E+00	7.06E+00
4.5	9.98E-01	7.04E+00
9.0	9.96E-01	7.03E+00
13.5	9.94E-01	7.01E+00
18.0	9.91E-01	6.99E+00
22.5	9.87E-01	6.97E+00
27.0	9.82E-01	6.93E+00
31.5	9.75E-01	6.88E+00
36.0	9.66E-01	6.82E+00
40.5	9.55E-01	6.74E+00
45.0	9.42E-01	6.65E+00
49.5	9.28E-01	6.55E+00
54.0	9.13E-01	6.44E+00
58.5	8.97E-01	6.33E+00
63.0	8.81E-01	6.22E+00
67.5	8.64E-01	6.10E+00
72.0	8.48E-01	5.98E+00
76.5	8.31E-01	5.86E+00
81.0	8.14E-01	5.75E+00
85.5	7.98E-01	5.63E+00
90.0	7.82E-01	5.52E+00

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Calculation of contaminant concentration in groundwater from a soil source

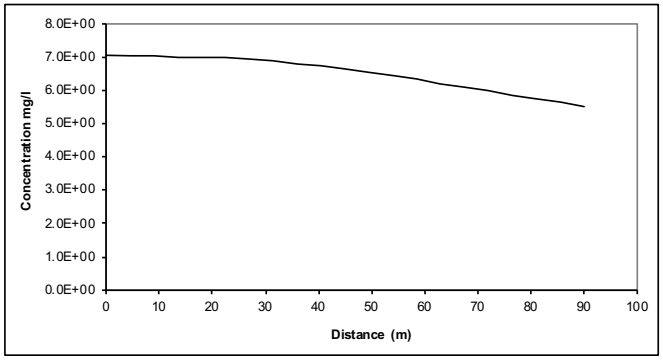
Only input required is Soil Contaminant Concentration

	Input Parameters			
	Soil contaminant concentration	C_0	3.90E+03	mg/kg
Level 1 Parameters				
	Water filled soil porosity	θ_W	1.00E-01	fraction
	Air filled soil porosity	θa	2.00E-01	fraction
	Bulk density	ρ	1.60E+00	g/cm^3
	Henry's Law constant	H	1.34E-02	dimensionless
	Soil water partition coefficient used in Level Assessment	Kd	2.88E+02	l/kg
	Factor (partitioning between soil and water)		2.88E+02	dimensionless
Level 2 Parameters	**Dilution Factor**	DF	1.92E+00	
Level 3 Parameters	**Attenuation factor (C_O/C_{ED})**	AF	1.28E+00	

Predicted concentrations at compliance point

Level 1	C	1.36E+01	mg/l	No dilution or attenuation
Level 2	C	7.06E+00	mg/l	Dilution taken into account
Level 3	C	5.52E+00	mg/l	Dilution and attenuation taken into account

Predicted concentrations between source and compliance point - Level 3



Distance m	Concentration mg/l
0.00	7.06E+00
4.50	7.04E+00
9.00	7.03E+00
13.50	7.01E+00
18.00	6.99E+00
22.50	6.97E+00
27.00	6.93E+00
31.50	6.88E+00
36.00	6.82E+00
40.50	6.74E+00
45.00	6.65E+00
49.50	6.55E+00
54.00	6.44E+00
58.50	6.33E+00
63.00	6.22E+00
67.50	6.10E+00
72.00	5.98E+00
76.50	5.86E+00
81.00	5.75E+00
85.50	5.63E+00
90.00	5.52E+00

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Level 3 - Groundwater

See Note

Input Parameters (using pull down menu) | Variable | Value | Unit | Source

Contaminant		TPH Aro C16-C21		from Level 1
Target Concentration	C_T	9.00E-02	mg/l	from Level 1

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

Ogata Banks — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

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

Approach for simulating degradation of pollutants: Apply degradation rate to dissolved pollutants only

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.70E+00	mg/l	
Half life for degradation of contaminant in water	$t_{1/2}$	1.39E+04	days	
Calculated decay rate	λ	4.99E-05	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	4.30E+01	m	
Plume thickness at source	Sy	6.45E+00	m	
Saturated aquifer thickness	da	6.58E+00	m	
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	
Effective porosity of aquifer	n	2.70E-01	fraction	
Hydraulic gradient	i	2.68E-03	fraction	
Hydraulic conductivity of aquifer	K	5.00E+00	m/d	
Distance to compliance point	x	9.00E+01	m	
Distance (lateral) to compliance point perpendicular to flow direction	z	0.00E+00	m	
Distance (depth) to compliance point perpendicular to flow direction	y	0.00E+00	m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	4.58E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.00E+00	m	*see options*
Transverse dispersivity	az	9.00E-01	m	*see options*
Vertical dispersivity	ay	9.00E-02	m	*see options*

Calculated Parameters | Variable

Groundwater flow velocity	v	4.96E-02	m/d
Retardation factor	Rf	2.71E+02	fraction
Decay rate used	λ	1.84E-07	d^{-1}
Rate of contaminant flow due to retardation	u	1.83E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{CED}	2.00E+00	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.35E+00**	

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

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	1.58E+04	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	4.58E+01	l/kg

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

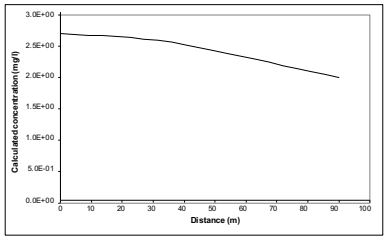
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	

Note values of dispersivity must be > 0

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

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



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

Note

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

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

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

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

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

Calculated concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Concentration
	mg/l
0	2.7E+00
4.5	2.69E+00
9.0	2.68E+00
13.5	2.66E+00
18.0	2.65E+00
22.5	2.63E+00
27.0	2.61E+00
31.5	2.59E+00
36.0	2.56E+00
40.5	2.52E+00
45.0	2.48E+00
49.5	2.43E+00
54.0	2.39E+00
58.5	2.34E+00
63.0	2.29E+00
67.5	2.24E+00
72.0	2.19E+00
76.5	2.14E+00
81.0	2.09E+00
85.5	2.05E+00
90.0	2.00E+00

Remedial Targets

Remedial Target		**1.22E-01**	**mg/l**	For comparison with measured groundwater concentration.
Ogata Banks				
Distance to compliance point		**90**	**m**	
Concentration of contaminant at compliance point	C_{ED}/C_0	**2.00E+00**	**mg/l**	Ogata Banks
after		**1.0E+100**	**days**	

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

Site being assessed: Vastern Road, Reading
Completed by: Dr. Adrian King
Date: ########
Version: 1

APPENDIX VII – OMNIA GROUND GAS MONITORING ASSESSMENT (2022)

Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP
Tel: 01489 808088
Email: info@omnia-consulting.co.uk
Web: www.omnia-consulting.co.uk

15th November 2022 ref: A11220/221115/L1

Rafal Chodkowski
Berkeley Homes (Oxford and Chiltern) Ltd
Berkeley House
Mill Lane
Taplow
Maidenhead
SL6 0AG

By Email: Rafal.Chodkowski@berkeleygroup.co.uk

Dear Rafal,

RE: Ground Gas Monitoring Assessment – 55 Vastern Road, Reading, RG1 8BU

Please find attached Omnia Report A11220/221115/L1 detailing results of all ground gas monitoring undertaken to date.

If you have any questions, please do not hesitate to contact us.

Yours sincerely,

Tim Mitchell
Director

Attachments
Attachment 1: Site Figures
Attachment 2: Exploratory Borehole Logs
Attachment 3: Ground Gas Results (Terramech Investigations Ltd)
Attachment 4: Gas Analyser GA5000 Calibration Certificate

Site Address	55 Vastern Road, Reading, RG1 8BU
Grid Reference	471089, 174089

1.0 Background & Objectives

Omnia were commissioned by Berkeley Homes Oxford and Chiltern to undertake gas and groundwater monitoring at the site of 55 Vastern Road, Reading, RG1 8BU, to assist with the gas classification of the site and explore whether the current classification, CS-3, for the site detailed in report reference A10967/1.1 dated April 2018 is robust. This letter should be read in conjunction with the Omnia Phase II report A11220/1.1 dated November 2019, which supersedes report A10967/1.0. The investigation requires additional gas monitoring in the area of the former SSE site, as well as assessment of previous gas monitoring undertaken by CC Ground Investigations Ltd (report reference: No.C5925/01).

A data review of gas monitoring data undertaken by CC Ground Investigations between 22/02/2018 to 19/04/2018 was also utilised to assist in classifying the site. A total of five (5no.) ground gas monitoring results were undertaken by CC Ground Investigations Ltd (report reference: No.C5925/01) on eleven (11no.) borehole locations. Terramech Investigations Ltd, in accordance with guidance set out in BS8485:2015, commenced seven (7no.) additional ground gas monitoring visits within eleven (11no.) boreholes within the site boundary at Vastern Road, Reading, in order to further classify the gas regime of the site and assess potential risks to future site users.

Therefore, the ground gas assessment is based on a total of twelve (12no.) gas monitoring visits over a period spanning February 2018 to December 2019.

A site location plan and intrusive location plan are presented in Attachment 1.

2.0 Site Works

Supplementary gas monitoring was undertaken by Terramech Investigations Ltd between the 1st November 2019 to the 19th December 2019 comprising eight (8no.) ground gas and groundwater monitoring visits as well as Photoionisation Detector (PID) screening and deploying an interface probe in each of the eleven (11no.) previously installed borehole locations.

2.1 Site Description

The area of investigation is located within Reading town centre, approximately 1km north of Reading train station on an irregularly shaped parcel of land approximately 0.75 hectares in size. A comprehensive site description is detailed within report A11220/1.0 dated November 2019, however a summary of site observations is summarised below:

The site is located north of Vastern Road with the long axis aligned north east to south west. The site was accessed via a security gate located just north of Vastern Road.

The site was vacant and comprised of a single two-storey building occupying the southern area. Electricity power distribution infrastructure was located directly to the east of the site boundary. The two-storey building within the southern section of the site was aligned alongside Vastern Road in an approximate east west orientation, with the building fronting onto Vastern Road. The majority of area of investigation was a former car parking area, in a generally good state of repair.

2.2 Ground Conditions

To assist in the characterisation of the site for the gas risk assessment a summary of geological observations from the previous report are set out below:

Made Ground (MG)

Made Ground (MG) was found to be predominantly granular in nature, to contain variable amounts of anthropogenic material and generally ranged from 1.10m to 2.00m in thickness with thicker MG up to 3.50m encountered in the central portion of the site, to the west of the neighbouring transformer compound.

Made Ground comprised an asphalt cover over a sequence of cohesive and granular strata. Generally Granular deposits comprised a brownish, very sandy, slightly silty, sandy angular to surrounded, fine to coarse flint GRAVEL with occasional brick, concrete, siliceous material and rare metal fragments. Sand is fine to medium. Made Ground also comprised a dark grey mottled black, gravelly, silty, fine to coarse SAND. Gravel is sub-angular, fine to coarse siliceous material and clinker. Granular deposits were often interbedded with cohesive strata, which generally comprised a very soft, dark brown, slightly gravelly, sandy CLAY. Sand is fine to medium. Gravel is angular to sub-rounded, fine to coarse of flint with occasional brick and concrete.

Superficial Deposits – Alluvium (ALL)

Immediately underlying MG was a sequence of cohesive deposits comprising soft, green slightly sandy, slight silty CLAY with variable gravel content attributed to Alluvium (ALL). The top of the ALL was encountered at depths ranging from 0.60 – 3.50m bgl (37.57 – 35.26mAOD). The unit ranged from 0.60 – 3.40m in thickness with an average thickness of approximately 1.70m. The base of the ALL was encountered at depths ranging from 2.30 – 4.10m bgl (36.08 – 34.11m AOD).

Superficial Deposits – Kempton Park Gravel (KPG)

Immediately underlying the ALL were sands and gravels attributed to the Kempton Park Gravel Formation (KPG), which ranged from loose to dense grey variably silty and sandy GRAVEL. The KPG ranged from 5.00 – 9.20m in thickness with an average thickness of approximately 6.60m. The base of the KPG was encountered at depths ranging from 8.10 to 12.50m bgl (30.21 – 26.21mAOD).

Bedrock – Seaford Chalk Formation and Newhaven Chalk Formation (SCF/NCF)

Chalk bedrock was encountered immediately beneath the KPG at depths ranging from 8.10 – 12.50m bgl (30.21 – 26.21mAOD) and was proven to a maximum depth of 35.00m bgl at locations BH1002C (3.40m AOD), BH1003E (3.71m AOD) and BH1004 (3.31mAOD) although the base of the Upper Chalk was not proven within any of the intrusive locations. A review of the geological logs indicated that the Chalk was recovered as a variably sandy and silty angular to subangular GRAVEL (Grade Dc) suggesting an absence of "Putty Chalk" (Grade Dm) from beneath the site.

Logs are presented in Attachment 2.

2.3 Gas Monitoring

Five (5no.) rounds of ground gas monitoring were conducted on the following dates, by CC Ground Investigations Ltd, summarised in Table 1:

1. 22/02/2018
2. 07/03/2018
3. 22/03/2018
4. 04/04/2018
5. 19/04/2018

In order to fully assess the ground regime of the site, Omnia proposed that eight (8no.) additional ground gas monitoring visits should be undertaken by Terramech Investigations Ltd. Eight (8no.) monitoring visits were undertaken on borehole locations BH1001, BH1002C, BH1003E, BH1004, BH2001, BH2002, BH2003, BH2004, WS1003, WS1004 and WS1007 on the following dates, summarised in Table 2:

1. 01/11/2019
2. 12/11/2019
3. 20/11/2019
4. 06/11/2019

5. 03/12/2019
6. 09/12/2019
7. 13/12/2019
8. 19/12/2019

From review of the CC Ground Investigations Ltd report (No.C5925/01) ground gas installations generally target the natural ground of the Superficial Deposits of the Alluvium and the Kempton Park Gravel thickness across the site (depth in excess of approximately 3.00m bgl). Within locations BH1001, BH1003E, BH1004, BH2004 slotted pipework transects the Made Ground and the Alluvium deposits. Location WS1007 response zone targets the Made Ground.

Concentrations of methane (CH_4), carbon dioxide (CO_2) and Oxygen (O_2) were measured using an infrared gas analyser (GA5000), calibrated to a reference standard (before and after each survey) with ground gas flow rates measured using an internal flow pod. Gas concentrations were recorded at thirty second (30 secs) intervals until concentrations stabilised for three consecutive readings and for a minimum of ninety seconds (90 secs) at each location, at which point the maximum concentration of CH_4 and CO_2 together with the lowest concentration of O_2 were recorded.

Groundwater monitoring was undertaken using an electronic dip tape to record the depth to groundwater. Headspace vapour was measured utilising a PID, prior to gas monitoring. Potential free product within the groundwater was measured utilising an interface probe. Ground gas and groundwater monitoring results as well as PID screening results are presented and discussed in Section 4.0, and in Appendix 3.

3.0 Ground Gas Assessment

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in BS 8485:2015 (*Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*). However, it is recommended that the full ground gas assessment and any recommended protection measures are agreed with the local authority prior to their adoption on site. Furthermore, any potential ground gas protection measures should be validated by a suitably qualified engineer.

Ground gas and groundwater monitoring data collected during the current phase of investigation are presented in Table 2.0, with previous phases of investigation, conducted by CC Ground Investigations Ltd presented in Table 1.0.

Five (5no.) ground gas monitoring visits were undertaken by CC Ground Investigations Ltd in 2018. Eight (8no.) additional ground gas and groundwater monitoring visits were undertaken on a weekly interval at eleven (11no.) installed locations (BH1001, BH1002C, BH1003E, BH1004, BH2001, BH2002, BH2003, BH2004, WS1003, WS1004 and WS1007). Upon completion of the visits, and review of previous monitoring data, concentrations of methane (CH_4) exceeding the equipment Limit of Detection (LOD) of 0.1% v/v were recorded at all locations, with a maximum methane (CH_4) concentration of 0.1% v/v, recorded at location BH2001 on the 12th November 2019 and WS1004 and WS1007 on the 13th December 2019. A maximum carbon dioxide (CO_2) concentration of 6.5% v/v was recorded at location BH1004 and BH2001 on the 1st November 2019.

Ground gas flow rates were recorded, with a maximum ground gas flow rate of 27.4 l/hr recorded within WS1007 on the 3rd December 2019.

In accordance with the methodology outlined within CIRIA publication C665 and BS 8485:2015, Omnia have utilised the results of the ground gas monitoring to calculate tentative Gas Screening Values (GSVs). Where ground gas concentrations have been recorded at less than the equipment LOD of 0.1% v/v, these concentrations have been assumed to be 0.1% v/v in order to adopt a conservative approach and facilitate the calculation of a GSV. The maximum GSV calculated for methane was 0.0248l/hr (WS1007) whilst the maximum GSV for carbon dioxide was 1.404l/hr (BH1004).

It is understood that the proposed development consists of the construction of eight (8no.) residential apartment blocks, as set out in Berkeley Homes Landscape General Arrangement Plan, dated February 2021 and within Figure 2.0 within Appendix 1. It is understood that the apartment block will range from 2 to 11 storeys. Therefore, a ground gas assessment has been undertaken for the assessment of apartment blocks, accordingly.

Omnia have therefore followed BS 8485:2015 guidance for high rise developments. A residential apartment block is defined under BS 8485:2015 as private ownership with central building management controls assessed under BS8485:2015 classed as a Type B building (Table 3 of BS 8485:2015).

3.1 BS 8485:2015 - Type B Building – Private ownership

Guidance set out in BS 8485:2015, which is equivalent to the characteristic situations of the modified Wilson & Card classification set out in CIRIA C665, stipulates a site characteristic maximum GSV of <0.07 l/hr, with typical maximum permissible concentrations of 1% v/v (CH_4) and/or 5% v/v (CO_2) is defined for a classification as Characteristic Situation 1 (CS1).

Maximum recorded concentrations and GSVs within the thirteen (13no.) monitoring visits have been recorded as follows; for CH_4 (0.1%v/v and 0.0248l/hr) within WS1007 and CO_2 (6.5%v/v and 1.404l/hr) in BH1004, which were recorded under low pressure conditions.

Whilst the maximum GSV of CH_4 are at levels that do not exceed the maximum permissible concentrations, CO_2 concentrations along with the high ground gas flows are at levels above the maximum permissible GSV. It is noted that guidance states that an increased classification could be considered, leaving space for the use of professional judgement. With this in mind, consideration is given to the maximum GSV value for CO_2 as set out below:

Carbon Dioxide – Maximum of 6.5%v/v (GSV of 1.404l/hr)

Elevated carbon dioxide recordings above 5.0%v/v have been identified in the range of 5.0%v/v to 6.5%v/v within BH1001, BH1004 and BH2001, with maximum concentrations of 6.5%v/v with the highest flow recorded in BH1004. High ground gas flow rates were recorded consistently ranging from 4.5l/hr to 21.6l/hr within BH1001, BH1004 and BH2001. A single elevated CO_2 concentration (6.5% v/v) was recorded in WS2001 on 1st November 2019. However, on the remainder of monitoring visits CO_2 concentrations have been recorded at <1.0% v/v consistently. It is therefore considered that the CO_2 concentration recorded on the 1st November 2019 is an anomalous isolated result and is unrepresentative of the 8no. Omnia monitoring visits.

The highest CO_2 results and the associated flow rate gave a GSV of 1.404l/hr within BH1004 which in accordance with BSS8485:2015 would meet the criteria for classification as Characteristic Situation 3. This position is located immediately to the south east of the site boundary, underlying the proposed block named 'The Railway House'. Over the thirteen (13no.) ground gas monitoring rounds it is apparent that BH1004 gives the highest GSVs, due to the high ground gas flow rates recorded (21.6l/hr in BH1004). However, review of the available data suggests that this classification is not representative of the entirety of the site, as the remaining boreholes do not show consistently high CO_2 results, and therefore should be assessed separately to the remainder of the site.

From the data presented in the previous section, with the exception of BH1004, it can be seen that the maximum calculated concentrations for CO_2 exceeds the criteria for Characteristic Situation 1 classification. The maximum recorded concentrations and GSVs, recorded within the thirteen (13no.) monitoring visits, for CO_2 (5.1%v/v and 0.595l/hr) is considered to meet the criteria for classification as CS-2 due to the consistently high ground gas flow readings across the site.

It is therefore considered that the area underlying block A meets the criteria for CS-3 whilst across the remainder of the site it is considered that a CS-2 classification is suitable for the site. Referring to Table 4 of BS 8485:2015 a Type B building with a gas classification of CS-3 give a gas protection score of 4.0 and a gas classification of CS-2 gives a gas protection score of 3.5.

4.0 Conclusions and Recommendations

The findings of a total of thirteen (13no.) rounds of ground gas monitoring, detected a maximum CH_4 concentration of 0.1% v/v, a maximum CO_2 concentration of 6.5% v/v, and a maximum ground gas flow rate of 27.4 l/hr. The elevated classification is restricted to just one borehole location, close to the south western boundary. Given the size of the data set, with a total of 13 visits from 11no. monitoring locations it is considered that division of the gas classification is robust.

The proposed Block A is classified as **CS-3**

The remainder of the site is classified as **CS-2**

A CS-3 development must achieve a gas protection score of 4.0 and CS-2 a score of 3.5 in accordance with BS 8485:2015. Reference should be made to Tables 5, 6 and 7 of BS 8485:2015 to achieve the recommended gas protection score and must include a structural barrier (Table 5), ventilation measures (Table 6) and/or gas resistant membrane (Table 7).

Consideration should be given to the proposed construction of the building by the structural engineer as it is likely that a standard ventilated sub void and gas membrane may provide mitigation for the CS-2 criteria and the majority of the points score on CS-3 without the requirement for a granular venting scheme. Demonstration of air exchange calculations will be required for the sub void to assist in achieving the required points score for CS-3. A gas membrane specification report should be prepared for the scheme once schematic diagrams and proposed membrane confirmed.

Table 1 - Summary of Ground Gas and Groundwater Monitoring Results CC Ground Investigations Ltd, 22/02/2018 to 19/04/2018 (Report Ref: C5925/01)

Well	CH_4 Peak %v/v	CH_4 Steady %v/v	CH_4 GSV l/hr	CO_2 Peak %v/v	CO_2 Steady %v/v	CO_2 GSV l/hr	O_2 %v/v	PID (ppm)	Flow (l/hr)
BH1001	0.2	0.2	0.0002	1.0	1.0	0.0010	17.6	2.9	<0.1
BH1002C	1.6	1.6	0.0032	0.4	0.4	0.0008	9.0	4.1	0.2
BH1003E	0.2	0.2	0.0002	0.6	0.6	0.0006	18.9	2.6	0.1
BH1004	3.0	3.0	0.009	4.0	4.0	0.012	6.5	4.5	0.3
BH2001	0.1	0.1	0.0011	1.0	1.0	0.112	19.7	3.2	11.2
BH2002	0.3	0.3	0.0003	0.6	0.6	0.0006	19.6	4.2	0.1
BH2003	0.3	0.3	0.0339	0.6	0.6	0.0678	19.7	3.9	11.3
BH2004	0.3	0.3	0.0003	0.6	0.6	0.0006	20.6	2.4	0.1
WS1003	0.2	0.2	0.0002	1.0	1.0	0.0010	19.2	4.6	0.1
WS1004	0.2	0.2	0.0002	1.8	1.8	0.0018	19.2	5.3	0.1
WS1007	0.3	0.3	0.0105	0.6	0.6	0.0210	19.5	10.3	3.5

Table 2 Summary of Ground Gas and Groundwater Monitoring Results: Terramech Investigations Ltd, 01/11/2019 to 09/12/2019

Well	Date	CH_4 Peak %v/v	CH_4 Steady %v/v	CH_4 GSV l/hr	CO_2 Peak %v/v	CO_2 Steady %v/v	CO_2 GSV l/hr	O_2 %v/v	Atmospheric Pressure (mbar)	PID (ppm)	Flow (l/hr)
BH1001	01/11/2019	<0.1	<0.1	0.0045	5.1	5.0	0.2295	8.0	995	0.3	4.5
	12/11/2019	<0.1	<0.1	0.0119	5.0	5.0	0.595	8.6	994	0.3	11.9
	20/11/2019	<0.1	<0.1	0.0041	4.8	4.8	0.1968	9.0	1010	0.2	4.1
	26/11/2019	<0.1	<0.1	0.0052	4.5	4.5	0.234	9.2	990	0.2	5.2
	03/12/2019	<0.1	<0.1	0.0068	4.5	4.0	0.306	10.3	1026	0.2	6.8
	09/12/2019	<0.1	<0.1	0.007	4.5	4.6	0.315	10.2	1013	0.2	7.0
	13/12/2019	<0.1	<0.1	0.0013	4.1	4.1	0.0533	11.4	980	0.2	1.3
	18/12/2019	<0.1	<0.1	0.005	4.1	4.1	0.205	10.9	1007	0.1	5.0
BH1002C	01/11/2019	<0.1	<0.1	0.0019	2.7	0.4	0.0513	19.4	994	0.1	1.9
	12/11/2019	<0.1	<0.1	0.0002	1.3	0.3	0.0026	16.7	994	0.1	0.2
	20/11/2019	<0.1	<0.1	0.0002	0.6	0.2	0.0012	19.6	1009	0.1	0.2
	26/11/2019	<0.1	<0.1	0.0001	0.1	0.1	0.0001	20.1	990	<0.1	0.1
	03/12/2019	<0.1	<0.1	0.0003	0.1	0.1	0.0003	21.5	1026	<0.1	0.3
	09/12/2019	<0.1	<0.1	0.0029	1.1	1.1	0.0319	21.1	1009	<0.1	2.9
	13/12/2019	<0.1	<0.1	0.0006	0.3	0.1	0.0018	15.9	980	0.6	0.1
	18/12/2019	<0.1	<0.1	0.0001	0.1	0.1	0.0001	21.0	1006	<0.1	0.1
BH1003E	01/11/2019	<0.1	<0.1	0.0001	1.0	1.0	0.001	19.4	994	0.3	0.1
	12/11/2019	<0.1	<0.1	0.0003	0.3	0.3	0.0009	21.8	994	<0.1	0.3
	20/11/2019	<0.1	<0.1	0.0001	0.8	0.8	0.0008	19.8	1009	0.1	0.1
	26/11/2019	<0.1	<0.1	0.0003	0.8	0.8	0.0024	19.1	990	0.1	0.3
	03/12/2019	<0.1	<0.1	0.0001	0.8	0.8	0.0008	20.1	1026	0.1	0.1
	09/12/2019	<0.1	<0.1	0.0002	0.7	0.7	0.0014	20.5	1012	0.2	0.2
	13/12/2019	<0.1	<0.1	0.0002	0.7	0.7	0.0014	21.4	980	0.2	0.1
	18/12/2019	<0.1	<0.1	0.0001	0.6	0.6	0.0006	20.7	1008	0.1	0.1
BH1004	01/11/2019	<0.1	<0.1	0.0216	6.5	6.5	1.404	0.1	994	0.8	21.6
	12/11/2019	<0.1	<0.1	0.0188	5.3	3.6	0.9964	11.5	995	0.2	18.8
	20/11/2019	<0.1	<0.1	0.0055	3.9	0.8	0.2145	17.1	1010	0.1	5.5
	26/11/2019	<0.1	<0.1	0.0216	3.4	3.4	0.7344	18.2	992	0.1	21.6

Well	Date	CH_4 Peak %v/v	CH_4 Steady %v/v	CH_4 GSV l/hr	CO_2 Peak %v/v	CO_2 Steady %v/v	CO_2 GSV l/hr	O_2 %v/v	Atmospheric Pressure (mbar)	PID (ppm)	Flow (l/hr)
	03/12/2019	<0.1	<0.1	0.0036	3.5	0.6	0.126	19.3	1026	<0.1	3.6
	09/12/2019	<0.1	<0.1	0.0068	3.1	1.0	0.2108	20.0	1007	<0.1	6.8
	13/12/2019	<0.1	<0.1	0.0184	3.6	3.6	0.6624	19.2	977	0.2	18.4
	18/12/2019	<0.1	<0.1	0.022	3.5	3.5	0.77	20.0	1006	0.1	22.0
BH2001	01/11/2019	<0.1	<0.1	0.0052	6.5	6.5	0.338	0.1	996	1.3	5.2
	12/11/2019	0.1	0.1	0.0119	1.0	0.4	0.119	20.4	994	1.8	11.9
	20/11/2019	<0.1	<0.1	0.0006	0.7	0.5	0.0042	21.2	1009	1.3	0.6
	26/11/2019	<0.1	<0.1	0.0209	0.8	0.8	0.1672	20.8	990	1.5	20.9
	03/12/2019	<0.1	<0.1	0.0213	0.8	0.7	0.1704	21.6	1024	1.3	21.3
	09/12/2019	<0.1	<0.1	0.0209	0.7	0.7	0.1463	21.3	1011	1.5	20.9
	13/12/2019	<0.1	<0.1	0.0002	0.4	0.2	0.0008	21.8	979	0.7	0.2
	18/12/2019	<0.1	<0.1	0.005	0.4	0.2	0.02	218.0	1007	0.6	5.0
BH2002	01/11/2019	<0.1	<0.1	0.0001	0.1	0.1	0.0001	21.0	996	0.1	0.1
	12/11/2019	<0.1	<0.1	0.0002	0.1	0.1	0.0002	21.2	994	0.1	0.2
	20/11/2019	<0.1	<0.1	0.0002	0.1	0.1	0.0002	22.2	1009	0.1	0.2
	26/11/2019	<0.1	<0.1	0.0002	0.1	0.1	0.0002	21.6	990	1.3	0.2
	03/12/2019	<0.1	<0.1	0.0001	0.1	0.1	0.0001	22.1	1024	0.1	0.1
	09/12/2019	<0.1	<0.1	0.0001	0.1	0.1	0.0001	21.7	1011	0.1	0.1
	13/12/2019	<0.1	<0.1	0.0001	0.2	0.1	0.0002	22.1	979	0.1	0.1
	18/12/2019	<0.1	<0.1	0.0001	0.2	0.1	0.0002	22.3	1006	0.1	0.1
BH2003	01/11/2019	<0.1	<0.1	0.0221	1.4	1.4	0.3094	17.8	996	2.7	22.1
	12/11/2019	<0.1	<0.1	0.0175	0.5	0.5	0.0875	19.6	994	1.4	17.5
	20/11/2019	<0.1	<0.1	0.0218	0.6	0.6	0.01308	21.5	1009	1.4	21.8
	26/11/2019	<0.1	<0.1	0.0207	0.4	0.4	0.0828	20.5	990	1.2	20.7
	03/12/2019	<0.1	<0.1	0.0235	0.4	0.4	0.094	21.7	1025	1.0	23.5
	09/12/2019	<0.1	<0.1	0.0207	0.3	0.3	0.0621	21.4	1011	0.8	20.7
	13/12/2019	<0.1	<0.1	0.0209	0.3	0.3	0.0627	22.1	980	0.6	20.9
	18/12/2019	<0.1	<0.1	0.0199	0.3	0.3	0.0597	22.4	1006	0.5	19.9
BH2004	01/11/2019	<0.1	<0.1	0.0003	0.1	0.1	0.0003	20.1	996	0.4	0.3
	12/11/2019	<0.1	<0.1	0.0014	0.2	0.2	0.0028	21.7	994	0.7	1.4

Well	Date	CH_4 Peak %v/v	CH_4 Steady %v/v	CH_4 GSV l/hr	CO_2 Peak %v/v	CO_2 Steady %v/v	CO_2 GSV l/hr	O_2 %v/v	Atmospheric Pressure (mbar)	PID (ppm)	Flow (l/hr)
	20/11/2019	<0.1	<0.1	0.0023	0.2	0.2	0.0046	21.7	1008	0.8	2.3
	26/11/2019	<0.1	<0.1	0.0006	0.2	0.1	0.0012	21.6	991	0.6	0.6
	03/12/2019	<0.1	<0.1	0.0019	0.2	0.2	0.0038	21.3	1025	0.6	1.9
	09/12/2019	<0.1	<0.1	0.0012	0.2	0.1	0.0024	21.0	1010	0.6	1.2
	13/12/2019	<0.1	<0.1	0.0002	0.3	0.1	0.0006	22.1	979	0.6	0.2
	18/12/2019	<0.1	<0.1	0.0033	0.2	0.1	0.0066	22.3	1006	0.5	3.3
WS1003	01/11/2019	<0.1	<0.1	0.0001	0.9	0.2	0.0009	21.0	995	0.1	<0.1
	12/11/2019	<0.1	<0.1	0.0004	0.8	0.4	0.0032	21.3	995	0.3	0.4
	20/11/2019	<0.1	<0.1	0.0002	1.1	0.4	0.0022	20.0	1010	0.2	0.2
	26/11/2019	<0.1	<0.1	0.0059	1.0	0.4	0.059	20.0	991	0.4	5.9
	03/12/2019	<0.1	<0.1	0.0252	1.0	1.0	0.252	20.7	1026	0.7	25.2
	09/12/2019	<0.1	<0.1	0.02014	0.8	0.7	0.16112	20.7	1012	0.4	20.1
	13/12/2019	<0.1	<0.1	0.0002	0.3	0.1	0.0006	22.1	980	0.1	0.2
	18/12/2019	<0.1	<0.1	0.0188	0.5	0.5	0.094	21.3	1007	0.2	18.8
WS1004	01/11/2019	<0.1	<0.1	0.0043	4.2	3.7	0.1806	17.1	995	0.5	4.3
	12/11/2019	<0.1	<0.1	0.0003	2.5	1.0	0.0075	20.1	994	0.2	0.3
	20/11/2019	<0.1	<0.1	0.0001	2.6	1.8	0.0026	19.2	1010	0.3	0.1
	26/11/2019	<0.1	<0.1	0.0004	0.3	0.1	0.0012	21.6	991	0.2	0.4
	03/12/2019	<0.1	<0.1	0.0001	1.6	0.6	0.0016	19.1	1026	0.2	0.1
	09/12/2019	<0.1	<0.1	0.0002	1.3	0.4	0.0026	20.9	1012	0.2	0.2
	13/12/2019	0.10	0.10	0.0002	1.9	0.4	0.0038	21.1	980	0.2	0.2
	18/12/2019	<0.1	<0.1	0.007	2.1	0.8	0.147	21.0	1007	0.2	7.0
WS1007	01/11/2019	<0.1	<0.1	0.0248	1.7	1.7	0.4216	17.3	996	0.1	24.8
	12/11/2019	<0.1	<0.1	0.0164	0.8	0.5	0.1312	20.4	995	0.1	16.4
	20/11/2019	<0.1	<0.1	0.0199	0.8	0.8	0.1592	21.7	1010	0.2	19.9
	26/11/2019	<0.1	<0.1	0.018	0.6	0.5	0.108	21.8	991	0.2	18.0
	03/12/2019	<0.1	<0.1	0.0274	0.8	0.8	0.2192	21.8	1026	0.1	27.4
	09/12/2019	<0.1	<0.1	0.0237	0.8	0.8	0.1896	21.7	1009	0.2	23.7

Well	Date	CH_4 Peak %v/v	CH_4 Steady %v/v	CH_4 GSV l/hr	CO_2 Peak %v/v	CO_2 Steady %v/v	CO_2 GSV l/hr	O_2 %v/v	Atmospheric Pressure (mbar)	PID (ppm)	Flow (l/hr)
	13/12/2019	0.10	0.10	0.0148	0.5	0.3	0.074	21.5	979	0.1	14.8
	18/12/2019	<0.1	<0.1	0.0202	0.7	0.5	0.1414	21.8	1007	0.2	20.2

Limitations

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between OE Ltd and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

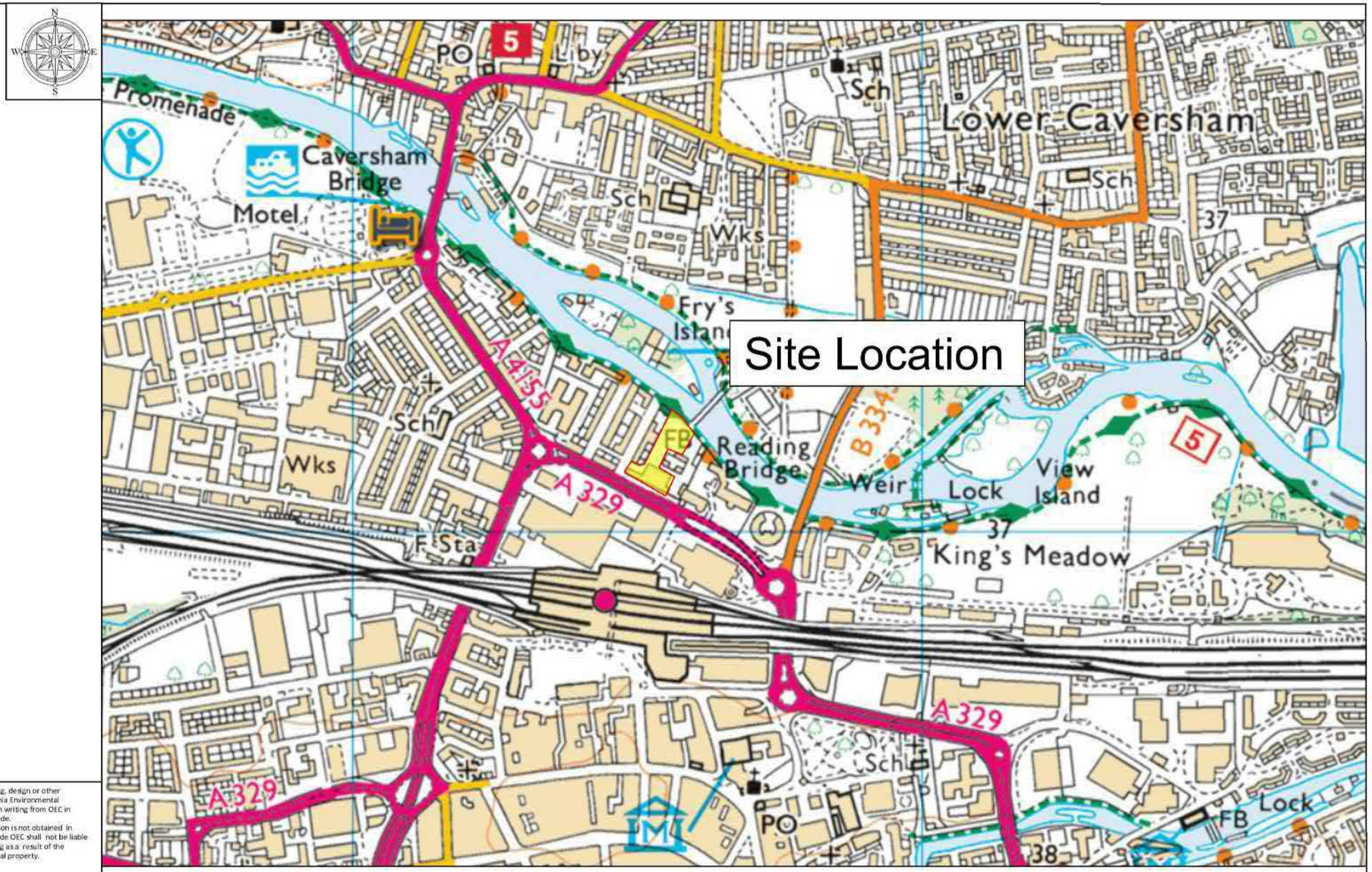
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10. Current information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

Attachment 1

Drawings

Key



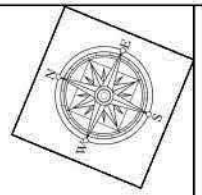
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OMNIA
ENVIRONMENTAL CONSULTING

Job Title: 55 Vastern Road, Reading	Client: Berkley Homes (Oxford and Chiltern)	Project No: A11220	Date: 18/11/2019	Drawing Title: Figure 1.0 - Site Location
		Drawn By: G.Larcombe	Authorised By: T.Mitchell	
		Scale: 1 squaure = 1km2	Notes:	

Key





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OMNIA
ENVIRONMENTAL CONSULTING

Job Title: 55 Vastern Road, Reading	Client: Berkley Homes (Oxford and Chiltern)	Project No: A11220	Date: 08/03/2021
		Drawn By: O. Maxwell	Authorised By: T.Mitchell
		Scale: NTS	Notes:

Drawing Title:

Figure 2.0 - Proposed Development Plan

Key

WS101 — Approximate Window Sample Probehole Location (OEC)

Current Site Boundary

Former Site Boundary



Intrusive Locations undertaken by others:

KEY

- CABLE PERCUSSION BOREHOLE LOCATION
- ROTARY CORED BOREHOLE LOCATION
- WINDOW SAMPLE LOCATION
- TRIAL PIT LOCATION
- INSPECTION PIT LOCATION
- SURFACE WATER SAMPLING LOCATION
- HISTORICAL BOREHOLE LOCATION (GEL, 2014)

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OMNIA ENVIRONMENTAL CONSULTING

Job Title:	Client:	Project No:	Date:	Drawing Title:
55 Vastern Road, Reading	Berkley Homes (Oxford and Chiltern)	A11220	18/11/2019	Figure 3.0 - Intrusive Location Plan
		Drawn By: G.Larcombe	Authorised By: T.Mitchell	
		Scale: NTS	Notes:	

Attachment 2

Logs

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1001**

Sheet 1 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471576 N 174181	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.39mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 29/01/2018 End: 31/01/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B	0.20 - 0.40				MADE GROUND: Grey ASPHALT.	0.10	38.29	
		ES	0.20				MADE GROUND: Dark grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick with low cobble content.	0.40	37.99	
		B	0.40 - 0.60					0.60	37.79	
		ES	0.50				MADE GROUND: Brown sandy silty angular fine to coarse GRAVEL of siliceous material and brick with medium cobble content of brick.	0.70	37.69	
		B	0.70 - 1.20							
1							MADE GROUND: Grey CONCRETE.	(0.80)		1
		ES	1.20	S 4			MADE GROUND: Soft dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and brick.			
		SPT	1.20 - 1.65					1.50	36.89	
	2						Soft becoming very soft green slightly sandy CLAY with a moderate organic odour. (ALLUVIUM)			
2		D	2.00							2
		ES	2.00 - 2.45							
		UT100								
		D	2.50							
								(2.50)		
3		D	3.00	S<1						3
	1	SPT	3.00 - 3.45							
	1									
4		B	4.00 - 4.45	S 5			Loose grey silty very sandy angular to subangular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.00	34.39	4
		D	4.00							
		SPT C	4.00 - 4.45					(1.00)		
5		B	5.00 - 5.45	C 25			Medium dense grey sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	5.00	33.39	5
		D	5.00							
		SPT C	5.00 - 5.45					(1.50)		
6		D	6.00							6
		SPT C	6.50 - 6.95	C 27			Medium dense light brown sandy becoming very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	6.50	31.89	
7		D	7.00							7
	2							(2.50)		
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-1.70m and 200mm diameter clay cutter and bailer 1.70-12.00m.
CASING: 250mm diameter to 1.70m. 200mm diameter to 10.50m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was sealed with bentonite pellets: 7.00-12.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.20m. Flush 150mm steel cover set in concrete: Flush cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Borehole was installed on 31/1/18. Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.20m - 0.10ppm; 0.50m -0.20ppm; 1.20m - 0.20.ppm; 2.00m - 0.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
30/01/18	4.00	4.00	3.40
30/01/18	8.00	7.60	1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
29/01/2018 17:00	0.05		
30/01/2018 08:00	0.05		

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1001**

Sheet 2 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471576 N 174181	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.39mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 29/01/2018 End: 31/01/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		D SPT	8.00 8.00 - 8.45	S 10			Medium dense light brown sandy becoming very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)* 8.00m: Firm grey gravelly sandy clay. Gravel angular to sub-rounded fine to medium.			
9		D	9.00				CHALK recovered as: light brown and off white slightly sandy slightly silty angular to sub-angular fine to coarse GRAVEL and COBBLES of weak low to medium density chalk. (WHITE CHALK SUBGROUP)	9.00	29.39	9
		SPT	9.50 - 9.95	S 6						
10		D	10.00					(3.00)		10
11		D SPT	11.00 11.00 - 11.45	S 12						11
12		D	12.00				Borehole completed at 12.00m	12.00	26.39	12
13										13
14										14
15										15
16										16
17										17

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
30/01/2018 17:00	12.00	10.50	3.60
31/01/2018 08:00	12.00	10.50	

CC GROUND INVESTIGATIONS LTD

INSPECTION PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **BH1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174164 Level: 38.30mAOD	Date 29/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.80m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
		B	0.10 - 0.15		MADE GROUND: Dark grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick.	0.10	38.20	
		ES	0.15		MADE GROUND: Grey CONCRETE.	0.15	38.15	
						(0.65)		
					Inspection pit completed at 0.80m	0.80	37.50	
1								
2								

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1002A. PID readings taken on all environmental samples. Results: 0.15m - 0.20ppm.

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INSPECTION PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **BH1002A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471600 N 174161 Level: 38.28mAOD	Date 30/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.80m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Grey to brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material and brick with low cobble content and rare possible asbestos containing material.	0.10	38.18	
		ES	0.50			(0.70)		
					0.80m: Concrete across base of pit.	0.80	37.48	
					Inspection pit completed at 0.80m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1002B. PID readings taken on all environmental samples. Results: 0.50m - 0.00ppm.

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INSPECTION PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **BH1002B**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471592 N 174149 Level: 38.37mAOD	Date 30/01/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.45m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Red brick MASONRY.	0.10	38.27	
						(0.25)		
					MADE GROUND: Grey CONCRETE.	0.35	38.02	
						(0.10)		
					0.450m: 1no. metal pipe approximately 50mm diameter, broken with surround of light grey to brown sandy slightly silty angular fine gravel of siliceous material.	0.45	37.92	
					Inspection pit completed at 0.45m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.45m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Metal pipe in base of pit. Relocated as BH1002C.

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1002C**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B	0.10 - 0.50				MADE GROUND: Grey ASPHALT.	0.10	38.30	
		ES	0.20				MADE GROUND: Brown tending to grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and red brick with medium cobble content. Cobbles are angular of brick.	0.30	38.10	
		ES	0.60				MADE GROUND: Red brick MASONRY.	0.50	37.90	
		B	0.65 - 1.10				MADE GROUND: Light brown locally grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.65	37.75	
1		ES	1.00					(0.45)		1
		D	1.20				MADE GROUND: Dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and red brick.	1.10	37.30	
	2	ES	1.50	S 6						
		SPT	1.50 - 1.65				Very soft dark grey slightly sandy CLAY with occasional partially decomposed organic material (<5mm). (ALLUVIUM)	(1.20)		
2										2
		ES	2.50				Soft to firm greenish grey slightly sandy CLAY. (ALLUVIUM)	2.30	36.10	
		UT100	2.50 - 2.95							
3		D	3.00					(1.50)		3
	1									
		SPT	3.50 - 3.95	S 31						
	1	B	3.80 - 4.30				Dense grey sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.80	34.60	
4										4
		B	4.50 - 5.00	C 34				(1.30)		
		SPT C	4.50 - 4.95							
5										5
							Medium dense locally dense light brown sandy tending to very sandy slightly silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	5.10	33.30	
		B	5.50 - 6.00	C 27						
		SPT C	5.50 - 5.95							
6										6
7		B	7.00 - 7.50	C 30						7
		SPT C	7.00 - 7.45					(5.00)		
8	2									8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.20-10.50m and 150mm diameter clay cutter and bailer 10.50-35.00m.
CASING: 250mm diameter to 1.70m, 200mm diameter to 10.50m, 150mm diameter to 24.90m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-2.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.00-0.20m. Flush 150mm steel cover set in concrete: Flush cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.20m - 0.00ppm; 0.60m -1.50ppm; 1.00m - 0.00.ppm; 1.50m - 4.50ppm; 2.50m - 0.30ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
31/01/18	4.00	4.00	3.40
01/02/18	8.00	8.00	1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
31/01/2018 17:00	7.00	6.90	3.20
01/02/2018 08:00	7.00	6.90	

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1002C**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
9		B SPT C	8.50 - 9.00 8.50 - 8.95	C 21			Medium dense locally dense light brown sandy tending to very sandy slightly silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)*			
10		B SPT C	10.00 - 10.50 10.00 - 10.45	C 8			CHALK recovered as light brown and off white slightly sandy silty angular to sub-angular fine to coarse GRAVEL with rare flints. Clasts are very weak low to medium dense. (Dc) (WHITE CHALK SUBGROUP)	10.10	28.30	
11		U100	11.50 - 11.95					(1.90)		
12		D	12.00				CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP)	12.00	26.40	
13		SPT	13.00 - 13.45	S 8						
14		D	14.00							
		U100	14.50 - 14.95							
15		D	15.00							
16		SPT	16.00 - 16.45	S 33						
17		D	17.00							
		U100	17.50 - 17.95							

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

CC GROUND INVESTIGATIONS LTD

BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1002C**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18		D	18.00				CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
19		SPT	19.00 - 19.45	S 46						
20		U100	20.50 - 20.95							
21		D	21.00							
22		SPT	22.00 - 22.45	S*55						
23		B	23.50 - 24.00					(23.00)		
24										
25		SPT	25.00 - 25.45	S*188						
26		SPT	26.50 - 26.95	S*81						
27										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
01/02/2018 17:00	25.00	24.90	3.80
02/02/2018 08:00	25.00	24.90	3.60

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BOREHOLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **BH1002C**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471591 N 174147	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.40mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 02/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		SPT	28.00 - 28.45	S*176			CHALK recovered as off white sandy silty angular to sub-angular fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
29		SPT	29.50 - 29.95	S*107						
30										
31		SPT	31.00 - 31.45	S*103						
32		SPT	32.50 - 32.95	S*120						
33										
34		SPT	34.00 - 34.45	S*83						
35		D	35.00				Borehole completed at 35.00m	35.00	3.40	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
02/02/2018 17:00	35.00	34.90	3.60

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INSPECTION PIT LOG

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Pit No **BH1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471556 N 174145 Level: 38.57mAOD	Date 01/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m x 0.50m Depth 0.80m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
		B	0.10 - 0.25		MADE GROUND: Brown to grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.10	38.47	
		D ES	0.20			(0.15)		
					MADE GROUND: Red brick MASONRY.	0.25	38.32	
						(0.20)		
					MADE GROUND: Brown to grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.45	38.12	
						(0.10)		
					MADE GROUND: Grey CONCRETE.	0.55	38.02	
						(0.10)		
		B	0.65 - 0.80		MADE GROUND: Brown to grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.65	37.92	
						(0.15)		
		D ES	0.80		0.80m: Clay pipe in north face of inspection pit. Intact (approximately 100mm). Inspection pit completed at 0.80m	0.80	37.77	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Borehole terminated due to clay pipe at 0.80m. Relocated as BH1003A. PID readings taken on all environmental samples. Results: 0.20m - 0.30ppm; 0.80m -0.20ppm.

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INSPECTION PIT LOG

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Pit No **BH1003A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471557 N 174145 Level: 38.56mAOD	Date 02/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 1.50m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Grey ASPHALT.	(0.10)		
					MADE GROUND: Brownish grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.10 (0.10)	38.46	
					MADE GROUND: Red brick MASONRY.	0.20 (0.20)	38.36	
					MADE GROUND: Brownish grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.40 (0.30)	38.16	
					MADE GROUND: Grey CONCRETE.	0.70 (0.20)	37.86	
		B	0.90 - 1.20		MADE GROUND: Loose brownish grey gravelly slightly silty (ashy) SAND with low cobble content. Gravel is angular fine to coarse of siliceous material and brick. Cobbles are angular of brick.	0.90	37.66	
1		D ES	1.00					1
		SPT	1.20 - 1.65		1.20-1.50m: Concrete footing in north face of the pit.	(0.60)		
					Inspection pit completed at 1.50m	1.50	37.06	
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.15m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.20-1.50m

CASING: None used.

GROUNDWATER: Groundwater seepage encountered at 0.50m. No rise is record.

BACKFILL: Borehole was backfilled with bentonite pellets and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003B. PID readings taken on all environmental samples. Results: 1.00m - 0.30ppm.

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INSPECTION PIT LOG

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Pit No **BH1003B**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174148 Level: 38.71mAOD	Date 02/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m, Depth 0.70m, 0.60m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.05 - 0.70		MADE GROUND: Black ASPHALT.			
					MADE GROUND: Dark grey CONCRETE.	0.08	38.63	
						(0.32)		
					MADE GROUND: Light grey CONCRETE.	0.40	38.31	
						(0.30)		
					Inspection pit completed at 0.70m	0.70	38.01	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m. Borehole advanced using 300mm diameter coring barrel: 0.05-0.70m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Borehole was backfilled with arisings and ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003C.

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INSPECTION PIT LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Pit No **BH1003C**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174137 Level: 38.76mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.50m Depth 0.50m 0.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH/MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.20		MADE GROUND: Dark grey ASPHALT.	(0.10)		
		B	0.10		MADE GROUND: Brown very sandy slightly clayey angular to sub-rounded fine to coarse GRAVEL mixed lithologies including concrete, red brick, chalk and siliceous material.	0.10	38.66	
		D ES	0.20					
		B	0.30 - 0.45			(0.40)		
					0.40-0.47m: Clayey.			
		D ES	0.45					
					0.50m: Concrete across base of pit.	0.50	38.26	
					Inspection pit completed at 0.50m			
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m. Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.05-0.20m.

Hand dug inspection pit: 0.20-050m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: None used.

REMARKS: Unable to advance hole through concrete at 0.50. Relocated as BH1003D. Inspection pit covered and fenced off to be continued using rotary drilling techniques: See BH2004. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.45m -0.40ppm.

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INSPECTION PIT LOG

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Pit No **BH1003D**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471535 N 174144 Level: 38.72mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 0.60m, Depth 0.05m, 0.50m	Scale 1 : 12.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT. 0.05m: Concrete across base of inspection pit. Inspection pit completed at 0.05m	0.05	38.67	

DRAFT

EQUIPMENT: Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels: 0.00-0.05m.

CASING: None used.

GROUNDWATER: None encountered.

BACKFILL: Ground surface reinstated.

REMARKS: Unable to advance hole through concrete. Relocated as BH1003E.

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BOREHOLE LOG

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Borehole No. **BH1003E**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Black ASPHALT.	0.08	38.63	
		B	0.30 - 0.40				MADE GROUND: Grey sandy angular fine to coarse GRAVEL of igneous material.	0.15	38.56	
		ES	0.30					(0.40)		
		B	0.60 - 0.70				MADE GROUND: Reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material.	0.55	38.16	
		ES	0.60				0.40-0.50m: 2no. clay pipes. Broken and infilled with sediment. Orientation approximately East to West.	0.90	37.81	
1		B	1.00 - 1.10				MADE GROUND: Light brown very sandy clayey angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including chalk, red brick, and siliceous material.	1.20	37.51	1
		ES	1.00					(0.70)		
		B	1.30 - 1.40				MADE GROUND: Off white and light brown sandy very clayey angular to sub-rounded COBBLES of chalk with some very silty angular to sub-angular fine to coarse gravel of chalk and siliceous material.	1.90	36.81	
		ES	1.30					(0.80)		
		SPT	1.50 - 1.95	S 2			MADE GROUND: Light brown sandy very clayey angular to sub-rounded fine to coarse GRAVEL of red brick, chalk and siliceous material locally tending to slightly sandy gravelly clay with rare bone and clay pot fragments (<100mm). 1.50-1.90m: Very loose.	2.70	36.01	
2		D	2.00					(0.60)		2
		ES					Very soft bluish grey mottled greenish grey silty CLAY with rare shell fragments (<5mm), rare pockets (<30mm) of dark grey peat and a moderate organic odour. (ALLUVIUM)	3.30	35.41	
		UT100	2.50 - 2.95					(1.20)		
		B	3.50 - 4.00	C 7			Very soft greyish brown slightly sandy gravelly CLAY. Gravel is angular to sub-rounded fine to coarse siliceous material. (ALLUVIUM) 3.00-3.30m: Tending to sandy, very clayey gravel.			
3		SPT C	3.50 - 3.95							3
		D	4.00				Loose greyish brown very sandy slightly silty angular to sub-rounded, fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.50	34.21	
		B	4.50 - 5.00	C 30			Dense grey very sandy silty angular to sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			
4		SPT C	4.50 - 4.95							4
		D	5.00							
5		B	5.50 - 6.00	C 30						5
		SPT C	5.50 - 5.95							
		D	6.00							
6										6
								(4.00)		
		B	7.00 - 7.45	C 32			7.00-7.45m: Locally tending to very gravelly silty SAND with low cobble content. Cobbles are sub-rounded siliceous material.			
7		D	7.00							7
		SPT C	7.00 - 7.45							
8										8

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.50m. Cable percussion drilled using 200mm diameter clay cutter and bailer 1.50-10.50m and 150mm diameter clay cutter and bailer 10.50-35.00m..
CASING: 250mm diameter to 1.70m, 200mm diameter to 12.80m, 150mm diameter to 26.50m.
GROUNDWATER: Encountered at 4.00m, and rose to 3.40m after 20 minutes; and at 8.00m and rose to 1.70m after 20 minutes.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-6.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 6.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush 150mm steel cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.40m. PID readings taken on all environmental samples. Results: 0.30m - 1.10ppm; 0.60m -1.60ppm; 1.00m - 1.10.ppm; 1.30m - 0.30ppm; 2.00m - 0.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	1.50		
06/02/2018 08:00	1.50		
08/02/2018 08:00			

CC BH LOG C5925.GPJ CCGI GINT STD AGS 4_0.GDT 9/3/18

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BOREHOLE LOG

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Borehole No. **BH1003E**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		D	8.00				Dense grey very sandy silty angular to sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)*			
		B	8.50 - 8.95	C 22			8.00-8.10m: Light brown slight sandy gravelly silty CLAY. Gravel is angular to sub-rounded fine to coarse chalk.	8.50	30.21	
		SPT C					Medium dense light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material and chalk. (KEMPTON PARK GRAVEL)			
9		D	9.00							9
								(2.60)		
10		D	10.00	C 30						10
		SPT C	10.00 - 10.45							
11		D	11.00							11
							Soft light brown locally light greyish brown slightly sandy gravelly silty CLAY. Gravel is angular to rounded fine to coarse siliceous material and chalk. (KEMPTON PARK GRAVEL)	11.10	27.61	
		SPT	11.50 - 11.95	S 9				(0.75)		
12		D	12.00				Medium dense slightly sandy very silty angular to sub-rounded fine to coarse GRAVEL of siliceous material and chalk. (KEMPTON PARK GRAVEL)	11.85	26.86	12
								(0.65)		
		B	12.50 - 12.80				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse Gravel with rare rinded flints. Clasts are very weak medium and high density. (WHITE CHALK SUBGROUP)	12.50	26.21	
13		B	13.00 - 13.41							13
		D	13.00							
14		D	14.00							14
		SPT	14.50 - 14.95	S 17						
15		D	15.00							15
16		D	16.00							16
		U100	16.00 - 16.45							
17		D	17.00							17
		SPT	17.50 - 17.95	S 19			17.50-17.95m: Occasional flints.			

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	11.50	11.50	3.50
07/02/2018 08:00	11.50	11.50	3.00

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BOREHOLE LOG

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Borehole No. **BH1003E**

Sheet 3 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18		D	18.00				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse Gravel with rare rinded flints. Clasts are very weak medium and high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*	(11.50)		
19		D U100	19.00 19.00 - 19.45							
20		D	20.00				20.00-20.45m: Locally speckled black.			
		SPT	20.50 - 20.95	S 28						
21		D	21.00							
22		B D U100	22.00 - 22.45 22.00 22.00 - 22.45							
23		D	23.00							
		SPT	23.50 - 23.95	S*167						
24		D	24.00				CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP)	24.00	14.71	
25		D SPT	25.00 25.00 - 25.45	S*88						
26		D	26.00							
		SPT	26.50 - 26.95	S*185						
27		D	27.00							

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	26.50	26.50	5.90

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BOREHOLE LOG

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Borehole No. **BH1003E**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174164	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.71mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		D SPT	28.00 28.00 - 28.45	S*130			CHALK recovered as off white slightly sandy very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak high density. (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
29		D	29.00							
		SPT	29.50 - 29.95	S*200				(11.00)		
30		D	30.00							
31		D SPT	31.00 31.00 - 31.45	S*115			31.00-34.00m: Occasional rinded flints			
32		D	32.00							
		SPT	32.50 - 32.95	S*88						
33		D	33.00							
34		D SPT	34.00 34.00 - 34.45	S*97						
35		D	35.00				Borehole completed at 35.00m	35.00	3.71	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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BOREHOLE LOG

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Borehole No. **BH1004**

Sheet 1 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							Black ASPHALT.	0.10	38.21	
		ES	0.30				MADE GROUND: Dark grey mottled black gravelly silty SAND. Gravel is sub-angular, fine to coarse siliceous material and clinker.	0.40	37.91	
		ES	0.60				MADE GROUND: Brown and greyish brown gravelly silty SAND with low cobble content and occasional fragments of wood and ceramics. Gravel is angular fine to coarse of red brick and concrete. Cobbles are angular of red brick.	(0.80)		
1		ES	1.00							1
		ES	1.20				MADE GROUND: Soft black gravelly CLAY. Gravel is angular, fine to medium red brick.	1.20	37.11	
		B	1.30 - 1.70					(0.50)		
		SPT	1.50 - 1.95	S 1						
		ES	1.70				Very soft bluish grey and brownish grey silty CLAY with frequent pockets (<30mm) of partially decomposed organic material and a moderate organic odour. (ALLUVIUM)	1.70	36.61	
2		B	2.00 - 2.40					(0.70)		2
		ES	2.00							
		B	2.50 - 3.00	C 24			Medium dense light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 2.40-8.10m: Partial loss of fines.	2.40	35.91	
		SPT C	2.50 - 2.95							
3										3
		B	3.50 - 4.00	C 21						
		SPT C	3.50 - 3.95							
4										4
		B	4.50 - 5.00	C 22						
		SPT C	4.50 - 4.95							
5										5
								(5.70)		
		B	5.50 - 6.00	C 29						
		SPT C	5.50 - 5.95							
6										6
7		B	7.00 - 7.50	C 25						7
		SPT C	7.00 - 7.45							
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-2.00m and 200mm diameter clay cutter and bailer 1.20-9.00m, and 150mm diameter clay cutter and bailer 9.00-35.00m.
CASING: 250mm diameter to 2.00m, 200mm diameter to 9.00m, 150mm diameter to 35.00m.
GROUNDWATER: None recorded, however was added to assist drilling.
INSTALLATION: Borehole was backfilled with bentonite pellets: 35.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush 150mm steel cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.40m. PID readings taken on all environmental samples. Results: 0.30m - 0.30ppm; 0.60m -0.20ppm; 1.00m - 0.40ppm; 1.20m - 2.30ppm; 1.70m - 0.20ppm; 2.00m - 1.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	2.50	2.00	
06/02/2018 08:00	2.50	2.00	

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BOREHOLE LOG

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Borehole No. **BH1004**

Sheet 2 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B	8.20 - 8.50				CHALK off white locally speckled black recovered as very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP)	8.10	30.21	
		B	8.50 - 9.00	S 7						
		SPT	8.50 - 8.95							
9										9
10		U100	10.00 - 10.45							10
		D	10.50							
11										11
		SPT	11.50 - 11.95	S 8						
12										12
		D	12.50							
13		U100	13.00 - 13.45							13
		D	13.50							
14								(12.40)		14
		SPT	14.50 - 14.95	S 19						
15										15
		D	15.50							
16		U100	16.00 - 16.45							16
		D	16.50							
17										17
		SPT	17.50 - 17.95	S 34						

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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Borehole No. **BH1004**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
18							CHALK off white locally speckled black recovered as very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP) *(continued from previous sheet)*			
		D	18.50							
19		B	19.00 - 19.50							
20										
		SPT	20.50 - 20.95	S*158			CHALK recovered as off white very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak medium and high density. (Dc) (WHITE CHALK SUBGROUP)	20.50	17.81	
21		D	21.00							
22		SPT	22.00 - 22.45	S*75						
23		D	23.00							
		SPT	23.50 - 23.95	S*97						
24		D	24.50							
25		SPT	25.00 - 25.45	S*94						
26		D	26.00							
		SPT	26.50 - 26.95	S*107						
27										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	20.50	20.40	4.80
07/02/2018 08:00	20.50	20.40	

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Borehole No. **BH1004**

Sheet 4 of 4

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471494 N 174112	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.31mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 05/02/2018 End: 08/02/2018	Logged By MM/TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
28		D SPT	28.00 28.00 - 28.45	S*136			CHALK recovered as off white very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are weak medium and high density. (Dc) (WHITE CHALK SUBGROUP) *(continued from previous sheet)*	(14.50)		
29		D	29.00							
		SPT	29.50 - 29.95	S*150						
30		D	30.50							
31		SPT	31.00 - 31.45	S*120			31.00-35.00m: Occasional rinded flints. 32.5m: Rinded flint cobbles.			
32		D	32.00							
		SPT	32.50 - 32.95	S**						
33		B	33.50 - 34.00							
34		SPT	34.00 - 34.45	S*103						
35		D	35.00				Borehole completed at 35.00m	35.00	3.31	
36										
37										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	28.00	28.00	3.10
08/02/2018 08:00	28.00	28.00	
08/02/2018 17:00	35.00	35.00	3.10

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Borehole No. **BH1005**

Sheet 1 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471538 N 174120	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.69mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 01/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Grey ASPHALT.	0.10	38.59	
		B ES	0.20 - 0.40 0.30				MADE GROUND: Dark grey slightly silty angular fine to coarse GRAVEL of siliceous material and brick.	0.20 (0.40)	38.49	
		B ES	0.60 - 0.90 0.70				MADE GROUND: Reddish brown and grey sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick with medium cobble content. Cobbles are angular of brick.	0.60	38.09	
1		B ES SPT	0.90 - 1.20 1.00 1.20 - 1.65	S 1			MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material, sandstone and brick with low cobble content. Cobbles are angular of brick.	0.90	37.79	1
							MADE GROUND: Very soft dark greyish brown slightly gravelly sandy CLAY. Gravel is angular fine to coarse of siliceous material, concrete and brick.	(1.00)		
2		D ES UT100	2.00 2.00 - 2.45				Very soft greenish grey slightly sandy silty CLAY. (ALLUVIUM)	1.90	36.79	2
		D	2.50					(0.90)		
		D	2.80				Very soft grey mottled brown slightly gravelly sandy CLAY.	2.80	35.89	
3		B SPT C	3.00 - 3.50 3.00 - 3.45	S 11			Gravel is sub-angular fine to medium of siliceous material. (ALLUVIUM)	3.00	35.69	3
							Medium dense light brown to grey very sandy slightly silty angular to sub-rounded GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			
4		B SPT C	4.00 - 4.50 4.00 - 4.45	S 25						4
5		B SPT C	5.00 - 5.50 5.00 - 5.45	S 30						5
6								(6.70)		6
		B SPT C	6.50 - 7.00 6.50 - 6.95	S 33			6.50-6.95m: Very dense.			
7										7
8										8

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Light cable percussion rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Cable percussion drilled using 250mm diameter clay cutter and bailer 1.20-2.00m and 200mm diameter clay cutter and bailer 1.20-9.00m, and 150mm diameter clay cutter and bailer 9.00-35.00m.
CASING: 250mm diameter to 2.00m, 200mm diameter to 9.00m, 150mm diameter to 35.00m.
GROUNDWATER: None recorded, however was added to assist drilling.
INSTALLATION: Borehole was backfilled with bentonite pellets: 12.00-7.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 7.00-2.80m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.80-0.20m. Flush 150mm steel cover set in concrete: 0.20-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Clean drilling techniques; bentonite seal from 1.50-2.00m. PID readings taken on all environmental samples. Results: 0.30m - 0.00ppm; 0.70m -0.20ppm; 1.00m - 0.50ppm; 2.00m - 0.20ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
31/01/2018 17:00	5.50	4.00	
01/02/2018 08:00	5.50	6.10	

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Borehole No. **BH1005**

Sheet 2 of 2

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471538 N 174120	Hole Type CP
Location: Vastern Road, Reading, RG1 8BU		Level: 38.69mAOD	Scale 1 : 50.00
Client: SSE Plc		Dates: Start: 31/01/2018 End: 01/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
9		B SPT C	8.00 - 8.45	S 20			Medium dense light brown to grey very sandy slightly silty angular to sub-rounded GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) *(continued from previous sheet)* 8.50-9.70m: Very sandy.			
		SPT D	9.50 - 9.95 9.70	S 7				9.70	28.99	
10							CHALK recovered as off white locally speckled black very silty sub-angular to sub-rounded fine to coarse GRAVEL with rare rinded flints. Clasts are very weak and weak medium density. (Dc) (WHITE CHALK SUBGROUP)	(2.30)		
11		B U100	11.00 - 11.45							
		SPT	11.50 - 11.95	S 36						
12							Borehole completed at 12.00m	12.00	26.69	
13										
14										
15										
16										
17										

DRAFT

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)

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Borehole No. **BH2001**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471586 N 174141	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.42mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.08	38.34	
								MADE GROUND: Light brown very sandy angular fine to coarse GRAVEL of siliceous material and brick.	0.30	38.12	
								MADE GROUND: Dark grey sandy silty (ashy) GRAVEL with low cobble content. Cobbles are angular of red brick.	0.55	37.87	
		C	0.60 - 1.20		C	100% 33% 33%		MADE GROUND: CONCRETE.	0.80	37.62	
		ES	0.80					MADE GROUND: Dark grey very sandy very clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material.	0.90	37.52	
1		D	0.90						(0.40)		1
		ES	1.00					MADE GROUND: Very soft light greyish brown locally mottled orangish brown slightly gravelly slightly sandy CLAY. Gravel is sub-angular to sub-rounded fine to coarse of red brick and siliceous material.	1.30	37.12	
		D	1.40					Very soft dark bluish green locally mottled light grey CLAY with rare partially decomposed organic material (<5mm) and occasional comminuted shell fragments (<3mm). (ALLUVIUM)	(1.10)		
2		D	2.00						2.40	36.02	2
								Very soft bluish green mottled brown slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (5mm) and a moderate organic odour. Gravel is sub-rounded to rounded fine to coarse siliceous material. (ALLUVIUM)	(1.20)		
3		D	3.00						3.60	34.82	3
								Light brown very sandy slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.60-3.80m: Very clayey.	(1.40)		
4		B	4.00 - 5.00						5.00	33.42	4
								Borehole completed at 5.00m			
5											5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1008. Waterflush rotary coring (150mm): 0.60-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 140mm diameter to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 5.00-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1008. PID readings taken on all environmental samples. Results: 0.80m - 3.60ppm; 1.00m - 4.70ppm; 1.50m - 4.80ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
13/02/2018 10:30	5.00	4.00	

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Borehole No. **BH2002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471577 N 174143	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.37mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 12/02/2018 End: 12/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.10	38.27	
		C	0.25 - 1.20		C	89% 13% 13%		MADE GROUND: Grey and brown very sandy silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.25	38.12	
								MADE GROUND: CONCRETE. 0.37-1.00m: recovered as very sandy silty angular fine to coarse gravel of concrete.	(0.75)		
1		ES	1.00					MADE GROUND: Off white and dark grey slightly sandy very silty angular GRAVEL of chalk. 1.10m: 1no. bone fragment (<30mm).	1.00	37.37	1
									(0.45)		
		ES	1.50					Very soft dark bluish green CLAY with rare partially decomposed organic material (<5mm) and occasional comminuted shell fragments (<3mm). (ALLUVIUM)	1.45	36.92	
		D	1.60					1.45-1.60m: Light brown. Occasional partially decomposed organic material (<5mm).	(0.65)		
2											2
		ES	2.20					Very soft bluish green mottled light grey slightly sandy silty calcareous CLAY with frequent lenses (<1mm) of light grey silt. (ALLUVIUM)	2.10	36.27	
		D	2.30						(0.80)		
3		D	3.00					Very soft dark bluish green slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm) and a slight organic odour. Gravel is sub-rounded fine to coarse siliceous material. (ALLUVIUM)	2.90	35.47	3
									(0.70)		
								Light brown very sandy slightly slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.60-3.80m: Very clayey.	3.60	34.77	
4		B	4.00 - 5.00						(1.40)		4
5								Borehole completed at 5.00m	5.00	33.37	5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1009. Waterflush rotary coring (150mm): 0.25-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00.
CASING: 140mm diameter to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 5.00-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1009. PID readings taken on all environmental samples. Results: 1.00m - 4.00ppm; 1.50m - 3.50ppm; 2.20m - 4.80ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
12/02/2018 17:00	5.00	4.00	

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Borehole No. **BH2003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471557 N 174145	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.56mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 12/02/2018 End: 12/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Grey ASPHALT.	0.10	38.46	
								MADE GROUND: Brownish grey slightly gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	0.20	38.36	
								MADE GROUND: Red brick MASONRY.	0.40	38.16	
								MADE GROUND: Brownish grey gravelly slightly silty SAND. Gravel is angular fine to coarse of siliceous material and brick.	(0.30) 0.70	37.86	
1								MADE GROUND: Grey CONCRETE.	0.90	37.66	1
								MADE GROUND: Loose brownish grey gravelly slightly silty (ashy) SAND with low cobble content. Gravel is angular fine to coarse of siliceous material and brick. Cobbles are angular of brick.	(0.60)		
		C	1.50 - 2.00		C	60% 0% 0%		MADE GROUND: CONCRETE recovered as dark grey, grey and reddish brown angular coarse gravel of red brick, siliceous material and concrete with 1no. cobble of angular concrete.	1.50 (0.50)	37.06	
2								MADE GROUND: Brownish grey very sandy silty angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including red brick, concrete and siliceous material.	2.00 2.20	36.56 36.36	2
		D ES	2.30 2.40					Very soft greenish grey CLAY with a moderate hydrocarbon odour, occasional partially decomposed organic material (<5mm) and rare comminuted shell fragments (<5mm). (ALLUVIUM)	(0.80)		
3								2.90-3.00m: Slightly gravelly slightly sandy clay. Gravel is angular to sub-angular fine to coarse siliceous material.	3.00	35.56	3
		ES	3.50					Light brown very sandy very clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material with a moderate hydrocarbon odour and free product (black). (KEMPTON PARK GRAVEL) 3.50-3.80m: Dark grey with a strong hydrocarbon odour.	(0.80)		
		B	3.80 - 4.50					Light brown very sandy silty angular to sub-angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.80 (0.70)	34.76	
4		ES	4.20								4
								Borehole completed at 4.50m	4.50	34.06	
5											5
6											6

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit and geology to 1.50m: See BH1003A. Waterflush rotary coring (146mm) : 1.50-2.00m. Dynamic sampling using 128mm and 113mm sample barrels: 2.00-4.50m.
CASING: 140mm diameter to 4.50m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 4.50-4.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-3.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.00-2.80m, bentonite pellet seal: 2.80-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of BH1003A. PID readings taken on all environmental samples. Results: 2.40m - 5.70ppm; 3.50m - 5.80ppm; 4.20m - 6.90ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
12/02/2018 17:00	4.50	4.50	

CC ROTARY LOG C5925.GPJ CCGI GINT STD AGS 4_0.GDT 9/3/18

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Borehole No. **BH2004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471544 N 174137	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.76mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.	0.10	38.66	
								MADE GROUND: Brown very sandy slightly clayey angular to sub-rounded fine to coarse GRAVEL mixed lithologies including concrete, red brick, chalk and siliceous material.	(0.40)		
		C	0.50 - 1.80		C	100% 21% 0%		MADE GROUND: CONCRETE recovered as light brown very sandy silty angular to sub-angular cobbles of concrete, red brick and siliceous material.	0.50	38.26	
								MADE GROUND: CONCRETE recovered as angular to sub-angular cobbles of concrete with little very sandy angular fine to coarse gravel of red brick, siliceous material and concrete.	(0.40)		
1								1.40-1.60m: Red brick masonry recovered as reddish brown very sandy silty angular to sub-angular fine to coarse gravel of red brick.	0.90	37.86	1
		C	1.80 - 2.90		C	100% 100% 100%		MADE GROUND: Light grey matrix supported CONCRETE. Aggregate is angular to rounded fine to coarse of red brick and siliceous material. 1.80-3.40m: Drill induced discontinuities are horizontal closely to medium spaced undulating and stepped rough.	(0.90)		
2									1.80	36.96	2
									(1.70)		
3		C	2.90 - 3.50		C	100% 83% 83%					3
		B	3.50 - 5.00					3.40-3.50m: Recovered non intact as angular fine to carse gravel of red brick and concrete. Light brown very sandy slightly silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.50	35.26	
4		ES	4.00						(1.50)		4
5								Borehole completed at 5.00m	5.00	33.76	5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See BH1003C. Dry drill rotary coring using 150mm coring barrel: 0.50-1.80m. Waterflush rotary coring using T6-116 coring barrel: 1.80-3.50m. Dynamic sampling using 98mm sample barrels: 3.50-5.00m.
CASING: 140mm diameter to 1.80m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: 50mm ID HDPE slotted pipe with washed gravel response zone: 3.80-3.30m. Plain 50mm ID HDPE pipe with washed gravel response zone: 3.30-3.10m, bentonite pellet seal: 3.10-0.60m and gravel 0.60-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of BH1003C. On completion, hole collapsed to 3.80m as unable to advance casing. PID readings taken on all environmental samples. Results: 4.00m - 0.00ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
13/02/2018 17:00	5.00	1.80	

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ROTARY BOREHOLE LOG

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Borehole No. **BH2005**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174113	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.65mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 13/02/2018 End: 13/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
								MADE GROUND: Dark grey ASPHALT.			
								MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	0.15 (0.35)	38.50	
		C ES B	0.50 - 1.20 0.60 0.70 - 0.95		C	100% 0% 0%		MADE GROUND: Concrete and red brick cobbles recovered as greyish brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of concrete, red brick, siliceous material and asphalt with 2no. angular cobbles of red brick and concrete.	0.50 (0.45)	38.15	
1		ES D	0.95 1.05					MADE GROUND: Very soft slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse chalk, siliceous material and red brick.	0.95 (0.90)	37.70	1
		ES ES	1.75 1.90					MADE GROUND: Dark grey very sandy clayey angular to sub-angular fine to coarse GRAVEL of red brick and siliceous material with visible hydrocarbons.	1.85 (0.30)	36.80	
2		D ES	2.30 2.40					Very soft dark green locally dark grey slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm). Gravel is sub-rounded fine to medium of siliceous material. (ALLUVIUM) 2.50-3.30m: Limited recovery: slightly sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse siliceous material.	2.15 (1.15)	36.50	2
3		D B	3.20 3.30 - 5.00					Light brown very sandy slightly silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.30 (1.70)	35.35	3
4											4
5								Borehole completed at 5.00m	5.00	33.65	5
6											6

DRAFT

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1018. Dry drill rotary coring using 150mm coring barrel: 0.50-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 150mm diameter casing to 1.20m and 140mm diameter casing to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 3.00-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 4.00-1.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 1.00-0.95m and bentonite pellet seal: 0.95-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1018. PID readings taken on all environmental samples. Results: 0.60m - 2.80ppm; 0.95m -4.00ppm; 1.75m - 4.00ppm; 1.90m - 3.40ppm; 2.40m - 2.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
14/02/2018 17:00	5.00		

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ROTARY BOREHOLE LOG

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Borehole No. **BH2006**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471564 N 174107	Hole Type DS+RC
Location: Vastern Road, Reading, RG1 8BU		Level: 38.49mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 14/02/2018 End: 14/02/2018	Logged By TH

(m)	Water Levels	Core Run, Samples & Testing: No/Type	Depth (m)	Result	Core Run & Sample	TCR SCR RQD	Install	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 1.20			100% 0% 0%		MADE GROUND: Light grey CONCRETE.	0.12	38.37	
								MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	(0.38)		
		ES	0.60		C				0.50	37.99	
		B	0.70 - 0.90					MADE GROUND: Concrete and red brick cobbles recovered as greyish brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of concrete, red brick, siliceous material and asphalt with 3no. angular cobbles of concrete.	(0.40)		
1		B	0.90 - 1.20						0.90	37.59	1
		ES	1.00					MADE GROUND: Dark grey and off white very sandy very silty angular to sub-angular fine to coarse GRAVEL of chalk, siliceous material, concrete and red brick.	(0.30)		
		ES	1.40					MADE GROUND: Very soft slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to coarse chalk, siliceous material and red brick.	1.20	37.29	
		D	1.50						(0.50)		
		ES	1.80					MADE GROUND: Dark grey very sandy clayey angular to sub-angular fine to coarse GRAVEL of red brick and siliceous material with visible hydrocarbons.	1.70	36.79	
2		ES	2.00					Very soft dark green locally dark grey slightly gravelly slightly sandy CLAY with rare partially decomposed organic material (<5mm). Gravel is sub-rounded fine to medium of siliceous material. (ALLUVIUM)	1.95	36.54	2
		D	2.20					2.50-3.00m: Limited recovery: slightly sandy gravelly clay. Gravel is angular to sub-rounded fine to coarse of siliceous material.	(1.05)		
		ES	2.40								
3		B	3.30 - 5.00					Light brown very sandy silty angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL) 3.00-3.20m: Very clayey. 3.20-3.30m: Clayey. 3.30-3.40m: Slightly clayey.	3.00	35.49	3
4									(2.00)		4
5								Borehole completed at 5.00m	5.00	33.49	5
6											6

EQUIPMENT: Hand digging tools. Comacchio Fraste Multi-drill ML track mounted rig.
METHOD: Hand dug inspection pit: See WS1019. Dry drill rotary coring using 150mm coring barrel: 0.50-1.20m. Dynamic sampling using 128mm and 113mm sample barrels: 1.20-5.00m.
CASING: 140mm diameter casing to 4.00m.
GROUNDWATER: None encountered prior to using water flush.
INSTALLATION: Bentonite seal 2.00-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 2.00-1.00m. Plain 50mm ID HDPE pipe with washed gravel response zone: 1.00-0.95m and bentonite pellet seal: 0.95-0.40m. Flush cover set in concrete: 0.40-0.10m. Gas valve fitted. Surface reinstated with tarmacadam 0.10-0.00m.
REMARKS: Drilled at location of WS1017. PID readings taken on all environmental samples. Results: 0.60m - 1.80ppm; 1.00m -1.60ppm; 1.40m - 2.30.ppm; 1.80m - 3.10ppm; 2.00m - 3.20ppm; 2.40m - 2.30ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
14/02/2018 17:00	5.00	4.00	

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471584 N 174194	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.26mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B ES	0.10 - 0.20 0.20				MADE GROUND: Black ASPHALT.	0.10	38.16	
		B	0.30 - 0.50				MADE GROUND: Reddish brown and grey sandy slightly silty angular fine to coarse GRAVEL of siliceous material and concrete.	0.20 (0.30)	38.06	
		D ES	0.50				MADE GROUND: Greyish brown very sandy clayey angular fine to coarse GRAVEL of brick and concrete. Cobbles are angular of concrete.	0.50	37.76	
		B	0.80 - 1.00				MADE GROUND: Brown to grey slightly sandy gravelly CLAY. Gravel is angular to sub-angular fine to medium of brick, siliceous material and concrete.			
1		D ES SPT	1.00 1.20 - 1.65	S 5				(1.20)		
		ES	1.70				1.70m: Slow groundwater seepage. Borehole completed at 1.70m	1.70	36.56	
2										
3										
4										
5										
6										

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-1.70m.
CASING: None used.
GROUNDWATER: Seepage encountered at 1.70m. No rise after 20 minutes.
BACKFILL: On completion, hole backfilled with arisings and the surface reinstated.
REMARKS: Obstruction encountered at 1.70m. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.50m -0.60ppm; 1.00m -0.70ppm; 1.70m -1.50ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	1.70		1.70

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 00:00	1.70	1.70	

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Borehole No. **WS1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174182	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.21mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B D ES	0.10 - 0.30 0.20				MADE GROUND: Dark grey ASPHALT.	0.10	38.11	
							MADE GROUND: Reddish brown slightly sandy angular fine to coarse GRAVEL of brick.	0.12	38.09	
		B D ES	0.40 - 0.60 0.50				MADE GROUND: Dark grey very sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick.	(0.98)		
1		B	0.80 - 1.00							1
		D ES D ES SPT	1.00 1.10 1.20 1.20 - 1.65	S<1			MADE GROUND: Light brown to grey sandy angular slightly silty fine to coarse GRAVEL of siliceous material and brick.	1.10 (0.30)	37.11	
							Very soft brown slightly sandy CLAY. (ALLUVIUM)	1.40 (0.35)	36.81	
		D ES	1.70				Very soft greenish grey silty CLAY with moderate organic odour. (ALLUVIUM)	1.75	36.46	
2		SPT	2.00 - 2.45	S<1						2
								(2.05)		
3	1	SPT	3.00 - 3.45	S<1						3
	1	D	3.80				Very soft dark grey organic sandy CLAY. (ALLUVIUM)	3.80 (0.30)	34.41	
4		B SPT	4.00 - 5.00 4.00 - 4.45	S 10			Medium dense becoming dense grey to brown sandy sub-angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.10	34.11	4
								(1.35)		
5		SPT	5.00 - 5.45	S 44						5
							Borehole completed at 5.45m	5.45	32.76	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.89m and rose to 2.99m after a 20 minute monitoring period.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.50m -0.60ppm; 1.00m -0.70ppm; 1.70m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	3.89	4.00	2.99

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	5.45	5.00	2.42

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471603 N 174169	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.37mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 06/02/2018 End: 06/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Grey ASPHALT.	0.10	38.27	
		B	0.20 - 0.40				MADE GROUND: Grey very sandy angular fine to coarse GRAVEL of siliceous material and brick.	(0.40)		
		D	0.20					0.50	37.87	
		ES					MADE GROUND: Grey very sandy slightly silty (ashy) angular fine to coarse GRAVEL of siliceous material and brick.	0.70	37.67	
		B	0.50 - 0.70				MADE GROUND: Very soft brown slightly sandy gravelly CLAY. Gravel is angular to sub-angular of siliceous material and brick.			
		D	0.60							
		ES								
		B	0.80 - 1.00							
1		D	1.00					(0.80)		1
		ES								
		SPT	1.20 - 1.65	S 2						
							Very soft brown mottled grey slightly sandy CLAY. (ALLUVIUM)	1.50	36.87	
								(0.50)		
		D	1.80							
2		ES	2.00	S 3			Very soft greenish grey mottled brown slightly sandy CLAY with moderate organic odour. (ALLUVIUM)	2.00	36.37	2
		SPT	2.00 - 2.45							
	▽1									
								(1.70)		
3		D	3.00	S<1						3
		SPT	3.00 - 3.45							
	▼1									
		D	3.70				Grey very sandy slightly silty angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.70	34.67	
								3.90	34.47	
4		B	4.00 - 5.00	S 25			Medium dense grey to brown sandy sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			4
		D	4.00							
		SPT	4.00 - 4.45							
								(1.55)		
5		SPT	5.00 - 5.45	S 38						5
							Borehole completed at 5.45m	5.45	32.92	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.71m and rose to 2.67m after a 20 minute monitoring period.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.45-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.60m -0.70ppm; 1.00m -0.90ppm; 2.00m -0.20ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
06/02/18	3.71	4.00	2.67

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
06/02/2018 17:00	5.45	5.00	2.43

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1005A**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471614 N 174146	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.17mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 09/02/2018 End: 09/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Dark grey ASPHALT.			
		B	0.25 - 0.45					0.25	37.92	
		ES	0.30				MADE GROUND: Reddish brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material.	0.45	37.72	
		B	0.45 - 0.60				MADE GROUND: Reddish brown and grey sandy clayey fine to coarse GRAVEL of siliceous material and brick.	0.60	37.57	
		ES	0.50				Very loose greyish brown slightly sandy clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material. (ALLUVIUM)			
		B	0.80 - 1.20							
1		ES	1.00					(1.00)		1
		SPT	1.20 - 1.65	S 4						
		ES	1.50				Very soft bluish grey mottled brown slightly sandy CLAY with occasional shell fragments (<5mm). (ALLUVIUM)	1.60	36.57	
		D	1.90							
2	▽1	SPT	2.00 - 2.45	S 3						2
	▼1							(2.40)		
3		D	2.90							3
		SPT	3.00 - 3.45	S<1						
		D	3.90							
4		SPT	4.00 - 4.45	S 37			Dense brown sandy clayey angular fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.00	34.17	4
		B	4.30 - 4.65					(0.65)		
		B	4.65 - 5.00				Dense light brown sandy angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	4.65	33.52	
5		SPT	5.00 - 5.45	S 41				(0.80)		5
							Borehole completed at 5.45m	5.45	32.72	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 2.76m and rose to and levelled out at 2.22m after a 15 minute monitoring period.
INSTALLATION: Bentonite seal 5.45-2.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 2.00-1.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 1.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.40ppm; 0.50m -0.80ppm; 1.00m -1.40ppm; 1.50m -0.40ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
09/02/18	2.76	3.00	2.22

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
08/02/2018 17:00	5.45	5.00	2.29

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1006** Sheet 1 of 1			
Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471608 N 174137	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.19mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 08/02/2018 End: 08/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
							MADE GROUND: Dark grey ASPHALT.			
		B	0.20 - 0.40				MADE GROUND: Grey and reddish brown sandy angular fine to coarse GRAVEL of siliceous material.	0.20	37.99	
		D	0.30					(0.40)		
		ES	0.40 - 0.60					0.60	37.59	
		B	0.50				MADE GROUND: Brown and greyish brown sandy angular to sub-angular fine to coarse GRAVEL of siliceous material, brick and concrete with rare geotextile membrane fragments (<80mm).			
		D	0.60 - 0.90							
		ES								
		B								
1		D	1.00					(1.00)		1
		ES								
		SPT	1.20 - 1.65	S 3				1.60	36.59	
							Very soft bluish grey mottled brown slightly sandy CLAY. (ALLUVIUM)			
		D	1.90							
2		ES	2.00 - 2.45	S<1						2
		SPT								
								(1.40)		
		D	2.40							
3		B	3.00 - 3.75	S 18			Medium dense brown and greyish brown sandy sub-angular to sub-rounded fine to medium GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.00	35.19	3
		SPT	3.00 - 3.45					(0.75)		
								3.75	34.44	
							Dense light brown sandy slightly silty sub-angular to sub-rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)			
4		SPT	4.00 - 4.45	S 41						4
		B	4.40 - 5.00					(1.70)		
5		SPT	5.00 - 5.45	S 30						5
							Borehole completed at 5.45m	5.45	32.74	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 3.36m and rose to 2.94 after 20 minutes.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.30m -0.10ppm; 0.50m -0.30ppm; 1.00m -0.20ppm; 1.90m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
07/02/18	3.36		2.94

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	3.45	3.00	3.36
08/02/2018 08:00	3.45	3.00	2.28
08/02/2018 17:00	5.45	5.00	2.32

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WINDOWLESS SAMPLE LOG

Telephone: 01452 739165 , Fax: 01452 739220 , Email: info@ccground.co.uk

Borehole No. **WS1007**

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471593 N 174138	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.38mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 05/02/2018 End: 05/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B D ES B D ES	0.10 - 0.20 0.15 0.20 - 0.50 0.45				MADE GROUND: ASPHALT. MADE GROUND: Brown sandy silty angular to sub-rounded fine to medium GRAVEL of siliceous material. MADE GROUND: Grey sandy slightly silty angular fine to coarse of GRAVEL of brick, concrete and siliceous material. MADE GROUND: Brown sandy clayey GRAVEL of siliceous material and chalk.	0.10 0.20 (0.30) 0.50	38.28 38.18 37.88	
1	1	B D ES SPT	1.00 - 1.20 1.00 1.20 - 1.65	S 1				(1.20)		1
							Grey mottled orangish brown gravelly CLAY. (ALLUVIUM)	1.70	36.68	
2		D ES SPT	2.00 2.00 - 2.45	S 4				(0.60)		2
							Orangish brown and grey sandy clayey GRAVEL. (KEMPTON PARK GRAVEL)	2.30	36.08	
								(1.00)		
3		D SPT B	3.00 3.00 - 3.45 3.30 - 3.70	S 11			3.00m: Medium dense. Dense brown sandy GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	3.30	35.08	3
4		B SPT	4.00 - 5.00 4.00 - 4.45	S 30				(2.15)		4
5		SPT	5.00 - 5.45	S 34						5
							Borehole completed at 5.45m	5.45	32.93	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 1.10m. No rise is recorded.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 3.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.15m -0.20ppm; 0.45m -0.40ppm; 1.00m -0.30ppm; 2.00m -0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
05/02/18	1.10		

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
05/02/2018 17:00	5.45	5.00	2.48

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INSPECTION PIT LOG

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Pit No **WS1008**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471586 N 174141 Level: 38.42mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.55m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.10		MADE GROUND: Dark grey ASPHALT.			
		B	0.10 - 0.25		MADE GROUND: Light brown very sandy angular fine to coarse GRAVEL of siliceous material and brick.	0.08	38.34	
		D ES	0.20			(0.22)		
		B	0.30 - 0.50		MADE GROUND: Dark grey sandy silty (ashy) GRAVEL with low cobble content. Cobbles are angular of red brick.	0.30	38.12	
		D ES	0.45		0.50m: Concrete across base of pit.	(0.25)		
					Inspection pit completed at 0.55m	0.55	37.87	
1								1
2								2

DRAFT

EQUIPMENT: Hand digging tools. Terrier 2002 track mounted rig.

METHOD: Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.00-0.10m. Hand dug inspection pit: 0.10-0.55m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.55-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2001. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm; 0.45m -0.10ppm.

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INSPECTION PIT LOG

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Pit No **WS1009**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471577 N 174143 Level: 38.37mAOD	Date 05/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.25m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		C	0.00 - 0.10		MADE GROUND: Dark grey ASPHALT.	(0.10)		
		B	0.10 - 0.25		MADE GROUND: Grey and brown very sandy silty angular fine to coarse GRAVEL of siliceous material and red brick.	0.10	38.27	
		D ES	0.20			(0.15)		
					0.25m: Concrete across base of pit. Inspection pit completed at 0.25m	0.25	38.12	
1								1
2								2

DRAFT

EQUIPMENT: Hand digging tools. Terrier 2002 track mounted rig.

METHOD: Borehole advanced using 300mm diameter coring barrel utilizing water flush: 0.00-0.10m. Hand dug inspection pit: 0.10-0.25m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.25-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2002. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm.

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INSPECTION PIT LOG

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Pit No **WS1013**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471560 N 174180 Level: 38.54mAOD	Date 08/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.80m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: ASPHALT.	(0.10)		
						0.10	38.44	
		B	0.15 - 0.40		MADE GROUND: Grey angular COBBLES of concrete with some slightly sandy angular fine to coarse gravel of concrete and brick.			
		ES	0.20					
		B	0.40 - 0.70			(0.70)		
		ES	0.60					
					Inspection pit completed at 0.80m	0.80	37.74	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.80m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.80-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete cobbles and boulders. PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.60m -0.30ppm.

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INSPECTION PIT LOG

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Pit No **WS1013A**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471560 N 174180 Level: 38.54mAOD	Date 09/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.55m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: ASPHALT.	(0.10)		
					MADE GROUND: Grey angular COBBLES of concrete with some slightly sandy angular fine to coarse gravel of concrete and brick.	0.10	38.44	
						(0.45)		
					Inspection pit completed at 0.55m	0.55	37.99	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.55m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.55-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete cobbles and boulders.

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INSPECTION PIT LOG

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Pit No **WS1017**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471564 N 174107 Level: 38.49mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.50m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B	0.00 - 0.12		MADE GROUND: Light grey CONCRETE.	(0.12)		
		B	0.12 - 0.40		MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.	0.12	38.37	
		D ES	0.40			(0.38)		
					Inspection pit completed at 0.50m	0.50	37.99	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.50m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.50-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2006. See separate sheet. PID readings taken on all environmental samples. Results: 0.20m -0.10ppm.

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INSPECTION PIT LOG

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Pit No **WS1018**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174113 Level: 38.65mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: m Depth 0.50m m	Scale 1 : 12.5
Client: SSE Plc			Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B	0.07 - 0.20		MADE GROUND: Dark grey ASPHALT.	(0.15)		
		D	0.15			0.15	38.50	
		ES			MADE GROUND: Grey sandy slightly silty angular fine to coarse GRAVEL of concrete and siliceous material with high cobble content. Cobbles are angular of concrete.			
		B	0.20 - 0.45			(0.35)		
		D	0.40					
		ES						
					Inspection pit completed at 0.50m	0.50	38.15	
1								1
2								2

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker.

METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-0.50m.

GROUNDWATER: None encountered.

BACKFILL: On completion, hole backfilled with bentonite pellets: 0.50-0.10 and the surface reinstated with Tarmacadam: 0.10-0.00.

REMARKS: Unable to advance hole through concrete. Position continued with rotary coring and renamed BH2005. See separate sheet. PID readings taken on all environmental samples. Results: 0.15m -0.20ppm; 0.40m -0.10ppm.

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WINDOWLESS SAMPLE LOG

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Borehole No. **WS1019**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471552 N 174069	Hole Type WS
Location: Vastern Road, Reading, RG1 8BU		Level: 38.32mAOD	Scale 1 : 37.50
Client: SSE Plc		Dates: Start: 07/02/2018 End: 07/02/2018	Logged By MM

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Sample	Install	Description	Depth (m)	Level (mAD)	Legend
		B ES B	0.10 - 0.25 0.20 0.25 - 0.50				MADE GROUND: Dark grey ASPHALT.	0.10	38.22	
							MADE GROUND: Grey and reddish brown sandy slightly silty angular fine to coarse GRAVEL of siliceous material.	0.25	38.07	
		ES	0.50				MADE GROUND: Brown and greyish brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of siliceous material, brick and concrete with low cobble content. Cobbles are angular brick.	(0.75)		
1		B D ES SPT	1.00 - 1.20 1.10 1.20 - 1.65	S<1			MADE GROUND: Very soft brown gravelly sandy CLAY. Gravel is angular to sub-angular fine to coarse of siliceous material, brick and concrete.	1.00	37.32	1
								(0.70)		
		D ES	1.80				Very soft firm greenish grey slightly gravelly slightly sandy CLAY. Gravel is sub-angular fine to medium of siliceous material. (ALLUVIUM)	1.70	36.62	
2		SPT	2.00 - 2.45	S<1				(0.78)		2
	1	D	2.40				Medium dense light brown very sandy slightly silty sub-angular to rounded fine to coarse GRAVEL of siliceous material. (KEMPTON PARK GRAVEL)	2.48	35.84	
3		SPT	3.00 - 3.45	S 11						3
4		D SPT	4.00 4.00 - 4.45	S 15				(2.97)		4
5		SPT	5.00 - 5.45	S 25						5
							Borehole completed at 5.45m	5.45	32.87	
6										6

DRAFT

EQUIPMENT: Hand tools. Hydraulic breaker. Terrier 2002 track mounted rig.
METHOD: Hard standing broken out using hydraulic breaker with a range of chisels and continued with hand dug inspection pit: 0.00-1.20m. Continuous disturbed sampling using 101mm sample barrel: 1.20-5.00m.
CASING: 113mm diameter to 5.00m.
GROUNDWATER: Encountered at 2.48m and rose to and leveling out at 2.36m after 15 minutes.
INSTALLATION: Borehole backfilled with washed gravel: 5.45-5.00m. 50mm ID HDPE slotted pipe with washed gravel response zone: 5.00-3.00m. 50mm ID HDPE plain pipe with bentonite pellet seal: 2.00-0.40m. Flush cover set in concrete: 0.40-0.10m and tarmacadam: 0.10-0.00m. Gas valve fitted.
REMARKS: PID readings taken on all environmental samples. Results: 0.20m -0.20ppm; 0.50m -0.30ppm; 1.10m -0.10ppm; 1.80m - 0.10ppm.

Groundwater:

Date	Strike Depth (m)	Casing Depth (m)	Depth After Observation (m)
07/02/18	2.48	3.00	2.36

Hole Progress:

Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)
07/02/2018 17:00	5.45	5.00	2.44

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TRIAL PIT LOG

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Pit No **TP1001**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471567 N 174208 Level: 38.13mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.10m Depth 1.20m, 0.60m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
		B D ES	0.20		MADE GROUND: Dark brown slightly gravelly sandy silty CLAY with frequent roots and rootlets (<20mm) and rare fragments (<60mm) of pottery. Gravel is angular to sub-angular fine to coarse of siliceous material, concrete and red brick.	(0.40)		
		B ES	0.50		MADE GROUND: Dark greyish brown, grey and reddish brown COBBLES of concrete, red brick and slag with low boulder content and much very gravelly slightly clayey sand. Gravel is angular to sub-angular fine to coarse of mixed lithologies including red brick, concrete and siliceous material. Boulders are angular of concrete and intact red brick masonry (<400mm).	0.40 (0.40)	37.73	
1		B D ES	1.00		MADE GROUND: Firm light brown mottled greyish brown slightly gravelly slightly sandy CLAY with rare roots and rootlets (<5mm). Gravel is angular to sub-rounded fine to coarse of red brick, concrete and siliceous material. 0.80m: Light grey concrete slab with red brick masonry across large are of pit. 1.20m: 1no. black cable (Intact) approximately 50mm diameter orientated approximately Southwest - Northeast. 1.20m: Dry. Trial pit completed at 1.20m	0.80 (0.40) 1.20	37.33 36.93	
2								
3								
4								
5								
6								

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -1.90ppm; 1.50m -2.00ppm; 1.00m - 2.60ppm. Trial pit terminated at 1.20m due to buried service at 1.20m.

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TRIAL PIT LOG

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Pit No **TP1002**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471604 N 174164 Level: 38.36mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.70m, Depth 4.00m, 2.00m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.31	
					MADE GROUND: CONCRETE.	0.15	38.21	
		B ES	0.30		MADE GROUND: Brown very sandy very silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with medium cobble content and rare fragments (<50mm) of metal. Cobbles are angular to sub-angular of red brick and concrete.	0.35	38.01	
					MADE GROUND: CONCRETE.	0.50	37.86	
		B ES	0.80		MADE GROUND: Brown, grey and reddish brown COBBLES of red brick and concrete with much very sandy very silty angular to rounded fine to coarse gravel of red brick, siliceous material and concrete.	(0.60)		
1					0.50-1.10m: Intact red brick masonry in Northern pit wall.	1.10	37.26	1
		B ES	1.40		MADE GROUND: Brown very sandy very clayey angular to sub-rounded fine to coarse GRAVEL of siliceous material, red brick and chalk. 1.40-1.60m: Tending to slightly sandy gravelly clay.	(0.50)		
		B D ES	1.70		Very soft dark green slightly sandy silty CLAY with moderate organic odour and rare comminuted shell fragments (<5mm). (ALLUVIUM)	1.60	36.76	
2						(0.80)		2
		B D	2.50		Very soft bluish green mottled light grey silty calcareous CLAY with rare partially decomposed organic material (<5mm), occasional comminuted shell fragments (<5mm) and a moderate organic odour. (ALLUVIUM)	2.40	35.96	
3						(1.60)		3
		B D	3.50					
4	1.1	D	3.90		3.90-4.00m: 1no. lens of light grey and off white very clayey sand with frequent comminuted shell fragments (<5mm). 4.00m: Slow groundwater seepage. Trial pit completed at 4.00m	4.00	34.36	4
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Slow groundwater seepage encountered at 4.00m.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -2.50ppm; 0.80m -3.40ppm; 1.40m - 4.10ppm; 1.70m -3.50ppm. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1003**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471596 N 174149 Level: 38.35mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 0.35m, 1.80m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.30	
					MADE GROUND: CONCRETE.	0.10	38.25	
		B ES	0.30		MADE GROUND: Reddish brown very sandy silty angular to sub-rounded fine to coarse GRAVEL of mixed lithologies including concrete, red brick and siliceous material with high cobble content. Cobbles are angular to sub-angular of red brick and concrete. 0.30m: Historic concrete foundations with rolled steel joists (~200mm). 0.30-0.35m: Attempt to break through concrete obstruction. Concrete extending bellow extent of JCB pecker. 0.35m: 1no steel plate (exposed 1.40mx0.80m) - Possible earthing plate. 0.35m: Dry.	0.35	38.00	
					Trial pit completed at 0.35m			

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -1.80ppm. Trial pit terminated at 0.35m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

CC GROUND INVESTIGATIONS LTD

TRIAL PIT LOG

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Pit No **TP1004**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471580 N 174166 Level: 38.29mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 4.20m, 2.10m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing: No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.24	
					MADE GROUND: CONCRETE.	(0.30)		
						0.35	37.94	
		B ES	0.40		MADE GROUND: Brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with a medium cobble content. Cobbles are angular of red brick.	0.50	37.79	
		B ES	0.60		MADE GROUND: Off white and brown sandy very clayey angular to sub-rounded fine to coarse GRAVEL of chalk, red brick and siliceous material.	0.75	37.54	
1		B D ES	1.00		MADE GROUND: Very soft dark green and bluish grey slightly gravelly slightly sandy silty calcareous CLAY with a slight organic odour. Gravel is angular to sub-angular fine to coarse of red brick.	(0.55)		1
		B D ES	1.50		Very soft dark green and dark brownish grey silty calcareous CLAY with rare shell fragments (<5mm) and a strong organic odour. (ALLUVIUM)	1.30	36.99	
						(0.70)		
2					Very soft bluish green mottled light grey silty calcareous CLAY with a strong organic odour and rare partially decomposed organic material (<5mm). (ALLUVIUM)	2.00	36.29	2
		B D	2.50			(1.10)		
3	1				Very soft greenish grey mottled greenish brown and light grey slightly sandy silty calcareous CLAY with occasional comminuted shell fragments (<5mm). (ALLUVIUM)	3.10	35.19	3
		B D	3.50			(1.10)		
4	1				Trial pit completed at 4.20m	4.20	34.09	4
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Groundwater encountered at 3.90m rising to 3.40m after a 10 minute monitoring period.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.40m -0.70ppm; 0.60m -1.30ppm; 1.00m - 1.50ppm; 1.50m - 4.20ppm. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1005**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471567 N 174159 Level: 38.41mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 2.60m, Depth 1.10m, 2.20m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.36	
					MADE GROUND: CONCRETE.	0.15	38.26	
		B ES	0.30		MADE GROUND: Brown and reddish brown COBBLES of angular red brick and concrete with much very sandy very silty angular to sub-angular fine to coarse gravel of red brick, concrete, slag and siliceous material.	(0.95)		
		B ES	0.70		0.80m: 1no. broken black metal pipe (~80mm diameter) orientated approximately East to West.			
1					Trial pit completed at 1.10m	1.10	37.31	
2								
3								
4								
5								
6								

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -0.40ppm; 0.70m -2.00ppm. Trial pit terminated at 1.10m due to buried service at 1.20m. Trial pit terminated at 0.35m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1006**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471565 N 174172 Level: 38.44mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.60m, Depth 2.40m, 2.00m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.39	
					MADE GROUND: CONCRETE.	0.15	38.29	
		B ES	0.30		MADE GROUND: Brown very sandy slightly clayey angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with a medium cobble content. Cobbles are angular of red brick.	(0.30) 0.45	37.99	
		B ES	0.50		MADE GROUND: Light brown very sandy silty angular to sub-rounded fine to coarse GRAVEL of siliceous material, red and yellow brick.	0.60	37.84	
		B ES	0.70		MADE GROUND: Off white and light brown slightly sandy very silty angular to sub-rounded fine to coarse GRAVEL of chalk and siliceous material with high cobble content. Cobbles are sub-angular to sub-rounded of chalk and siliceous material. 0.90-1.10m: Light brown and reddish brown very sandy clayey angular to sub-angular gravel of siliceous material, red brick and concrete with a high cobble content. Cobbles are angular to sub-angular of red brick. 1.10-1.90m: Low cobble content.	(1.30)		
1		B ES	1.50					1
2	1				Very soft dark green and dark grey CLAY with strong organic odour. (ALLUVIUM)	1.90 (0.50)	36.54	2
	1	B D ES	2.20		Trial pit completed at 2.40m	2.40	36.04	
3								3
4								4
5								5
6								6

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: Groundwater encountered at 2.40m rising to 2.30m after a ten minute monitoring period. Slow groundwater seepage encountered at 1.90m.

STABILITY: Trial pit collapsing from 1.10-1.90m.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.30m -1.20ppm; 0.50m -1.20ppm; 0.70m - 1.40ppm; 1.50m - 0.70ppm; 2.20m - 1.70ppm. Trial pit terminated at 2.40m due to undermining of surface hardstanding. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1007**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471545 N 174170 Level: 38.70mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 2.80m Depth 0.70m 2.20m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.65	
					MADE GROUND: CONCRETE.	0.10	38.60	
		B ES	0.20		MADE GROUND: Brown very sandy very silty angular to sub-angular fine to coarse GRAVEL of red brick, concrete and siliceous material with medium cobble content and rare fragments (<50mm) of metal. Cobbles are angular to sub-angular of red brick and concrete.	(0.40)		
		B ES	0.50		0.30m: Historic concrete foundations.	0.50	38.20	
					MADE GROUND: Firm light brown slightly gravelly sandy silty CLAY with a moderate hydrocarbon odour. Gravel is angular to sub-angular fine to coarse of red brick, siliceous material, chalk and concrete.	0.70	38.00	
					Trial pit completed at 0.70m			

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pits excavated using 0.60m backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally stable and vertical throughout.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.20m -3.20ppm; 0.70m -5.20ppm. Trial pit terminated at 0.70m due to historic reinforced concrete foundations. Surface reinstated on 13/02/2018.

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TRIAL PIT LOG

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Pit No **TP1008**

Sheet 1 of 1

Project Name: SSE Site, Vastern Road, Reading	Project No: **C5925**	Co-ords: E 471546 N 174157 Level: 38.69mAOD	Date 07/02/2018
Location: Vastern Road, Reading, RG1 8BU		Dimensions: 3.10m Depth 1.70m, 1.50m	Scale 1 : 37.5
Client: SSE Plc			Logged By TH

(m)	Water Levels	Samples & In Situ Testing No/Type	Depth (m)	Result	Description	Depth (m)	Level (mAD)	Legend
					MADE GROUND: Dark grey ASPHALT.	0.05	38.64	
					MADE GROUND: CONCRETE.	(0.30)		
						0.35	38.34	
		B ES	0.40		MADE GROUND: Gray and light brown and reddish brown very sandy silty angular to sub-angular fine to coarse GRAVEL of mixed lithologies including concrete, red brick and siliceous material with high cobble content. Cobbles are angular to sub-angular of concrete and red brick.	(0.35)		
						0.70	37.99	
1		B ES	0.80		MADE GROUND: Firm light brown slightly gravelly sandy silty CLAY. Gravel is angular to sub-angular fine to coarse of chalk, siliceous material, red brick and clinker. 0.75-1.10m: 1no. pocket of dark grey and grey ash. 1.00-1.70m: With pockets (<0.5m) of off white slightly sandy very silty angular to sub-angular fine to coarse gravel of chalk and siliceous material.	(1.00)		
		B D ES	1.50					
					1.70m: Dry. Trial pit completed at 1.70m	1.70	36.99	
2								
3								
4								
5								
6								

DRAFT

EQUIPMENT: JCB 3CX Mechanical Excavator.

METHOD: Trial pit excavated using 0.60m wide backactor bucket.

GROUNDWATER: None encountered.

STABILITY: Trial pit generally unstable and collapse from 1.20-1.70m.

BACKFILL: Trial pit backfilled with arisings and compacted with excavator bucket.

REMARKS: PID readings taken on all environmental samples. Results: 0.40m -1.70ppm; 0.80m -0.60ppm; 1.50m - 1.40ppm. Trial pit terminated at 1.20m due to buried service at 1.20m. Trial pit terminated at 1.70m due to undermining surface hardstanding. Surface reinstated on 13/02/2018.

Omnia Environmental Consulting
10 Manor Court
2 Barnes Wallis Road
Fareham
PO15 5TH

Borehole Log

Borehole No.
WS101
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=4	0.40			MADE GROUND Concrete.
		0.40 - 0.45	ES		0.45			MADE GROUND Soft dark grey slightly silty CLAY. Black staining present.
		0.45 - 0.80	ES	PID=4				MADE GROUND Dark grey SAND AND GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse concrete, brick and asphalt.
				PID=4	0.80			
		0.80 - 1.00	ES					MADE GROUND Dark grey/black slightly silty slightly gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse brick and concrete.
		1.00 - 1.30	ES	PID=10				
				PID=9	1.30			MADE GROUND Soft brown slightly sandy slightly gravelly CLAY. Sand is medium to coarse. Gravel is subangular to subrounded fine to coarse chalk, asphalt and clinker.
		1.30 - 1.50	ES					
				PID=8	1.50			CLAY Soft brown slightly gravelly CLAY. Gravel is subangular to subrounded fine shell fragments.
		1.50 - 1.70	ES					
				PID=6	1.70			CLAY Firm green with black speckling slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to medium chalk, flint and organic matter.
		1.70 - 1.80	ES		1.80			End of borehole at 1.80 m

1
2
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4
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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	# Borehole Log	Borehole No. **WS102** Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				PID=4	0.38			MADE GROUND Concrete.
		0.40 - 0.60	ES					
				PID=4	0.60			MADE GROUND Black gravely medium to coarse SAND. Gravel of subangular to subrounded fine to coarse concrete, clinker, asphalt and PACM.
		0.60 - 0.90	ES					MADE GROUND Multicoloured gravelly medium to coarse SAND. Gravel of subangular to subrounded fine to medium clinker, concrete and brick.
				PID=7	0.95			MADE GROUND Light grey SAND AND GRAVEL. Sand is medium to coarse. Gravel is angular to subrounded fine to coarse brick concrete and clinker.
		0.95 - 1.50	ES					
				PID=9				
		1.50 - 2.00	ES					
				PID=10	2.00			CLAY Soft green slightly gravelly slightly silty CLAY. Gravel of subangular to subrounded fine chalk and shell fragments.
		2.00 - 2.40	ES					
					2.40			End of borehole at 2.40 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

Omnia Environmental Consulting
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2 Barnes Wallis Road
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PO15 5TH

Borehole Log

Borehole No.
WS103
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 16/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.70	ES	PID=5	0.40			MADE GROUND Concrete.
		1.20 - 1.40	ES	PID=4				MADE GROUND Grey and SAND AND GRAVEL. Sand is fine to coarse with frequent cobble content of brick, ceramic, clinker asphalt, chalk and concrete.
		1.60 - 1.70	ES	PID=6	1.60			MADE GROUND Soft brown slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse brick, chalk, clinker and flint.
		1.70 - 2.00	ES	PID=3	1.70 1.80			CLAY Soft brown slightly gravelly CLAY . Gravel of subangular to subrounded fine chalk.
					2.00			CLAY Soft green slightly gravelly CLAY. Gravel of subangular to subrounded flint, chalk and shell fragments. End of borehole at 2.00 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS104** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 17/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.70	ES		0.30			MADE GROUND Concrete.
		0.70 - 1.55	ES	PID=3	0.70			MADE GROUND Grey sandy GRAVEL. Sand is medium to coarse. Gravel of subangular to subrounded fine to medium concrete and brick.
		1.55 - 1.75	ES	PID=13	1.55			MADE GROUND Soft brown gravelly CLAY. Gravel subangular to subrounded fine to coarse with frequent cobble of brick, concrete, slate, clinker and flint.
		1.75 - 2.00	ES	PID=2307	1.75			MADE GROUND Firm black slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse flint, brick and concrete.
		2.00 - 2.40	ES	PID=368				CLAY Firm greyish green with black staining present slightly gravelly CLAY. Gravel subangular to subrounded fine, chalk and shell fragments.
					2.40			End of borehole at 2.40 m

1 2 3 4 5

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.

AGS

Omnia Environmental Consulting
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2 Barnes Wallis Road
Fareham
PO15 5TH

Borehole Log

Borehole No.
WS105
Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 17/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND Concrete.
		0.60 - 0.90	ES	PID=4	0.60			MADE GROUND Soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel of subangular to subrounded fine to coarse with frequent cobble content brick, clinker and flint.
		0.90 - 1.30	ES	PID=4				
		1.60 - 1.70	ES					
		1.70 - 1.80	ES	PID=8	1.70			MADE GROUND Soft dark brown/black slightly gravelly CLAY. Gravel of subangular to subrounded fine to medium brick, clinker and flint.
		2.00 - 2.30	ES	PID=3	1.85			CLAY Soft greyish green slightly gravelly CLAY. Gravel of subangular to subrounded fine shell fragments chalk and orangic matter.
					2.30			End of borehole at 2.20 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
Groundwater encountered as strike at 2.2m bgl.

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS106** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								MADE GROUND Concrete.
		0.40 - 0.70	ES		0.40			MADE GROUND Red slightly sandy GRAVEL. Sand is medium to coarse. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick.
					0.70			End of borehole at 0.70 m

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.
Hole terminated due to obstruction at 0.70m bgl.

OMNIA ENVIRONMENTAL CONSULTING Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**		Borehole No. **WS107** Sheet 1 of 1
Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.40	ES	PID=0				MADE GROUND Brown slightly silty gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick and concrete.
		0.50 - 1.00	ES	PID=0				
		1.00 - 1.50	ES	PID=1				
					1.50			POOR RECOVERY BETWEEN 1.50- 2.20M BGL.
					2.20			End of borehole at 2.20 m

Remarks
Cleared by Cable Avoidance Tool (CAT)
No groundwater encountered.
Hole terminated due to obstruction at 2.20m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	Borehole Log	Borehole No. **WS108** Sheet 1 of 1

Project Name:	55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location:	SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client:	Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES	PID=0	0.05			MADE GROUND Asphalt cover.
		0.50 - 0.70	ES	PID=0				MADE GROUND Brown slightly clayey gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse brick, concrete and flint.
		0.90 - 1.20	ES	PID=0				
		1.20 - 1.50	ES	PID=3				
		1.50 - 1.70	ES	PID=6	1.50			CLAY Firm greyish green slightly silty slightly gravelly CLAY. Gravel of subangular to subrounded fine flint and orangic material.
		1.80 - 2.00	ES	PID=0				
		2.00 - 2.50	ES					
					2.50			End of borehole at 2.50 m

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Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	# Borehole Log	Borehole No. **WS109** Sheet 1 of 1

Project Name: 55 Vastern Road, Reading	Project No. A10967	Co-ords: -	Hole Type WS
Location: SSE Contracting Ltd, 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkely (Western) Homes		Dates: 18/04/2018 -	Logged By K.D

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES	PID=6	0.05			MADE GROUND Asphalt cover.
		0.30 - 0.60	ES	PID=2				MADE GROUND Brown slightly silty gravelly fine to coarse SAND. Gravel of subangular to subrounded fine to coarse with frequent cobble content of brick, asphalt and concrete.
		0.60 - 0.90	ES	PID=0				
					1.00			End of borehole at 1.00 m

1
2
3
4
5

Remarks
Cleared by Cable Avoidance Tool (CAT).
No groundwater encountered.
Hole terminated due to obstruction at 1.00m bgl.

Attachment 3

Ground Gas Results (Terramech Investigations Ltd)

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date: 01/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.2
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** 0.0
Weather/Wind: Light Rain **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: BH1002C: Bung moved at the end of test allowing air to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	995	0.05		**15**	0	4.9	12.9	1	1	0.2	2.23
			Initial:	**30**	0	5	8.5	1	1	0.3	
				45	0	5	8.3	1	1	0.3	
			0.1	**60**	0	5	8.2	1	1	0.3	
				75	0	5	8.2	1	1	0.3	
			Peak:	**90**	0	5	8.2	1	1	0.3	
				105	0	5	8.1	1	1	0.3	
			-4.5	**120**	0	5.1	8.1	1	1	0.3	
				135	0	5.1	8	1	1	0.3	
			Average:	**150**	0	5.1	8	1	1	0.3	
				165	0	5.1	8.2	1	1	0.3	
			-1.3	**180**	0	5	8.5	1	1	0.2	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1002C	996	-0.17		**15**	0	0.1	21.5	1	1	0.1	2.32 - Light Hydro-carbon Odour
			Initial:	**30**	0	1.6	18.8	1	1	0.1	
				45	0	1.8	17	1	1	0.1	
			-1.9	**60**	0	2	16.4	1	1	0.1	
				75	0	2.3	15.9	1	1	0.1	
			Peak:	**90**	0	2.4	15.5	1	1	0.1	
				105	0	2.6	15.1	1	1	0.0	
			-1.9	**120**	0	2.7	14.9	1	1	0.1	
				135	0	2.7	14.8	1	1	0.1	
			Average:	**150**	0	2.4	15.4	1	1	0.0	
				165	0	1.6	17.7	1	1	0.0	
			-1.7	**180**	0	0.4	20.3	1	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1003E	994	0.03		**15**	0	0.9	20.2	1	1	0.3	2.44
			Initial:	**30**	0	1	19.5	0	1	0.3	
				45	0	1	19.4	0	1	0.3	
			0.1	**60**	0	1	19.4	0	1	0.3	
				75	0	1	19.4	0	1	0.3	
			Peak:	**90**	0	1	19.4	0	1	0.3	
				105	0	1	19.4	0	1	0.3	
			0.1	**120**	0	1	19.4	0	1	0.3	
				135	0	1	19.4	0	1	0.3	
			Average:	**150**	0	1	19.4	0	1	0.3	
				165	0	1	19.4	0	1	0.2	
			0.1	**180**	0	1	19.4	0	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date: 01/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.2
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** 0.0
Weather/Wind: Light Rain **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: BH1002C: Bung moved at the end of test allowing air to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	994	-1.15		**15**	0.1	6.3	9.8	8	1	0.7	2.08
			Initial:	**30**	0.1	6.4	0.6	2	1	0.7	
				45	0.1	6.5	0.3	2	1	0.7	
			0.1	**60**	0.1	6.5	0.3	1	1	0.8	
				75	0.1	6.5	0.2	1	1	0.8	
			Peak:	**90**	0.1	6.5	0.2	1	1	0.8	
				105	0.1	6.5	0.2	1	1	0.8	
			-21.6	**120**	0.1	6.5	0.2	1	1	0.8	
				135	0.1	6.5	0.2	1	1	0.8	
			Average:	**150**	0.1	6.5	0.2	1	1	0.8	
				165	0.1	6.5	0.1	1	1	0.8	
			-9.9	**180**	0.1	6.5	0.1	1	1	0.8	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1005	997	0.05		**15**	0	0.6	20.3	1	1	2.5	2.49
			Initial:	**30**	0	0.6	20	0	1	2.5	
				45	0	0.6	20.1	0	1	2.4	
			-16.0	**60**	0	0.6	20.1	0	1	2.3	
				75	0	0.6	20.2	0	1	2.2	
			Peak:	**90**	0	0.5	20.2	0	1	2.2	
				105	0	0.5	20.2	0	1	2.1	
			-16.0	**120**	0	0.5	20.3	0	1	2.0	
				135	0	0.5	20.3	0	1	2.0	
			Average:	**150**	0	0.5	20.3	0	1	1.9	
				165	0	0.5	20.4	0	1	1.8	
			-5.9	**180**	0	0.4	20.4	0	1	1.8	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2001	996	-0.53		**15**	0.1	6.3	9.8	8	1	1.3	2.32
			Initial:	**30**	0.1	6.4	0.6	2	1	1.2	
				45	0.1	6.5	0.3	2	1	1.1	
			-5.2	**60**	0.1	6.5	0.3	1	1	1.0	
				75	0.1	6.5	0.2	1	1	0.9	
			Peak:	**90**	0.1	6.5	0.2	1	1	0.9	
				105	0.1	6.5	0.2	1	1	0.8	
			-2.7	**120**	0.1	6.5	0.2	1	1	0.7	
				135	0.1	6.5	0.2	1	1	0.7	
			Average:	**150**	0.1	6.5	0.2	1	1	0.7	
				165	0.1	6.5	0.1	1	1	0.6	
			-2.8	**180**	0.1	6.5	0.1	1	1	0.5	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date: 01/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.2
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** 0.0
Weather/Wind: Light Rain **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	996	-0.17		**15**	0	0.1	21	1	1	0.1	2.28
			Initial:	**30**	0	0.1	21.1	1	1	0.1	
				45	0	0.1	21.1	1	1	0.1	
			0.1	**60**	0	0.1	21.1	1	1	0.1	
				75	0	0.1	21.1	1	1	0.1	
			Peak:	**90**	0	0.1	21.1	1	1	0.1	
				105	0	0.1	21.1	1	1	0.1	
			0.1	**120**	0	0.1	21.2	1	1	0.1	
				135	0	0.1	21.2	1	1	0.1	
			Average:	**150**	0	0.1	21.2	1	1	0.0	
				165	0	0.1	21.2	1	1	0.0	
			0.1	**180**	0	0.1	21.2	1	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2003	996	-2.62		**15**	0	1.4	19.3	4	1	2.5	2.44
			Initial:	**30**	0	1.4	17.9	6	1	2.6	
				45	0	1.4	17.8	6	1	2.7	
			-22.1	**60**	0	1.4	17.8	6	1	2.7	
				75	0	1.4	17.8	6	1	2.7	
			Peak:	**90**	0	1.4	17.8	6	1	2.6	
				105	0	1.4	17.8	6	1	2.6	
			-22.1	**120**	0	1.4	17.8	6	1	2.6	
				135	0	1.4	17.8	6	1	2.6	
			Average:	**150**	0	1.4	17.8	6	1	2.6	
				165	0	1.4	17.8	6	1	2.6	
			-20.2	**180**	0	1.4	17.8	6	1	2.6	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2004	996	-0.29		**15**	0	0.1	20.2	1	1	0.4	2.40
			Initial:	**30**	0	0.1	20.1	1	1	0.5	
				45	0	0.1	20.3	1	1	0.4	
			0.1	**60**	0	0.1	20.5	1	1	0.3	
				75	0	0.1	20.6	0	1	0.2	
			Peak:	**90**	0	0.1	20.7	0	1	0.2	
				105	0	0.1	20.7	0	1	0.2	
			0.3	**120**	0	0.1	20.7	0	1	0.2	
				135	0	0.1	20.8	1	1	0.2	
			Average:	**150**	0	0.1	20.8	1	1	0.2	
				165	0	0.1	20.8	1	1	0.2	
			0.2	**180**	0	0.1	20.8	1	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date: 01/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.2
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** 0.0
Weather/Wind: Light Rain **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	997	-1.34		**15**	0	10.3	12.7	2	1	0.2	2.44 - Strong hydro-carbon odour & sheen on dipmeter
			Initial:	**30**	0	10.4	9.4	2	1	0.2	
				45	0	10.4	9.3	1	1	0.1	
			0.1	**60**	0	10.5	9.2	1	1	0.1	
				75	0	10.5	9.2	1	1	0.1	
			Peak:	**90**	0	10.6	9.2	1	1	0.1	
				105	0	10.7	9.2	1	1	0.0	
			0.1	**120**	0	10.9	8.9	1	1	0.0	
				135	0	11.1	8.7	1	1	0.0	
			Average:	**150**	0	11.2	8.5	0	1	0.0	
				165	0	11.2	8.4	0	1	0.0	
			0.1	**180**	0	11.2	8.3	1	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1003	995	-0.43		**15**	0	0.9	20.3	1	1	0.3	2.06
			Initial:	**30**	0	0.5	21	1	1	0.1	
				45	0	0.4	21.1	1	1	0.1	
			0.0	**60**	0	0.3	21.1	1	1	0.1	
				75	0	0.2	21.2	1	1	0.1	
			Peak:	**90**	0	0.2	21.2	1	1	0.1	
				105	0	0.2	21.2	1	1	0.1	
			0.0	**120**	0	0.2	21.2	1	1	0.1	
				135	0	0.2	21.2	1	1	0.1	
			Average:	**150**	0	0.2	21.2	1	1	0.1	
				165	0	0.2	21.2	1	1	0.1	
			0.0	**180**	0	0.2	21.3	1	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1004	995	-0.63		**15**	0	4.2	17.7	1	1	0.5	2.24
			Initial:	**30**	0	4.2	17.3	1	1	0.5	
				45	0	4.2	17.3	1	1	0.5	
			-4.3	**60**	0	4.1	17.3	1	1	0.5	
				75	0	4.1	17.3	1	1	0.5	
			Peak:	**90**	0	4.1	17.3	1	1	0.5	
				105	0	4.1	17.3	1	1	0.5	
			-4.3	**120**	0	4.1	17.3	1	1	0.5	
				135	0	4	17.3	1	1	0.4	
			Average:	**150**	0	3.9	17.2	1	1	0.4	
				165	0	3.9	17.2	1	1	0.4	
			-2.5	**180**	0	3.7	17.1	1	1	0.3	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date: 01/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.2
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** 0.0
Weather/Wind: Light Rain **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	996	-4.61		**15**	0	1.7	19	1	1	0.1	0.96
			Initial:	**30**	0	1.7	17.4	1	1	0.1	
				45	0	1.7	17.3	1	1	0.1	
			-24.8	**60**	0	1.7	17.3	1	1	0.1	
				75	0	1.7	17.3	1	1	0.1	
			Peak:	**90**	0	1.7	17.3	1	1	0.1	
				105	0	1.7	17.3	1	1	0.1	
			-24.8	**120**	0	1.7	17.3	1	1	0.1	
				135	0	1.7	17.3	1	1	0.0	
			Average:	**150**	0	1.7	17.3	1	1	0.0	
				165	0	1.7	17.3	1	1	0.0	
			-20.7	**180**	0	1.7	17.3	1	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS10019	994	0.03		**15**	0	0.6	20.7	0	0	0.5	2.21
			Initial:	**30**	0	0.6	20.6	0	0	0.5	
				45	0	0.7	20.5	0	1	0.5	
			0.1	**60**	0	0.8	20.4	0	0	0.5	
				75	0	0.8	20.4	0	1	0.5	
			Peak:	**90**	0	0.9	20.3	0	1	0.5	
				105	0	1	20.2	0	1	0.5	
			0.3	**120**	0	1	20.1	0	1	0.5	
				135	0	1.1	20.1	0	1	0.5	
			Average:	**150**	0	1.1	20.1	0	1	0.5	
				165	0	1.2	20	0	1	0.5	
			0.3	**180**	0	1.2	20	0	1	0.5	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 01/11/2019	VASTERN ROAD, READING	

Monitoring Date:	01/11/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):**	0.1	**O2 (%):** 21.2
Monitoring Engineer:	RK		**CO (ppm):**	0.0	**H_2S (ppm):**	1.0	**VOCs (ppm):** 0.0
Weather/Wind:	Light Rain	**Weather Trend:**	Unsettled		**Atm. Press. Trend**		Falling
Remarks: -					**Equipment:**		**Geotech GA5000**



Local Weather Station Atmospheric Pressure Records for 30th October to 6th November 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date: 12/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.4
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Rainy/strong **Weather Trend:** Unsettled **Atm. Press. Trend** Stable
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	994	-0.09	**Initial:**	**Initial:**	**15**	0	4.7	17.1	0	1	0.2	2.15
					30	0	4.8	9.7	0	1	0.3	
					45	0	4.8	8.9	0	1	0.3	
			-4.5	0.0	**60**	0	4.9	8.7	0	1	0.3	
					75	0	4.9	8.7	0	1	0.3	
			Peak:	**Peak:**	**90**	0	4.9	8.6	0	1	0.3	
					105	0	4.9	8.6	0	1	0.3	
			-11.9	0.0	**120**	0	4.9	8.6	0	1	0.2	
					135	0	5	8.6	0	1	0.2	
			Average:	**Average:**	**150**	0	5	8.5	0	1	0.2	
					165	0	5	8.6	0	1	0.2	
			-3.3	0.0	**180**	0	5	8.6	0	1	0.2	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1002C	994	0.07			**15**	0	1.3	20.4	0	1	0.1	2.21
			Initial:		**30**	0	1.3	16.7	0	0	0.1	
					45	0	1	17	0	0	0.1	
			0.1		**60**	0	0.8	17.9	0	0	0.1	
					75	0	0.6	19.3	0	1	0.1	
			Peak:		**90**	0	0.6	20	0	1	0.1	
					105	0	0.5	20.2	0	1	0.1	
			0.2		**120**	0	0.4	20.5	0	1	0.0	
					135	0	0.4	20.7	0	1	0.0	
			Average:		**150**	0	0.4	20.8	0	1	0.0	
					165	0	0.3	21	0	1	0.0	
			0.2		**180**	0	0.3	21.1	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1003E	994	0.03			**15**	0	0.2	22	0	0	0.0	2.47
			Initial:		**30**	0	0.2	22	0	0	0.0	
					45	0	0.2	22	0	0	0.0	
			0.2		**60**	0	0.2	22	0	0	0.0	
					75	0	0.2	22	0	0	0.0	
			Peak:		**90**	0	0.2	22	0	1	0.0	
					105	0	0.3	21.9	0	1	0.0	
			0.3		**120**	0	0.3	21.9	0	1	0.0	
					135	0	0.3	21.9	0	1	0.0	
			Average:		**150**	0	0.3	21.8	0	1	0.0	
					165	0	0.3	21.8	0	1	0.0	
			0.2		**180**	0	0.3	21.8	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date: 12/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.4

Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A

Weather/Wind: Rainy/strong **Weather Trend:** Unsettled **Atm. Press. Trend** Stable

Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	995	2.48	**Initial:**	**Initial:**	**15**	0	5.1	19.4	0	1	0.2	2.01
					30	0	5.2	12.2	0	1	0.2	
					45	0	5.3	11.7	0	1	0.2	
			-18.8	2.0	**60**	0	5.3	11.5	0	1	0.2	
					75	0	5.3	11.5	0	1	0.2	
			Peak:	**Peak:**	**90**	0	4.9	11.7	0	1	0.2	
					105	0	4.4	12.1	0	1	0.2	
			-18.8	5.0	**120**	0	4.3	13.2	0	1	0.2	
					135	0	4.2	13.6	0	1	0.2	
			Average:	**Average:**	**150**	0	3.8	13.9	0	1	0.2	
					165	0	3.8	14.3	0	1	0.2	
			-14.5	5.0	**180**	0	3.6	14.2	0	1	0.2	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1005	995	4.37	**Initial:**	**Initial:**	**15**	0	1	21	1	1	1.8	2.41 - Light Hydro-carbon Odour & Sheen
					30	0	1	20.8	1	1	1.8	
					45	0	0.8	20.9	1	1	1.6	
			-0.2	0.4	**60**	0	0.6	21	1	1	1.2	
					75	0	0.9	21.1	1	1	0.9	
			Peak:	**Peak:**	**90**	0	0.4	21.2	1	1	0.7	
					105	0	0.4	21.3	1	1	0.6	
			-0.7	1.1	**120**	0	0.4	21.4	1	1	0.5	
					135	0	0.3	21.4	1	1	0.4	
			Average:	**Average:**	**150**	0	0.3	21.4	0	1	0.4	
					165	0	0.2	21.4	0	1	0.3	
			-0.6	1.0	**180**	0	0.2	21.5	0	1	0.3	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH2001	994	-1.68	**Initial:**	**Initial:**	**15**	0.1	1	20.9	1	1	1.6	2.21
					30	0.1	1	20.4	1	1	1.8	
					45	0.1	0.9	20.4	1	1	1.7	
			-11.9	0.4	**60**	0.1	0.9	20.6	1	1	1.6	
					75	0.1	0.8	20.6	1	1	1.5	
			Peak:	**Peak:**	**90**	0.1	0.8	20.7	1	1	1.4	
					105	0.1	0.7	20.8	0	1	1.4	
			-11.9	1.1	**120**	0	0.7	20.9	0	1	1.3	
					135	0	0.6	21	0	1	1.2	
			Average:	**Average:**	**150**	0	0.5	21.2	0	1	0.9	
					165	0	0.4	21.4	0	1	0.7	
			-9.4	1.0	**180**	0	0.4	21.4	0	1	0.7	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date: 12/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.4
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Rainy/strong **Weather Trend:** Settled **Atm. Press. Trend** Stable
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	994	0.02	Initial:		**15**	0	0.2	21.3	0	1	0.0	2.19
					30	0	0.2	21.2	0	1	0.0	
			0.1		**45**	0	0.1	21.3	0	1	0.0	
					60	0	0.1	21.4	0	1	0.0	
			Peak:		**75**	0	0.1	21.4	0	1	0.0	
					90	0	0.1	21.4	0	1	0.0	
			0.2		**105**	0	0.1	21.5	0	1	0.0	
					120	0	0.1	21.4	0	1	0.0	
			Average:		**135**	0	0.1	21.5	0	1	0.0	
					150	0	0.1	21.5	0	1	0.0	
			0.2		**165**	0	0.1	21.5	0	1	0.0	
					180	0	0.1	21.5	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH2003	994	0.09	Initial:	Initial:	**15**	0	0.6	20.1	1	1	1.2	2.35
					30	0	0.6	19.6	2	1	1.4	
			-17.0	0.4	**45**	0	0.6	19.6	2	1	1.3	
					60	0	0.6	19.7	2	1	1.2	
			Peak:	Peak:	**75**	0	0.5	19.8	1	1	1.1	
					90	0	0.5	19.9	1	1	1.1	
			-17.5	0.7	**105**	0	0.5	19.9	1	1	1.1	
					120	0	0.5	20	1	1	1.1	
			Average:	Average:	**135**	0	0.5	20	1	1	1.0	
					150	0	0.5	20.1	1	1	0.9	
			-5.6	0.7	**165**	0	0.5	20.1	1	1	1.0	
					180	0	0.5	20.1	1	1	0.9	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH2004	994	0.1	Initial:	Initial:	**15**	0	0.3	22.1	1	0	0.7	2.29
					30	0	0.3	21.7	1	0	0.7	
			-0.5	0.1	**45**	0	0.2	21.7	0	0	0.5	
					60	0	0.2	21.9	0	0	0.4	
			Peak:	Peak:	**75**	0	0.2	22	0	1	0.4	
					90	0	0.2	22	0	1	0.4	
			-1.0	1.4	**105**	0	0.2	22	0	0	0.3	
					120	0	0.2	22.1	0	1	0.3	
			Average:	Average:	**135**	0	0.2	22.1	0	0	0.3	
					150	0	0.2	22.1	0	1	0.3	
			-0.9	0.3	**165**	0	0.2	22.1	0	0	0.2	
					180	0	0.2	22.1	0	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date: 12/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.4
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Rainy/strong **Weather Trend:** Settled **Atm. Press. Trend** Stable
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	995	-0.05	Initial: 0.1 Peak: 0.2 Average: 0.1		15	0	10.7	16.6	1	1	0.2	2.31 - Hydro-carbon odour & sheen on dipmeter
					30	0	10.9	8.8	1	1	0.2	
					45	0	11	7.9	1	1	0.2	
					60	0	11	7.7	0	1	0.2	
					75	0	11	7.6	0	1	0.2	
					90	0	11.1	7.5	0	1	0.2	
					105	0	11.1	7.4	0	1	0.2	
					120	0	11.2	7.2	0	1	0.2	
					135	0	11.5	7	0	1	0.2	
					150	0	11.6	6.6	0	1	0.1	
					165	0	11.8	6.3	0	1	0.1	
					180	0	12	6.1	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1003	995	0.6	Initial: 0.2 Peak: 0.4 Average: 0.4		15	0	0.8	21.3	0	0	0.3	1.98
					30	0	0.6	21.4	0	0	0.2	
					45	0	0.6	21.5	0	0	0.2	
					60	0	0.6	21.5	0	0	0.2	
					75	0	0.5	21.6	0	0	0.2	
					90	0	0.5	21.7	0	0	0.2	
					105	0	0.4	21.7	0	0	0.2	
					120	0	0.4	21.8	0	0	0.2	
					135	0	0.4	21.9	0	0	0.2	
					150	0	0.4	21.9	0	0	0.2	
					165	0	0.4	22	0	0	0.2	
					180	0	0.4	22	0	0	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1004	994	0	Initial: 0.1 Peak: 0.3 Average: 0.2		15	0	2.5	21.4	0	0	0.2	2.15
					30	0	2.3	20.1	0	0	0.2	
					45	0	2.1	20.2	0	0	0.2	
					60	0	1.9	20.4	0	0	0.2	
					75	0	1.8	20.6	0	0	0.2	
					90	0	1.6	20.8	0	0	0.2	
					105	0	1.4	21	0	0	0.2	
					120	0	1.2	21.2	0	0	0.2	
					135	0	1.1	21.3	0	0	0.1	
					150	0	1	21.4	0	0	0.1	
					165	0	1	21.5	0	0	0.1	
					180	0	1	21.5	0	0	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date: 12/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.4
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Rainy/strong **Weather Trend:** Unsettled **Atm. Press. Trend** Stable
Remarks: - **Equipment:** **Geotech GA5000**

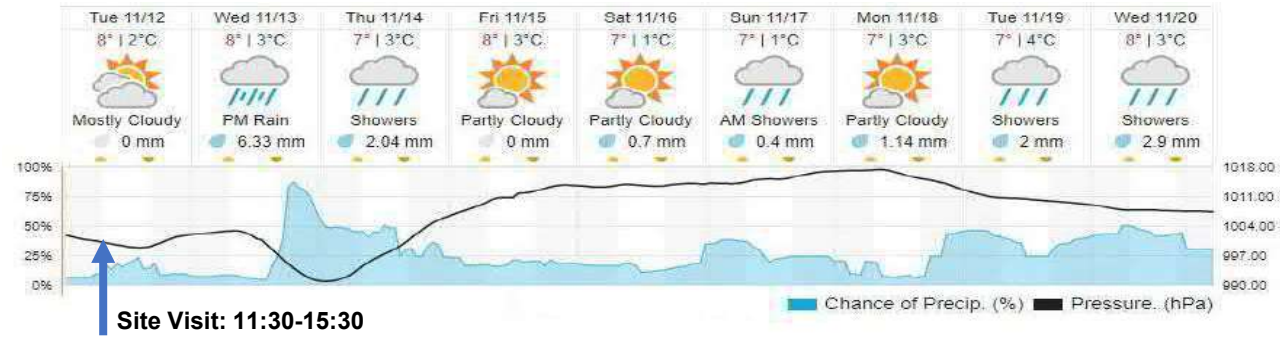
Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	995	0.02	**Initial:**	**Initial:**	**15**	0	0.8	21.5	0	0	0.1	0.95
					30	0	0.8	20.5	0	0	0.1	
					45	0	0.8	20.4	0	0	0.1	
			-16.4	0.5	**60**	0	0.8	20.4	0	0	0.1	
					75	0	0.8	20.4	0	0	0.1	
			Peak:	**Peak:**	**90**	0	0.7	20.6	0	0	0.1	
					105	0	0.6	20.8	0	0	0.1	
			-16.4	0.9	**120**	0	0.6	21	0	0	0.1	
					135	0	0.6	21	0	0	0.1	
			Average:	**Average:**	**150**	0	0.6	21	0	0	0.1	
					165	0	0.5	21.2	0	1	0.1	
			-4.2	0.6	**180**	0	0.5	21.3	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1019	995	-0.07			**15**	0	0.4	21.5	0	0	0.1	2.12 - Hydro-carbon odour
			Initial:		**30**	0	0.2	21.7	0	0	0.1	
					45	0	0.2	21.8	0	0	0.1	
			0.1		**60**	0	0.1	21.9	0	0	0.1	
					75	0	0.1	21.9	0	0	0.1	
			Peak:		**90**	0	0.1	22	0	0	0.1	
					105	0	0.1	22	0	0	0.1	
			0.2		**120**	0	0.1	22	0	0	0.1	
					135	0	0.1	22	0	0	0.1	
			Average:		**150**	0	0.1	22	0	0	0.1	
					165	0	0.1	22	0	0	0.1	
			0.1		**180**	0	0.1	22	0	0	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 12/11/2019	VASTERN ROAD, READING	

Monitoring Date:	12/11/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):** 0.1	**O2 (%):**	21.4
Monitoring Engineer:	RK		**CO (ppm):**	0.0	**H_2S (ppm):** 0.0	**VOCs (ppm):**	N/A
Weather/Wind:	Rainy/strong	**Weather Trend:**	Unsettled		**Atm. Press. Trend**	Stable	
Remarks: -					**Equipment:**	**Geotech GA5000**	



Local Weather Station Atmospheric Pressure Records for 12th to 20th November 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date: 20/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.5
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/ Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	1010	-0.07	**Initial:**	**Initial:**	**15**	0	4.7	15.2	0	1	0.2	2.13
					30	0	4.8	9.7	0	1	0.2	
					45	0	4.8	9.2	0	1	0.2	
			-4.1	0.1	**60**	0	4.8	9.1	0	1	0.2	
			Peak:	**Peak:**	**75**	0	4.8	9.1	0	1	0.2	
					90	0	4.8	9.1	0	1	0.2	
					105	0	4.8	9	0	1	0.2	
			-4.1	0.1	**120**	0	4.8	9.1	0	1	0.2	
					135	0	4.8	9.1	0	1	0.2	
			Average:	**Average:**	**150**	0	4.8	9.1	0	1	0.2	
					165	0	4.8	9.2	0	1	0.2	
			-3.8	0.1	**180**	0	4.8	9.3	0	1	0.2	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1002C	1009	-1.06	**Initial:**	**Initial:**	**15**	0	0.6	20.4	0	1	0.1	2.19
					30	0	0.5	19.6	0	1	0.1	
					45	0	0.4	20	0	1	0.1	
			0.1	0.1	**60**	0	0.3	20.4	0	1	0.1	
			Peak:	**Peak:**	**75**	0	0.3	20.7	0	1	0.1	
					90	0	0.3	20.9	0	1	0.1	
					105	0	0.2	21.1	0	1	0.0	
			0.2	0.1	**120**	0	0.2	21.2	0	1	0.0	
					135	0	0.2	21.3	0	1	0.0	
			Average:	**Average:**	**150**	0	0.2	21.4	0	1	0.0	
					165	0	0.2	21.5	0	1	0.0	
			0.1	0.0	**180**	0	0.2	21.6	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1003E	1009	0.03	**Initial:**	**Initial:**	**15**	0	0.8	21.1	0	0	0.1	1.45
					30	0	0.8	19.9	0	0	0.1	
					45	0	0.8	19.8	0	0	0.1	
			0.1	0.0	**60**	0	0.8	19.8	0	0	0.1	
					75	0	0.8	19.8	0	0	0.1	
			Peak:	**Peak:**	**90**	0	0.8	19.8	0	0	0.1	
					105	0	0.8	19.8	0	1	0.1	
			0.1	0.0	**120**	0	0.8	19.8	0	1	0.1	
					135	0	0.8	19.8	0	1	0.1	
			Average:	**Average:**	**150**	0	0.8	19.8	0	1	0.1	
					165	0	0.8	19.8	0	1	0.1	
			0.0	0.0	**180**	0	0.8	19.8	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date: 20/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.5
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/ Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	1010	1.23	Initial:	Initial:	15	0	3.9	18.9	0	1	0.1	1.99
					30	0	4	16.7	0	1	0.1	
			-5.5	0.0	45	0	3.4	17.1	0	1	0.1	
					60	0	3	17.9	0	1	0.1	
			Peak:	Peak:	75	0	2.7	18.3	0	1	0.1	
					90	0	2.2	18.8	0	1	0.1	
			-5.5	0.0	105	0	1.8	19.3	0	1	0.1	
					120	0	1.5	19.8	0	1	0.0	
			Average:	Average:	135	0	1.2	20.2	0	1	0.0	
					150	0	1	20.4	0	1	0.0	
			-4.3	0.0	165	0	0.9	20.7	0	1	0.0	
					180	0	0.8	20.8	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1005	1010	0.89	Initial:	Initial:	15	0	1.2	21.8	1	1	1.6	2.37
					30	0	1.2	21.4	1	1	1.7	
			-22.6	0.6	45	0	1.2	21.4	1	1	1.8	
					60	0	1.2	21.4	1	1	1.8	
			Peak:	Peak:	75	0	1.2	21.4	1	1	1.8	
					90	0	1.3	21.4	1	1	1.9	
			-22.6	1.0	105	0	1.3	21.4	1	1	1.9	
					120	0	1.3	21.4	1	1	1.9	
			Average:	Average:	135	0	1.3	21.4	1	1	1.9	
					150	0	1.3	21.4	1	1	1.9	
			-20.8	0.9	165	0	1.3	21.4	1	1	1.9	
					180	0	1.3	21.4	1	1	2.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2001	1009	0.03	Initial:	Initial:	15	0	0.8	21.6	1	1	1.2	2.18
					30	0	0.8	21.2	1	1	1.3	
			-0.6	0.0	45	0	0.8	21.2	1	1	1.3	
					60	0	0.8	21.2	1	1	1.2	
			Peak:	Peak:	75	0	0.7	21.3	1	1	1.2	
					90	0	0.7	21.3	1	1	1.2	
			-0.6	-0.1	105	0	0.7	21.4	1	1	1.2	
					120	0	0.7	21.4	1	1	1.1	
			Average:	Average:	135	0	0.6	21.4	1	1	1.0	
					150	0	0.6	21.5	1	1	1.0	
			-4.7	-0.1	165	0	0.6	21.5	1	1	0.9	
					180	0	0.5	21.6	1	1	0.8	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date: 20/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.5
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/ Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	1009	0.02	**Initial:**	**Initial:**	**15**	0	0.1	22.2	0	1	0.1	2.16
					30	0	0.1	22.2	0	1	0.1	
					45	0	0.1	22.2	0	1	0.1	
			0.2	0.0	**60**	0	0.1	22.2	0	1	0.1	
			Peak:	**Peak:**	**75**	0	0.1	22.2	0	1	0.0	
					90	0	0.1	22.2	0	1	0.0	
					105	0	0.1	22.2	0	1	0.0	
			0.2	0.0	**120**	0	0.1	22.2	0	1	0.0	
			Average:	**Average:**	**135**	0	0.1	22.2	0	1	0.0	
					150	0	0.1	22.2	0	1	0.0	
					165	0	0.1	22.2	0	1	0.0	
			0.2	0.0	**180**	0	0.1	22.2	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2003	1008	-0.09	**Initial:**	**Initial:**	**15**	0	0.5	21.9	1	1	1.2	2.32
					30	0	0.5	21.6	2	1	1.3	
					45	0	0.5	21.5	2	1	1.3	
			-21.8	0.1	**60**	0	0.5	21.5	2	0	1.4	
			Peak:	**Peak:**	**75**	0	0.5	21.5	2	1	1.4	
					90	0	0.5	21.5	2	1	1.4	
					105	0	0.5	21.5	2	1	1.4	
			-21.8	0.4	**120**	0	0.5	21.5	2	1	1.4	
			Average:	**Average:**	**135**	0	0.6	21.5	2	1	1.3	
					150	0	0.6	21.5	2	1	1.3	
					165	0	0.6	21.5	2	1	1.3	
			-19.9	0.3	**180**	0	0.6	21.5	2	1	1.3	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2004	1008	-2.6	**Initial:**	**Initial:**	**15**	0	0.3	21.9	1	1	0.8	2.28
					30	0	0.3	21.7	1	1	0.8	
					45	0	0.3	21.7	1	1	0.7	
			-2.3	0.1	**60**	0	0.2	21.8	1	1	0.5	
			Peak:	**Peak:**	**75**	0	0.2	21.9	0	1	0.4	
					90	0	0.2	21.9	0	1	0.4	
					105	0	0.2	22	0	1	0.4	
			-2.3	0.2	**120**	0	0.2	22	0	1	0.4	
			Average:	**Average:**	**135**	0	0.2	22	0	1	0.4	
					150	0	0.2	22	0	1	0.3	
					165	0	0.2	22	0	1	0.3	
			-2.1	0.2	**180**	0	0.2	22	0	1	0.3	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date: 20/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.5
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/ Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	1011	-0.15	**Initial:**	**Initial:**	**15**	0	10.1	15	4	1	0.1	2.35 Hydro-carbon Odour & Sheen/ residue on dipmeter
					30	0	10.2	9.5	1	1	0.1	
			0.1	0.0	**45**	0	10.2	9.1	0	0	0.1	
					60	0	10.3	9.1	0	1	0.1	
			Peak:	**Peak:**	**75**	0	10.3	9	0	1	0.1	
					90	0	10.3	9	0	1	0.1	
			0.1	0.0	**105**	0	10.3	9	0	1	0.1	
					120	0	10.4	8.9	0	1	0.1	
			Average:	**Average:**	**135**	0	10.5	8.8	0	1	0.1	
					150	0	10.7	8.5	0	1	0.1	
			0.1	0.0	**165**	0	10.8	8.2	0	1	0.0	
					180	0	10.9	8.1	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1003	1010	0.15	**Initial:**	**Initial:**	**15**	0	1.1	21	0	1	0.3	1.97
					30	0	1	20	0	1	0.2	
			0.1	0.1	**45**	0	0.8	20.4	0	1	0.2	
					60	0	0.7	20.8	0	1	0.2	
			Peak:	**Peak:**	**75**	0	0.6	20.9	0	1	0.2	
					90	0	0.6	21.1	0	1	0.2	
			0.2	0.1	**105**	0	0.5	21.2	0	1	0.1	
					120	0	0.5	21.3	0	1	0.1	
			Average:	**Average:**	**135**	0	0.5	21.3	0	1	0.1	
					150	0	0.4	21.5	0	1	0.1	
			0.2	0.1	**165**	0	0.4	21.5	0	1	0.1	
					180	0	0.4	21.6	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1004	1010	-0.07	**Initial:**	**Initial:**	**15**	0	2.6	20.8	0	0	0.2	2.13
					30	0	2.6	19.3	0	0	0.3	
			0.1	0.0	**45**	0	2.5	19.2	0	0	0.3	
					60	0	2.4	19.3	0	0	0.3	
			Peak:	**Peak:**	**75**	0	2.4	19.4	0	0	0.3	
					90	0	2.2	19.5	0	1	0.2	
			0.1	0.0	**105**	0	2.1	19.7	0	1	0.2	
					120	0	2	19.8	0	1	0.2	
			Average:	**Average:**	**135**	0	2	19.7	0	1	0.2	
					150	0	1.9	19.7	0	1	0.2	
			0.1	0.0	**165**	0	1.8	19.8	0	1	0.2	
					180	0	1.8	19.8	0	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date: 20/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.5
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/ Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

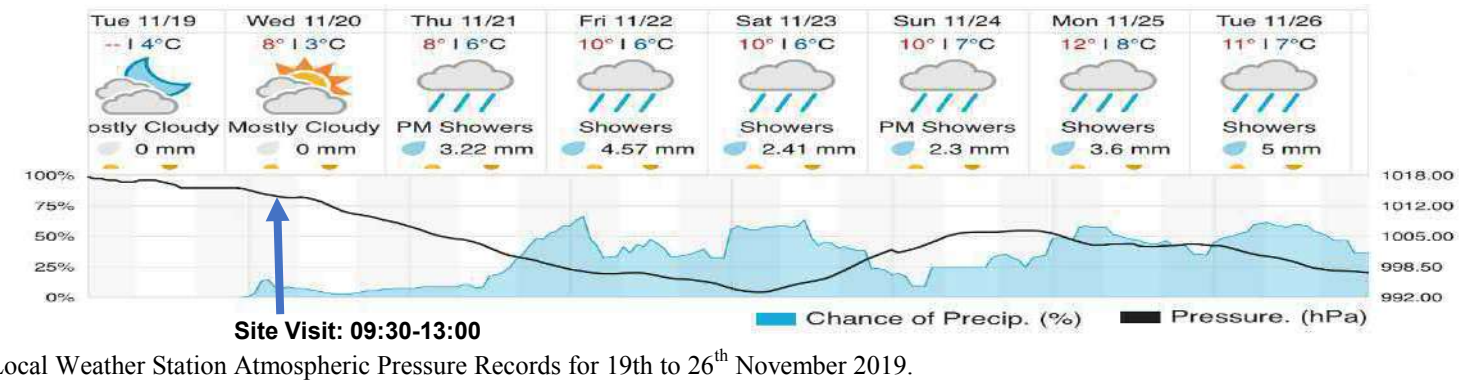
Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	1010	0.77	**Initial:**	**Initial:**	**15**	0	0.9	22.1	0	0	0.2	0.95
					30	0	0.9	21.7	0	0	0.2	
			-19.9	0.0	**45**	0	0.9	21.7	0	0	0.2	
					60	0	0.8	21.7	0	0	0.2	
			Peak:	**Peak:**	**75**	0	0.8	21.7	0	1	0.1	
					90	0	0.8	21.8	0	1	0.1	
			-19.9	0.0	**105**	0	0.8	21.8	0	1	0.1	
					120	0	0.8	21.8	0	1	0.1	
			Average:	**Average:**	**135**	0	0.8	21.8	0	1	0.1	
					150	0	0.8	21.8	0	1	0.1	
			-15.7	0.0	**165**	0	0.8	21.8	0	1	0.1	
					180	0	0.7	21.8	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1019	1010	-0.02	**Initial:**	**Initial:**	**15**	0	0.3	22	0	0	0.1	2.09 - Hydro-carbon odour
					30	0	0.2	22.1	0	0	0.1	
			0.1	0.0	**45**	0	0.2	22.1	0	0	0.1	
					60	0	0.2	22.2	0	0	0.1	
			Peak:	**Peak:**	**75**	0	0.2	22.2	0	0	0.1	
					90	0	0.1	22.3	0	0	0.0	
			0.2	0.0	**105**	0	0.1	22.3	0	0	0.0	
					120	0	0.1	22.3	0	0	0.0	
			Average:	**Average:**	**135**	0	0.1	22.3	0	0	0.0	
					150	0	0.1	22.4	0	0	0.0	
			0.2	0.0	**165**	0	0.1	22.4	0	0	0.0	
					180	0	0.1	22.4	0	0	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 20/11/2019	VASTERN ROAD, READING	

Monitoring Date:	20/11/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):**	0.1	**O2 (%):**	21.5
Monitoring Engineer:	RK		**CO (ppm):**	0.0	**H_2S (ppm):**	1.0	**VOCs (ppm):**	N/A
Weather/Wind:	Overcast/ Mod.	**Weather Trend:**	Stable		**Atm. Press. Trend**		Falling	
Remarks: -					**Equipment:**		**Geotech GA5000**	



Local Weather Station Atmospheric Pressure Records for 19th to 26th November 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date: 26/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.1
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Showers/Light **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	990	0.43	**Initial:**	**Initial:**	**15**	0	4.4	15.2	0	1	0.2	2.17
					30	0	4.4	9.8	0	1	0.2	
					45	0	4.4	9.5	0	1	0.2	
			-5.2	0.0	**60**	0	4.4	9.4	0	1	0.2	
					75	0	4.4	9.4	0	1	0.2	
			Peak:	**Peak:**	**90**	0	4.4	9.4	0	1	0.2	
					105	0	4.4	9.3	0	1	0.2	
			-5.2	0.0	**120**	0	4.4	9.3	0	1	0.2	
					135	0	4.5	9.3	0	1	0.2	
			Average:	**Average:**	**150**	0	4.5	9.3	0	1	0.2	
					165	0	4.5	9.2	0	1	0.2	
			-2.2	0.0	**180**	0	4.5	9.2	0	1	0.2	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1002C	990	4.07	**Initial:**	**Initial:**	**15**	0	0.1	20.8	0	1	0.1	2.24
					30	0	0.1	20.1	0	1	0.1	
					45	0	0.1	20.2	0	1	0.1	
			0.0	-0.1	**60**	0	0.1	20.5	0	1	0.1	
					75	0	0.1	20.8	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.1	21	0	1	0.1	
					105	0	0.1	21.2	0	1	0.1	
			0.0	-0.3	**120**	0	0.1	21.3	0	1	0.0	
					135	0	0.1	21.4	0	1	0.0	
			Average:	**Average:**	**150**	0	0.1	21.5	0	1	0.0	
					165	0	0.1	21.5	0	1	0.0	
			0.0	-0.3	**180**	0	0.1	21.5	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1003E	990	0	**Initial:**	**Initial:**	**15**	0	0.8	20.4	0	1	0.1	2.49
					30	0	0.8	19.2	0	1	0.1	
					45	0	0.8	19.1	0	1	0.1	
			0.2	0.0	**60**	0	0.8	19.1	0	1	0.1	
					75	0	0.8	19.1	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.8	19.1	0	1	0.1	
					105	0	0.8	19.1	0	1	0.1	
			0.3	0.0	**120**	0	0.8	19.1	0	1	0.0	
					135	0	0.8	19.1	0	1	0.0	
			Average:	**Average:**	**150**	0	0.8	19.1	0	1	0.0	
					165	0	0.8	19.1	0	1	0.0	
			0.3	0.0	**180**	0	0.8	19.1	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date: 26/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.1
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Showers/Light **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	992	3.24	**Initial:**	**Initial:**	**15**	0	3.2	19.3	1	1	0.2	2.03
					30	0	3.3	18.3	1	1	0.2	
					45	0	3.3	18.3	1	1	0.1	
			-21.6	0.0	**60**	0	3.3	18.3	1	1	0.1	
			Peak:	**Peak:**	**75**	0	3.3	18.3	1	1	0.1	
					90	0	3.3	18.3	1	1	0.1	
					105	0	3.3	18.3	1	1	0.1	
			-21.6	0.0	**120**	0	3.3	18.3	1	1	0.1	
			Average:	**Average:**	**135**	0	3.3	18.3	1	1	0.1	
					150	0	3.4	18.3	1	1	0.1	
					165	0	3.4	18.2	1	1	0.1	
			-18.2	0.0	**180**	0	3.4	18.2	1	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1005	991	1.11	**Initial:**	**Initial:**	**15**	0	1.1	21.2	1	1	1.2	2.43
					30	0	1.1	20.9	1	1	1.3	
					45	0	1.1	20.9	1	1	1.3	
			-6.3	0.1	**60**	0	1	21	1	1	1.1	
			Peak:	**Peak:**	**75**	0	0.8	21.2	1	1	0.9	
					90	0	0.7	21.2	1	1	0.7	
					105	0	0.6	21.4	1	1	0.6	
			-6.3	0.1	**120**	0	0.5	21.5	1	1	0.4	
			Average:	**Average:**	**135**	0	0.4	21.5	1	1	0.3	
					150	0	0.3	21.6	1	1	0.3	
					165	0	0.3	21.7	1	1	0.2	
			-4.9	0.0	**180**	0	0.2	21.7	1	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2001	990	0.43	**Initial:**	**Initial:**	**15**	0	0.8	21.2	2	1	1.2	2.12
					30	0	0.8	20.8	2	1	1.3	
					45	0	0.8	20.8	2	1	1.4	
			-20.9	-3.9	**60**	0	0.8	20.8	2	1	1.4	
			Peak:	**Peak:**	**75**	0	0.8	20.8	2	1	1.5	
					90	0	0.8	20.8	2	1	1.5	
					105	0	0.8	20.8	2	1	1.5	
			-20.9	-3.9	**120**	0	0.8	20.8	2	1	1.5	
			Average:	**Average:**	**135**	0	0.8	20.8	2	1	1.5	
					150	0	0.8	20.8	2	1	1.5	
					165	0	0.8	20.8	2	1	1.5	
			-17.6	-2.8	**180**	0	0.8	20.8	2	1	1.5	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date: 26/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.1
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Showers/Light **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	990	-0.09	Initial:	Initial:	15	0	0.1	21.4	0	1	1.2	2.20
					30	0	0.1	21.4	0	1	1.3	
					45	0	0.1	21.5	0	1	1.3	
			0.1	0.0	60	0	0.1	21.5	0	1	1.1	
					75	0	0.1	21.5	0	1	0.9	
			Peak:	Peak:	90	0	0.1	21.5	0	1	0.7	
					105	0	0.1	21.5	0	1	0.6	
			0.2	0.0	120	0	0.1	21.6	0	1	0.4	
					135	0	0.1	21.6	0	1	0.3	
			Average:	Average:	150	0	0.1	21.6	0	1	0.3	
					165	0	0.1	21.6	0	1	0.2	
			0.2	0.0	180	0	0.1	21.6	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2003	990	0.53	Initial:	Initial:	15	0	0.4	20.7	1	1	1.2	2.37
					30	0	0.4	20.5	1	1	1.2	
					45	0	0.4	20.5	1	1	1.2	
			-20.7	0.2	60	0	0.4	20.5	1	1	1.2	
					75	0	0.4	20.5	1	1	1.2	
			Peak:	Peak:	90	0	0.4	20.6	1	1	1.2	
					105	0	0.4	20.6	1	1	1.1	
			-20.7	0.3	120	0	0.4	20.6	1	1	1.1	
					135	0	0.4	20.6	1	1	1.1	
			Average:	Average:	150	0	0.4	20.7	1	1	1.1	
					165	0	0.4	20.7	1	1	1.0	
			-17.3	0.3	180	0	0.4	20.7	1	1	1.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2004	991	0.03	Initial:	Initial:	15	0	0.2	21.8	1	1	0.6	2.31
					30	0	0.3	21.6	1	1	0.6	
					45	0	0.2	21.7	1	1	0.5	
			-0.4	0.2	60	0	0.2	21.8	1	1	0.4	
					75	0	0.2	21.8	1	1	0.4	
			Peak:	Peak:	90	0	0.2	21.9	1	1	0.3	
					105	0	0.1	21.9	0	1	0.2	
			-0.6	0.4	120	0	0.1	21.9	0	1	0.2	
					135	0	0.1	22	0	1	0.2	
			Average:	Average:	150	0	0.1	22	0	1	0.1	
					165	0	0.1	22	0	1	0.1	
			-0.1	0.4	180	0	0.1	22	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date: 26/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.1
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Showers/Light **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	991	0.02	**Initial:**	**Initial:**	**15**	0	9.4	14.6	6	1	0.1	2.32 Hydro-carbon Odour & Sheen/ residue on dipmeter
					30	0	9.5	10.8	2	1	0.1	
			0.1	0.0	**45**	0	9.5	10.6	1	1	0.1	
					60	0	9.5	10.6	1	1	0.1	
			Peak:	**Peak:**	**75**	0	9.5	10.6	1	1	0.1	
					90	0	9.5	10.5	1	1	0.1	
			0.2	0.0	**105**	0	9.6	10.5	1	1	0.1	
					120	0	9.7	10.5	1	1	0.1	
			Average:	**Average:**	**135**	0	9.8	10.3	1	1	0.1	
					150	0	10.1	9.9	0	1	0.1	
			0.2	0.0	**165**	0	10.4	9.5	1	1	0.1	
					180	0	10.5	9.1	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1003	991	0.02	**Initial:**	**Initial:**	**15**	0	1	20.9	0	1	0.3	2.00
					30	0	1	20	0	1	0.4	
			-5.9	0.2	**45**	0	1	20.1	0	1	0.4	
					60	0	0.9	20.2	0	1	0.3	
			Peak:	**Peak:**	**75**	0	0.8	20.5	0	1	0.3	
					90	0	0.8	20.5	0	1	0.3	
			-5.9	0.4	**105**	0	0.7	20.6	0	1	0.3	
					120	0	0.6	20.8	0	1	0.2	
			Average:	**Average:**	**135**	0	0.6	21	0	1	0.2	
					150	0	0.5	21.1	0	1	0.2	
			-2.8	0.4	**165**	0	0.4	21.2	0	1	0.1	
					180	0	0.4	21.4	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1004	991	0.03	**Initial:**	**Initial:**	**15**	0	0.2	21.8	1	1	0.2	2.17
					30	0	0.3	21.6	1	1	0.2	
			-0.3	0.0	**45**	0	0.2	21.7	1	1	0.2	
					60	0	0.2	21.8	1	1	0.1	
			Peak:	**Peak:**	**75**	0	0.2	21.8	1	1	0.1	
					90	0	0.2	21.9	1	1	0.1	
			-0.4	0.0	**105**	0	0.1	21.9	0	1	0.1	
					120	0	0.1	21.9	0	1	0.1	
			Average:	**Average:**	**135**	0	0.1	22	0	1	0.1	
					150	0	0.1	22	0	1	0.1	
			-0.3	0.0	**165**	0	0.1	22	0	1	0.1	
					180	0	0.1	22	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date: 26/11/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.1
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Showers/Light **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

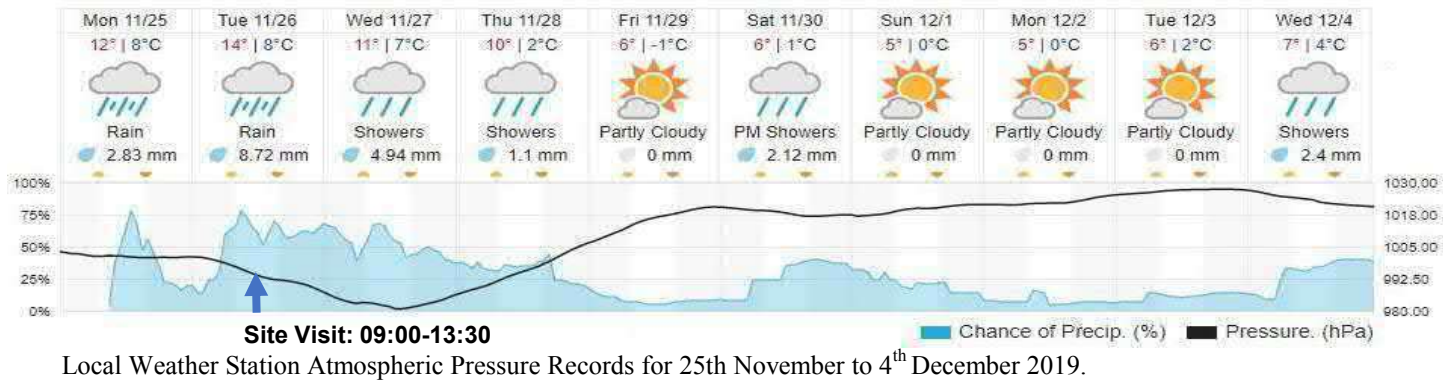
Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	991	5.43	**Initial:**	**Initial:**	**15**	0	0.6	21.9	0	1	0.2	0.95
					30	0	0.6	21.8	0	1	0.2	
					45	0	0.6	21.8	0	1	0.2	
			-18.0	-0.1	**60**	0	0.6	21.8	0	1	0.2	
					75	0	0.6	21.8	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.6	21.8	0	1	0.1	
					105	0	0.6	21.8	0	1	0.1	
			-18.0	-0.5	**120**	0	0.5	21.8	0	1	0.1	
					135	0	0.5	21.8	0	1	0.1	
			Average:	**Average:**	**150**	0	0.5	21.9	0	1	0.1	
					165	0	0.5	21.9	0	1	0.1	
			-12.5	-0.3	**180**	0	0.5	21.9	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1019	991	0.05	**Initial:**	**Initial:**	**15**	0	0.2	21.9	0	0	0.0	2.15 Faint sheen on dip meter
					30	0	0.2	22	0	0	0.0	
					45	0	0.2	22	0	0	0.0	
			0.1	0.0	**60**	0	0.2	22	0	0	0.0	
					75	0	0.2	22	0	0	0.0	
			Peak:	**Peak:**	**90**	0	0.2	22	0	1	0.0	
					105	0	0.3	22	0	1	0.0	
			0.1	0.0	**120**	0	0.3	21.9	0	1	0.0	
					135	0	0.4	21.9	0	1	0.0	
			Average:	**Average:**	**150**	0	0.4	21.8	0	1	0.0	
					165	0	0.5	21.8	0	1	0.0	
			0.1	0.0	**180**	0	0.5	21.8	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 26/11/2019	VASTERN ROAD, READING	

Monitoring Date:	26/11/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):**	0.1	**O2 (%):**	21.1
Monitoring Engineer:	RK		**CO (ppm):**	1.0	**H_2S (ppm):**	1.0	**VOCs (ppm):**	N/A
Weather/Wind:	Showers/Light	**Weather Trend:**	Unsettled		**Atm. Press. Trend**		Falling	
Remarks: -					**Equipment:**		**Geotech GA5000**	



Local Weather Station Atmospheric Pressure Records for 25th November to 4th December 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date: 03/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.6
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	1026	-5	**Initial:**	**Initial:**	**15**	0	4.5	16.7	0	0	0.2	2.20
					30	0	4.5	10.6	0	0	0.2	
					45	0	4.4	10.3	0	1	0.2	
			-6.8	0.1	**60**	0	4.3	10.5	0	0	0.2	
					75	0	4.2	10.8	0	1	0.2	
			Peak:	**Peak:**	**90**	0	4	11.3	0	1	0.2	
					105	0	3.9	11.6	0	1	0.2	
			-6.8	0.2	**120**	0	3.8	11.8	0	1	0.2	
					135	0	3.8	12	0	1	0.2	
			Average:	**Average:**	**150**	0	3.8	11.9	0	1	0.2	
					165	0	3.8	12.2	0	1	0.1	
			-6.6	0.2	**180**	0	4	11.5	0	1	0.2	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1002C	1026	0.65	**Initial:**	**Initial:**	**15**	0	0.1	22	0	1	0.1	2.30
					30	0	0.1	21.5	0	0	0.1	
					45	0	0.1	21.7	0	0	0.1	
			-0.1	0.1	**60**	0	0.1	21.8	0	0	0.0	
					75	0	0.1	21.9	0	0	0.0	
			Peak:	**Peak:**	**90**	0	0.1	22	0	0	0.0	
					105	0	0.1	22.1	0	0	0.0	
			-0.3	0.2	**120**	0	0.1	22.2	0	1	0.0	
					135	0	0.1	22.2	0	1	0.0	
			Average:	**Average:**	**150**	0	0.1	22.2	0	1	0.0	
					165	0	0.1	22.3	0	1	0.0	
			-0.3	0.1	**180**	0	0.1	22.3	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1003E	1026	-0.02	**Initial:**	**Initial:**	**15**	0	0.8	21.4	0	0	0.0	2.54
					30	0	0.8	20.3	0	0	0.0	
					45	0	0.8	20.2	0	0	0.0	
			0.1	0.0	**60**	0	0.8	20.2	0	0	0.0	
					75	0	0.8	20.2	0	0	0.0	
			Peak:	**Peak:**	**90**	0	0.8	20.2	0	0	0.0	
					105	0	0.8	20.2	0	0	0.0	
			0.1	0.0	**120**	0	0.8	20.2	0	0	0.0	
					135	0	0.8	20.2	0	0	0.0	
			Average:	**Average:**	**150**	0	0.8	20.2	0	0	0.1	
					165	0	0.8	20.1	0	0	0.1	
			0.0	0.0	**180**	0	0.8	20.2	0	0	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date: 03/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.6
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	1026	-2.64	**Initial:**	**Initial:**	**15**	0	3.5	20.5	1	1	0.1	1.91
					30	0	3.1	19.3	0	1	0.1	
					45	0	2.7	19.6	0	1	0.1	
			-3.6	0.3	**60**	0	2.3	19.9	0	1	0.1	
					75	0	2.1	20.1	0	1	0.1	
			Peak:	**Peak:**	**90**	0	1.8	20.3	0	1	0.1	
					105	0	1.5	20.6	0	1	0.0	
			-3.6	0.5	**120**	0	1.3	20.7	0	1	0.0	
					135	0	1.1	20.9	0	1	0.0	
			Average:	**Average:**	**150**	0	0.9	21	1	1	0.0	
					165	0	0.8	21.2	0	1	0.0	
			-2.5	0.5	**180**	0	0.6	21.3	1	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1005	1025	-10.17	**Initial:**	**Initial:**	**15**	0	1.3	21.6	0	0	1.4	2.47
					30	0	1.3	21.2	0	0	1.5	
					45	0	1.3	21.2	0	1	1.6	
			-23.9	0.5	**60**	0	1.3	21.2	0	0	1.6	
					75	0	1.3	21.2	0	1	1.6	
			Peak:	**Peak:**	**90**	0	1.3	21.2	0	1	1.7	
					105	0	1.3	21.2	0	1	1.7	
			-23.9	1.1	**120**	0	1.3	21.2	0	1	1.7	
					135	0	1.4	21.2	0	0	1.7	
			Average:	**Average:**	**150**	0	1.4	21.2	0	1	1.7	
					165	0	1.4	21.2	0	1	1.8	
			-21.9	1.0	**180**	0	1.4	21.2	0	1	1.8	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2001	1024	-15.26	**Initial:**	**Initial:**	**15**	0	0.8	22	0	0	0.9	2.30
					30	0	0.8	21.6	1	0	1.2	
					45	0	0.8	21.6	1	0	1.3	
			-21.3	0.1	**60**	0	0.8	21.6	1	0	1.2	
					75	0	0.8	21.6	1	1	1.3	
			Peak:	**Peak:**	**90**	0	0.8	21.6	1	0	1.3	
					105	0	0.8	21.6	1	0	1.3	
			-21.3	0.1	**120**	0	0.8	21.6	1	1	1.3	
					135	0	0.7	21.6	0	0	1.3	
			Average:	**Average:**	**150**	0	0.7	21.6	1	0	1.3	
					165	0	0.7	21.6	1	1	1.3	
			-18.1	0.1	**180**	0	0.7	21.6	0	1	1.3	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date: 03/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.6
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	1024	-0.05	**Initial:**	**Initial:**	**15**	0	0.1	22	0	0	0.1	2.27
					30	0	0.1	22	0	0	0.1	
					45	0	0.1	22.1	0	0	0.1	
			0.0	0.0	**60**	0	0.1	22.1	0	1	0.1	
			Peak:	**Peak:**	**75**	0	0.1	22.1	0	0	0.1	
					90	0	0.1	22.1	0	0	0.1	
					105	0	0.1	22.1	0	1	0.1	
			0.0	0.0	**120**	0	0.1	22.1	0	1	0.1	
			Average:	**Average:**	**135**	0	0.1	22.1	0	1	0.1	
					150	0	0.1	22.1	0	1	0.1	
					165	0	0.1	22.1	0	1	0.0	
			0.0	0.0	**180**	0	0.1	22.1	0	1	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2003	1025	-11.25	**Initial:**	**Initial:**	**15**	0	0.3	22	0	0	0.9	2.42
					30	0	0.4	21.8	1	0	1.0	
					45	0	0.4	21.8	1	0	1.0	
			-23.5	0.2	**60**	0	0.4	21.8	1	0	1.0	
			Peak:	**Peak:**	**75**	0	0.4	21.8	1	0	1.0	
					90	0	0.4	21.8	1	0	1.0	
					105	0	0.4	21.7	1	0	1.0	
			-23.5	0.6	**120**	0	0.4	21.7	1	0	1.0	
			Average:	**Average:**	**135**	0	0.4	21.7	1	0	1.0	
					150	0	0.4	21.7	1	1	1.0	
					165	0	0.4	21.7	1	0	1.0	
			-21.5	0.5	**180**	0	0.4	21.7	1	0	1.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2004	1025	-2.98	**Initial:**	**Initial:**	**15**	0	0.3	21.9	0	1	0.6	2.37
					30	0	0.3	21.6	1	1	0.6	
					45	0	0.3	21.6	0	1	0.6	
			-1.9	0.3	**60**	0	0.2	21.7	0	1	0.5	
			Peak:	**Peak:**	**75**	0	0.2	21.8	0	1	0.3	
					90	0	0.2	21.9	0	1	0.3	
					105	0	0.2	22	0	1	0.2	
			-1.9	0.5	**120**	0	0.2	22	0	1	0.3	
			Average:	**Average:**	**135**	0	0.2	22	0	1	0.2	
					150	0	0.2	22	0	1	0.2	
					165	0	0.2	22	0	1	0.2	
			-1.7	0.5	**180**	0	0.2	22	0	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date: 03/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.6
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	1025	0.02	**Initial:**	**Initial:**	**15**	0	9.5	16.8	1	1	0.1	2.41 Strong Hydro-carbon Odour & Sheen on Dipmeter
					30	0	9.6	10.8	0	1	0.1	
			0.1	0.0	**45**	0	9.7	10.2	0	1	0.1	
					60	0	9.7	10.1	0	1	0.1	
			Peak:	**Peak:**	**75**	0	9.7	10	0	1	0.1	
					90	0	9.7	10	0	1	0.1	
			0.1	0.0	**105**	0	9.7	9.9	0	1	0.1	
					120	0	9.8	9.8	0	1	0.1	
			Average:	**Average:**	**135**	0	9.9	9.7	0	1	0.1	
					150	0	10.1	9.4	0	1	0.1	
			0.0	0.0	**165**	0	10.4	8.9	0	1	0.1	
					180	0	10.6	8.5	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1003	1026	-10.17	**Initial:**	**Initial:**	**15**	0	1	21.7	0	0	0.6	2.05
					30	0	1	20.8	0	0	0.7	
			-25.2	0.0	**45**	0	1	20.7	0	0	0.7	
					60	0	1	20.7	0	0	0.7	
			Peak:	**Peak:**	**75**	0	1	20.7	0	0	0.7	
					90	0	1	20.7	0	1	0.7	
			-25.2	0.0	**105**	0	1	20.7	0	1	0.7	
					120	0	1	20.7	0	0	0.7	
			Average:	**Average:**	**135**	0	1	20.7	0	1	0.7	
					150	0	1	20.7	0	1	0.7	
			-21.1	0.0	**165**	0	1	20.7	0	1	0.7	
					180	0	1	20.7	0	1	0.7	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1004	1026	-0.03	**Initial:**	**Initial:**	**15**	0	1.6	20.7	0	0	0.2	2.22
					30	0	1.5	19.1	0	0	0.2	
			0.1	0.0	**45**	0	1.3	19.5	0	0	0.2	
					60	0	1.1	19.9	0	0	0.2	
			Peak:	**Peak:**	**75**	0	1	20.3	0	0	0.2	
					90	0	0.9	20.6	0	0	0.1	
			0.1	0.0	**105**	0	0.8	20.8	0	1	0.1	
					120	0	0.7	21	0	1	0.1	
			Average:	**Average:**	**135**	0	0.7	21	0	0	0.1	
					150	0	0.7	21.2	0	0	0.1	
			0.1	0.0	**165**	0	0.6	21.2	0	0	0.1	
					180	0	0.6	21.3	0	0	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date: 03/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.6
Monitoring Engineer: RK **CO (ppm):** 1.0 **H_2S (ppm):** 1.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Mod. **Weather Trend:** Stable **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	1026	-6.75	**Initial:**	**Initial:**	**15**	0	0.8	22.2	0	0	0.1	0.95
					30	0	0.8	21.9	0	0	0.1	
					45	0	0.8	21.8	0	0	0.1	
			-27.4	-0.2	**60**	0	0.8	21.8	0	1	0.1	
					75	0	0.8	21.8	0	0	0.1	
			Peak:	**Peak:**	**90**	0	0.8	21.8	0	1	0.1	
					105	0	0.8	21.8	0	1	0.1	
			-27.4	-0.5	**120**	0	0.8	21.8	0	1	0.1	
					135	0	0.8	21.8	0	1	0.1	
			Average:	**Average:**	**150**	0	0.8	21.8	0	1	0.1	
					165	0	0.8	21.8	0	1	0.1	
			-22.2	-0.4	**180**	0	0.8	21.8	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1019	1025	0	**Initial:**	**Initial:**	**15**	0	1	21.7	0	1	0.1	2.19 Faint Hydro-carbon Odour & Sheen on Dipmeter
					30	0	0.9	20.8	0	1	0.1	
					45	0	0.9	20.7	0	1	0.1	
			0.1	0.0	**60**	0	0.9	20.7	0	1	0.1	
					75	0	0.9	20.7	0	1	0.1	
			Peak:	**Peak:**	**90**	0	1	20.7	0	1	0.1	
					105	0	1	20.7	0	1	0.1	
			0.1	0.0	**120**	0	1	20.7	0	1	0.1	
					135	0	1	20.7	0	1	0.1	
			Average:	**Average:**	**150**	0	1.1	20.6	0	1	0.1	
					165	0	1.1	20.6	0	1	0.1	
			0.1	0.0	**180**	0	1.2	20.5	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 03/12/2019	VASTERN ROAD, READING	

Monitoring Date:	03/12/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):** 0.1	**O2 (%):**	21.6
Monitoring Engineer:	RK		**CO (ppm):**	1.0	**H_2S (ppm):** 1.0	**VOCs (ppm):**	N/A
Weather/Wind:	Overcast/Mod.	**Weather Trend:**	Stable		**Atm. Press. Trend**	Falling	
Remarks: -					**Equipment:**	**Geotech GA5000**	



Local Weather Station Atmospheric Pressure Records for 2nd to 11th December 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

Monitoring Date: 09/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.9
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	1013	-4.01	**Initial:**	**Initial:**	**15**	0	4.4	18.5	0	1	0.2	2.26
					30	0	4.5	11	0	1	0.2	
					45	0	4.5	10.4	0	1	0.2	
			-7.0	0.0	**60**	0	4.5	10.3	0	1	0.2	
					75	0	4.5	10.3	0	1	0.2	
			Peak:	**Peak:**	**90**	0	4.5	10.3	0	1	0.2	
					105	0	4.5	10.3	0	1	0.2	
			-7.0	0.0	**120**	0	4.5	10.3	0	1	0.2	
					135	0	4.5	10.2	0	1	0.2	
			Average:	**Average:**	**150**	0	4.5	10.2	0	1	0.2	
					165	0	4.6	10.2	0	1	0.2	
			-6.7	0.0	**180**	0	4.6	10.2	0	1	0.2	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1002C	1009	-0.87	**Initial:**	**Initial:**	**15**	0	1.2	19.8	0	1	0.1	2.36
					30	0	1.2	16.9	0	1	0.1	
					45	0	1.1	16.7	0	1	0.1	
			-2.9	0.1	**60**	0	1.1	17	0	1	0.1	
					75	0	1.1	17.1	0	1	0.1	
			Peak:	**Peak:**	**90**	0	1	17.4	0	1	0.0	
					105	0	1	17.8	0	0	0.0	
			-2.9	0.1	**120**	0	1	17.9	0	0	0.0	
					135	0	1	18.1	0	1	0.0	
			Average:	**Average:**	**150**	0	0.9	18.3	0	1	0.0	
					165	0	0.9	18.6	0	1	0.0	
			-2.6	0.1	**180**	0	0.8	18.8	0	0	0.0	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1003E	1012	0.07	**Initial:**	**Initial:**	**15**	0	0.7	21.4	0	1	0.2	2.59
					30	0	0.7	20.6	0	1	0.2	
					45	0	0.7	20.6	0	1	0.2	
			0.1	0.0	**60**	0	0.7	20.6	0	1	0.2	
					75	0	0.7	20.5	0	1	0.2	
			Peak:	**Peak:**	**90**	0	0.7	20.6	0	1	0.2	
					105	0	0.7	20.6	0	1	0.2	
			0.2	0.0	**120**	0	0.7	20.6	0	1	0.2	
					135	0	0.7	20.6	0	1	0.2	
			Average:	**Average:**	**150**	0	0.7	20.6	0	1	0.2	
					165	0	0.7	20.6	0	1	0.2	
			0.1	0.0	**180**	0	0.7	20.6	0	1	0.2	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

Monitoring Date: 09/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.9
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	1007	-0.57			**15**	0	3.1	21.1	0	0	0.1	2.13
			Initial:	**Initial:**	**30**	0	2.9	20	0	0	0.1	
					45	0	2.7	20.1	0	0	0.1	
			-6.8	0.1	**60**	0	2.7	20	0	1	0.1	
					75	0	2.8	20	0	1	0.1	
			Peak:	**Peak:**	**90**	0	2.5	20.1	0	1	0.0	
					105	0	2	20.4	0	1	0.0	
			-6.8	0.1	**120**	0	1.7	20.7	0	1	0.0	
					135	0	1.5	20.8	0	1	0.0	
			Average:	**Average:**	**150**	0	1.3	20.9	0	1	0.0	
					165	0	1.1	21.2	0	1	0.0	
			-4.9	0.1	**180**	0	1	21.2	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH1005	1007	0.6			**15**	0	1.1	21.6	0	1	1.1	2.53
			Initial:	**Initial:**	**30**	0	1.2	21.2	0	1	1.1	
					45	0	1.2	21.2	1	1	1.2	
			-22.0	0.4	**60**	0	1.2	21.2	1	1	1.2	
					75	0	1.2	21.2	1	1	1.2	
			Peak:	**Peak:**	**90**	0	1.2	21.2	1	1	1.2	
					105	0	1.2	21.2	1	1	1.3	
			-22.0	0.9	**120**	0	1.2	21.2	1	1	1.3	
					135	0	1.2	21.1	1	1	1.3	
			Average:	**Average:**	**150**	0	1.2	21.1	0	1	1.3	
					165	0	1.3	21.1	1	1	1.3	
			-20.4	0.8	**180**	0	1.3	21.1	1	1	1.3	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH2001	1011	-1.42			**15**	0	0.7	21.7	0	1	1.0	2.30
			Initial:	**Initial:**	**30**	0	0.7	21.4	1	1	1.2	
					45	0	0.7	21.3	0	1	1.3	
			-20.9	0.0	**60**	0	0.7	21.3	0	1	1.3	
					75	0	0.7	21.3	0	1	1.4	
			Peak:	**Peak:**	**90**	0	0.7	21.3	0	1	1.4	
					105	0	0.7	21.3	0	1	1.4	
			-20.9	0.0	**120**	0	0.7	21.3	0	1	1.5	
					135	0	0.7	21.3	0	1	1.5	
			Average:	**Average:**	**150**	0	0.7	21.3	0	1	1.5	
					165	0	0.7	21.3	0	1	1.5	
			-18.9	0.0	**180**	0	0.8	21.3	0	1	1.5	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

Monitoring Date: 09/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 21.9 **O2 (%):** 21.9
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	1011	0.17			**15**	0	0.1	21.7	0	1	0.1	2.32
			Initial:	**Initial:**	**30**	0	0.1	21.7	0	1	0.1	
					45	0	0.1	21.7	0	1	0.1	
			0.1	0.0	**60**	0	0.1	21.7	0	1	0.1	
					75	0	0.1	21.8	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.1	21.8	0	1	0.1	
					105	0	0.1	21.8	0	1	0.1	
			0.1	0.0	**120**	0	0.1	21.8	0	1	0.1	
					135	0	0.1	21.8	0	1	0.1	
			Average:	**Average:**	**150**	0	0.1	21.8	0	1	0.1	
					165	0	0.1	21.8	0	1	0.1	
			0.1	0.0	**180**	0	0.1	21.8	0	1	0.1	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2003	1011	-0.48			**15**	0	0.2	21.5	0	1	0.7	2.48
			Initial:	**Initial:**	**30**	0	0.3	21.4	0	1	0.8	
					45	0	0.3	21.4	0	1	0.8	
			-20.7	0.3	**60**	0	0.3	21.4	0	1	0.8	
					75	0	0.3	21.4	0	1	0.8	
			Peak:	**Peak:**	**90**	0	0.3	21.4	0	1	0.8	
					105	0	0.3	21.4	0	1	0.8	
			-20.7	0.5	**120**	0	0.3	21.4	0	1	0.8	
					135	0	0.3	21.4	0	1	0.8	
			Average:	**Average:**	**150**	0	0.3	21.4	0	1	0.8	
					165	0	0.3	21.4	0	1	0.8	
			-19.1	0.4	**180**	0	0.3	21.4	0	1	0.8	

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2004	1010	0.05			**15**	0	0.2	21.2	0	0	0.5	2.43
			Initial:	**Initial:**	**30**	0	0.2	21	0	0	0.6	
					45	0	0.2	21	0	0	0.6	
			-0.6	0.3	**60**	0	0.2	21.1	0	0	0.5	
					75	0	0.2	21.1	0	1	0.4	
			Peak:	**Peak:**	**90**	0	0.2	21.2	0	1	0.3	
					105	0	0.1	21.2	0	1	0.2	
			-1.2	0.5	**120**	0	0.1	21.3	0	1	0.2	
					135	0	0.1	21.3	0	1	0.2	
			Average:	**Average:**	**150**	0	0.1	21.3	0	1	0.1	
					165	0	0.1	21.3	0	1	0.1	
			-1.0	0.5	**180**	0	0.1	21.3	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

Monitoring Date: 09/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 21.9 **O2 (%):** 21.9
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	1008	-0.02	**Initial:**	**Initial:**	**15**	0	10.6	15.7	1	1	0.2	2.49 Strong Hydro-carbon Odour & Sheen on Dipmeter
					30	0	10.8	7.8	1	1	0.2	
			0.1	0.0	**45**	0	10.8	7.1	1	1	0.2	
					60	0	10.8	7.1	1	1	0.1	
			Peak:	**Peak:**	**75**	0	10.8	7	1	1	0.1	
					90	0	10.8	7.1	0	1	0.1	
			0.1	0.0	**105**	0	10.9	7.1	0	1	0.1	
					120	0	10.9	7.1	0	1	0.1	
			Average:	**Average:**	**135**	0	10.9	7	0	1	0.1	
					150	0	11.1	6.9	0	1	0.1	
			0.1	0.0	**165**	0	11.4	6.5	0	1	0.0	
					180	0	11.6	6.1	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1003	1012	0.27	**Initial:**	**Initial:**	**15**	0	0.8	21.3	0	1	0.4	2.11
					30	0	0.8	20.7	0	1	0.4	
			-20.1	0.0	**45**	0	0.8	20.7	0	1	0.4	
					60	0	0.8	20.7	0	1	0.4	
			Peak:	**Peak:**	**75**	0	0.7	20.7	0	1	0.4	
					90	0	0.7	20.7	0	1	0.4	
			-20.1	0.0	**105**	0	0.8	20.7	0	1	0.4	
					120	0	0.8	20.7	0	1	0.3	
			Average:	**Average:**	**135**	0	0.8	20.7	0	1	0.3	
					150	0	0.8	20.7	0	1	0.3	
			-18.3	0.0	**165**	0	0.7	20.7	0	1	0.3	
					180	0	0.7	20.7	0	1	0.3	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1004	1012	-0.05	**Initial:**	**Initial:**	**15**	0	1.3	21.3	0	1	0.2	2.28
					30	0	1.1	20.9	0	1	0.2	
			0.1	0.0	**45**	0	0.9	21	0	1	0.1	
					60	0	0.8	21.1	0	1	0.1	
			Peak:	**Peak:**	**75**	0	0.8	21.2	0	1	0.1	
					90	0	0.7	21.2	0	1	0.1	
			0.2	0.1	**105**	0	0.6	21.3	0	1	0.1	
					120	0	0.6	21.3	0	1	0.1	
			Average:	**Average:**	**135**	0	0.5	21.4	0	1	0.1	
					150	0	0.5	21.4	0	1	0.1	
			0.1	0.0	**165**	0	0.4	21.4	0	1	0.1	
					180	0	0.4	21.5	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

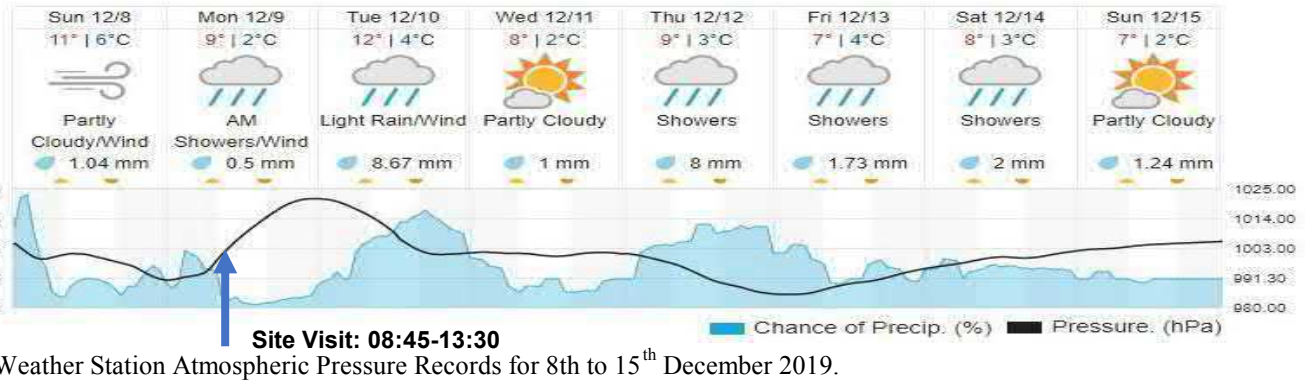
Monitoring Date: 09/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 21.9
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	1009	1.39	**Initial:**	**Initial:**	**15**	0	0.8	21.9	0	0	0.2	0.95
					30	0	0.8	21.7	0	1	0.2	
					45	0	0.8	21.7	0	0	0.2	
			-23.7	0.1	**60**	0	0.8	21.7	0	1	0.2	
					75	0	0.8	21.7	0	1	0.2	
			Peak:	**Peak:**	**90**	0	0.8	21.7	0	1	0.1	
					105	0	0.8	21.7	0	1	0.1	
			-23.7	0.1	**120**	0	0.8	21.7	0	1	0.1	
					135	0	0.8	21.7	0	1	0.1	
			Average:	**Average:**	**150**	0	0.8	21.7	0	1	0.1	
					165	0	0.8	21.7	0	1	0.1	
			-22.0	0.0	**180**	0	0.8	21.7	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1019	1025	-0.09	**Initial:**	**Initial:**	**15**	0	0.5	21.6	0	1	0.1	2.24 Faint Hydro-carbon Odour & Sheen on Dipmeter
					30	0	0.5	21.7	0	0	0.1	
					45	0	0.6	21.7	0	0	0.1	
			0.1	0.0	**60**	0	0.6	21.7	0	0	0.1	
					75	0	0.6	21.6	0	0	0.1	
			Peak:	**Peak:**	**90**	0	0.7	21.6	0	0	0.1	
					105	0	0.7	21.5	0	1	0.1	
			0.2	0.1	**120**	0	0.8	21.5	0	1	0.1	
					135	0	0.8	21.4	0	1	0.1	
			Average:	**Average:**	**150**	0	0.9	21.3	0	1	0.1	
					165	0	1	21.2	0	1	0.0	
			0.1	0.0	**180**	0	1.1	21.1	0	0	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 09/12/2019	VASTERN ROAD, READING	

Monitoring Date:	09/12/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):**	0.1	**O2 (%):**	21.9
Monitoring Engineer:	RK		**CO (ppm):**	0.0	**H_2S (ppm):**	0.0	**VOCs (ppm):**	N/A
Weather/Wind:	Overcast/Strong	**Weather Trend:**	Unsettled		**Atm. Press. Trend**		Rising	
Remarks:	-				**Equipment:**		**Geotech GA5000**	



Local Weather Station Atmospheric Pressure Records for 8th to 15th December 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD, READING	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rrising
Remarks: BH1002C: Bung moved in the end of test allowing air and standing water to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	980	11.32	**Initial:**	**Initial:**	**15**	0	4.1	17.5	0	0	0.1	2.13
					30	0	4.1	12.3	0	1	0.2	
					45	0	4.1	11.7	0	1	0.2	
			0.6	0.1	**60**	0	4.1	11.7	0	1	0.2	
					75	0	4.1	11.6	0	1	0.2	
			Peak:	**Peak:**	**90**	0	4.1	11.6	0	1	0.2	
					105	0	4.2	11.6	0	1	0.2	
			1.3	0.3	**120**	0	4.2	11.6	0	1	0.2	
					135	0	4.2	11.5	0	1	0.2	
			Average:	**Average:**	**150**	0	4.2	11.5	0	1	0.2	
					165	0	4.2	11.5	0	1	0.2	
			1.2	0.3	**180**	0	4.3	11.4	0	1	0.2	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1002C	980	7.02	**Initial:**	**Initial:**	**15**	0	0.2	19.5	2	0	0.1	2.2 (See Remark)
					30	0	0.2	16.4	2	1	0.1	
					45	0	0.2	16	3	1	0.1	
			-0.2	0.2	**60**	0	0.3	16	3	1	0.1	
					75	0	0.3	15.9	4	1	0.1	
			Peak:	**Peak:**	**90**	0	0.3	16	4	1	0.1	
					105	0	0.2	18.5	2	1	0.1	
			-0.6	0.3	**120**	0	0.2	20	1	1	0.1	
					135	0	0.1	20.5	1	1	0.1	
			Average:	**Average:**	**150**	0	0.1	20.8	0	1	0.1	
					165	0	0.1	20.9	0	1	0.1	
			-0.5	0.3	**180**	0	0.1	21	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1003E	980	-0.03	**Initial:**	**Initial:**	**15**	0	0.7	22	0	0	0.1	2.45
					30	0	0.7	21.5	0	0	0.1	
					45	0	0.7	21.4	0	0	0.1	
			0.1	0.0	**60**	0	0.7	21.4	0	1	0.1	
					75	0	0.7	21.4	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.7	21.4	0	1	0.1	
					105	0	0.7	21.4	0	1	0.1	
			0.2	0.1	**120**	0	0.7	21.4	0	1	0.1	
					135	0	0.7	21.4	0	1	0.1	
			Average:	**Average:**	**150**	0	0.7	21.4	0	1	0.1	
					165	0	0.7	21.4	0	1	0.1	
			0.2	0.0	**180**	0	0.7	21.4	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD, READING	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rrising
Remarks: BH1002C: Bung moved in the end of test allowing air and standing water to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	977	19.06	**Initial:**	**Initial:**	**15**	0	3.3	20.4	1	1	0.2	1.99
					30	0	3.3	19.5	0	1	0.2	
					45	0	3.3	19.3	0	1	0.2	
			-18.4	0.3	**60**	0	3.3	19.3	0	1	0.2	
					75	0	3.3	19.3	0	1	0.2	
			Peak:	**Peak:**	**90**	0	3.3	19.3	0	1	0.1	
					105	0	3.4	19.3	0	1	0.1	
			-18.4	0.7	**120**	0	3.4	19.3	0	1	0.1	
					135	0	3.5	19.2	0	1	0.1	
			Average:	**Average:**	**150**	0	3.6	19.2	0	1	0.1	
					165	0	3.6	19.2	0	1	0.1	
			-16.3	0.7	**180**	0	3.6	19.2	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH1005	978	19.45	**Initial:**	**Initial:**	**15**	0	1	21.6	0	1	0.8	2.39
					30	0	1	21.3	0	1	0.9	
					45	0	1	21.3	0	1	0.9	
			-18.4	0.2	**60**	0	1	21.3	0	1	0.9	
					75	0	1	21.3	0	1	1.0	
			Peak:	**Peak:**	**90**	0	1	21.3	0	1	1.0	
					105	0	1	21.3	0	1	1.0	
			-18.4	0.6	**120**	0	1	21.3	0	1	1.0	
					135	0	1.1	21.3	0	1	1.0	
			Average:	**Average:**	**150**	0	1.1	21.3	0	1	1.0	
					165	0	1.1	21.3	0	1	1.0	
			-17.0	0.5	**180**	0	1.1	21.3	0	1	1.1	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH2001	979	0.03	**Initial:**	**Initial:**	**15**	0	0.5	22	1	1	0.7	2.23
					30	0	0.4	21.8	1	1	0.7	
					45	0	0.4	21.9	1	1	0.6	
			-0.1	0.0	**60**	0	0.3	21.9	1	1	0.6	
					75	0	0.3	22	1	1	0.5	
			Peak:	**Peak:**	**90**	0	0.3	22	0	1	0.5	
					105	0	0.3	22	0	1	0.4	
			-0.2	0.0	**120**	0	0.2	22	0	1	0.4	
					135	0	0.2	22.1	0	1	0.4	
			Average:	**Average:**	**150**	0	0.2	22.1	0	1	0.3	
					165	0	0.2	22.1	0	1	0.3	
			-0.2	0.0	**180**	0	0.2	22.1	0	1	0.3	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3

Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A

Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising

Remarks: BH1002C: Bung moved in the end of test allowing air and standing water to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	979	-0.02			**15**	0	0.2	22.1	0	0	0.1	2.18
			Initial:	**Initial:**	**30**	0	0.1	22.1	0	0	0.1	
					45	0	0.1	22.2	0	0	0.1	
			0.1	0.0	**60**	0	0.1	22.2	0	0	0.1	
					75	0	0.1	22.2	0	0	0.0	
			Peak:	**Peak:**	**90**	0	0.1	22.2	0	0	0.0	
					105	0	0.1	22.2	0	0	0.0	
			0.1	0.1	**120**	0	0.1	22.2	0	0	0.0	
					135	0	0.1	22.2	0	1	0.0	
			Average:	**Average:**	**150**	0	0.1	22.2	0	1	0.0	
					165	0	0.1	22.2	0	1	0.0	
			0.1	0.0	**180**	0	0.1	22.2	0	0	0.0	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH2003	979	-0.14			**15**	0	0.2	22.2	0	0	0.5	2.31
			Initial:	**Initial:**	**30**	0	0.2	22.1	0	0	0.6	
					45	0	0.2	22.1	0	0	0.6	
			-20.9	0.2	**60**	0	0.3	22.1	0	0	0.6	
					75	0	0.3	22.1	0	1	0.6	
			Peak:	**Peak:**	**90**	0	0.3	22.1	0	1	0.6	
					105	0	0.3	22.1	0	1	0.6	
			-20.9	0.5	**120**	0	0.3	22.1	0	1	0.6	
					135	0	0.3	22.1	0	1	0.6	
			Average:	**Average:**	**150**	0	0.3	22.1	0	1	0.6	
					165	0	0.3	22.1	0	1	0.6	
			-18.6	0.5	**180**	0	0.3	22.1	0	1	0.6	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH2004	979	3.12			**15**	0	0.2	22.2	0	0	0.5	2.23
			Initial:	**Initial:**	**30**	0	0.3	22	0	1	0.6	
					45	0	0.3	22	0	0	0.6	
			-0.1	0.2	**60**	0	0.3	22	0	0	0.6	
					75	0	0.2	22.1	0	1	0.4	
			Peak:	**Peak:**	**90**	0	0.2	22.2	0	1	0.3	
					105	0	0.1	22.2	0	1	0.2	
			-0.2	0.4	**120**	0	0.1	22.2	0	1	0.2	
					135	0	0.1	22.3	0	1	0.2	
			Average:	**Average:**	**150**	0	0.1	22.3	0	1	0.1	
					165	0	0.1	22.3	0	1	0.1	
			-0.1	0.3	**180**	0	0.1	22.3	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: BH1002C: Bung moved in the end of test allowing air and standing water to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	980	-0.1			**15**	0	10.2	15.6	0	1	0.1	2.3 Strong Hydro-carbon Odour & Sheen on Dipmeter
			Initial:	**Initial:**	**30**	0	10.4	8.5	0	1	0.1	
					45	0	10.4	7.8	0	1	0.1	
			0.2	0.0	**60**	0	10.4	7.7	0	1	0.1	
					75	0	10.5	7.6	0	1	0.1	
			Peak:	**Peak:**	**90**	0	10.5	7.6	0	1	0.1	
					105	0	10.6	7.5	0	1	0.1	
			0.2	0.1	**120**	0	10.7	7.4	0	1	0.1	
					135	0	10.9	7.2	0	1	0.1	
			Average:	**Average:**	**150**	0	11.1	6.9	0	1	0.1	
					165	0	11.4	6.5	0	1	0.1	
			0.2	0.0	**180**	0	11.6	6.1	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1003	980	-0.02			**15**	0	0.3	22	0	0	0.1	1.96
			Initial:	**Initial:**	**30**	0	0.2	22	0	0	0.1	
					45	0	0.2	22.1	0	0	0.1	
			0.1	0.1	**60**	0	0.2	22.2	0	0	0.1	
					75	0	0.1	22.2	0	0	0.1	
			Peak:	**Peak:**	**90**	0	0.1	22.2	0	0	0.1	
					105	0	0.1	22.2	0	0	0.1	
			0.2	0.1	**120**	0	0.1	22.2	0	0	0.1	
					135	0	0.1	22.2	0	1	0.1	
			Average:	**Average:**	**150**	0	0.1	22.2	0	0	0.1	
					165	0	0.1	22.2	0	0	0.1	
			0.2	0.0	**180**	0	0.1	22.2	0	0	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1004	980	0.15			**15**	0	1.8	21.7	0	0	0.2	2.13
			Initial:	**Initial:**	**30**	0	1.9	21.1	0	0	0.2	
					45	0	1.8	21.1	0	0	0.2	
			0.1	0.0	**60**	0	1.6	21.2	0	0	0.2	
					75	0	1.3	21.4	0	1	0.2	
			Peak:	**Peak:**	**90**	0	1.1	21.6	0	0	0.1	
					105	0	0.9	21.7	0	1	0.1	
			0.2	0.0	**120**	0	0.8	21.8	0	0	0.1	
					135	0	0.6	21.9	0	0	0.1	
			Average:	**Average:**	**150**	0	0.5	22	0	1	0.1	
					165	0	0.5	22	0	1	0.1	
			0.2	0.0	**180**	0	0.4	22.1	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD, READING	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3

Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A

Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising

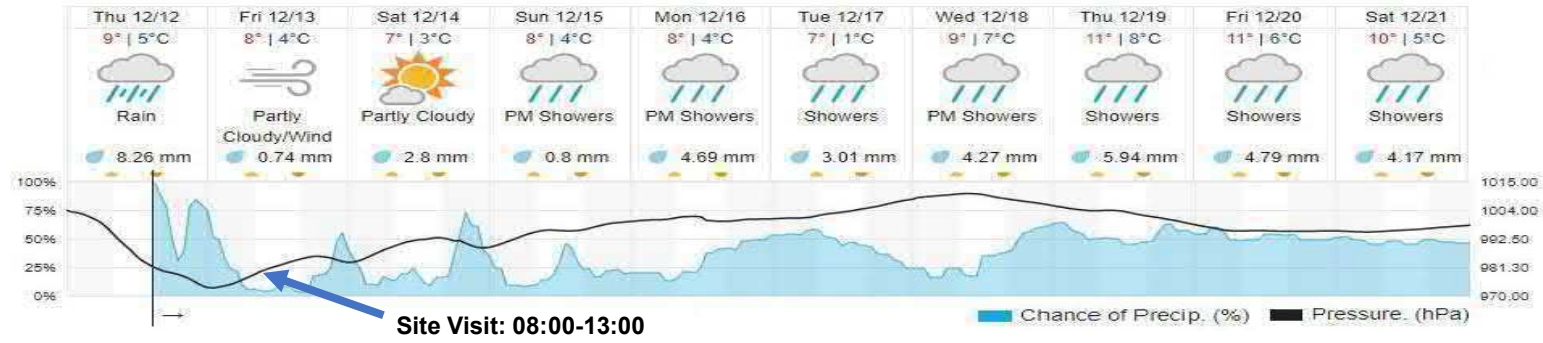
Remarks: BH1002C: Bung moved in the end of test allowing air and standing water to move in **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	979	0.02	**Initial:**	**Initial:**	**15**	0	0.5	21.8	0	1	0.1	0.89
					30	0	0.5	21.5	0	1	0.1	
					45	0	0.5	21.5	0	1	0.1	
			-14.8	0.8	**60**	0	0.5	21.5	0	1	0.1	
					75	0	0.5	21.5	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.5	21.5	0	1	0.1	
					105	0	0.4	21.6	0	1	0.1	
			-14.8	1.4	**120**	0	0.4	21.6	0	1	0.1	
					135	0	0.4	21.7	0	1	0.1	
			Average:	**Average:**	**150**	0	0.4	21.7	0	1	0.1	
					165	0	0.3	21.8	0	1	0.1	
			-10.1	1.3	**180**	0	0.3	21.8	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
WS1019	978	0.1	**Initial:**	**Initial:**	**15**	0	0.2	22.1	0	0	0.1	2.11 Faint Hydro-carbon Odour & Sheen on Dipmeter
					30	0	0.3	22	0	0	0.1	
					45	0	0.3	22.1	0	0	0.1	
			0.2	0.1	**60**	0	0.2	22.1	0	0	0.1	
					75	0	0.2	22.1	0	1	0.1	
			Peak:	**Peak:**	**90**	0	0.2	22.2	0	1	0.1	
					105	0	0.2	22.2	0	0	0.1	
			0.3	0.1	**120**	0	0.2	22.2	0	0	0.1	
					135	0	0.2	22.2	0	0	0.0	
			Average:	**Average:**	**150**	0	0.2	22.2	0	1	0.0	
					165	0	0.1	22.2	0	1	0.0	
			0.3	0.0	**180**	0	0.1	22.2	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 13/12/2019	VASTERN ROAD, READING	

Monitoring Date: 13/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.3
Monitoring Engineer: RK **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Overcast/Strong **Weather Trend:** Unsettled **Atm. Press. Trend** Rising
Remarks: BH1002C: Bung moved in the en **Equipment:** **Geotech GA5000**



Local Weather Station Atmospheric Pressure Records for 12th to 21st December 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date: 18/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.2
Monitoring Engineer: JM **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Cool/Calm **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1001	1007	1.37	Initial:	Initial:	15	0	4	15.3	0	1	0.1	2.09
					30	0	4	11.3	0	1	0.1	
					45	0	4	11.1	0	1	0.1	
			-5.0	-0.1	60	0	4	11	0	1	0.1	
			Peak:	Peak:	75	0	4.1	11	0	1	0.1	
					90	0	4.1	11	0	1	0.1	
					105	0	4.1	11	0	1	0.1	
			-5.0	-0.1	120	0	4.1	11	0	1	0.1	
					135	0	4.1	11	0	1	0.1	
			Average:	Average:	150	0	4.1	10.9	0	1	0.1	
					165	0	4.1	10.9	0	1	0.1	
			-4.5	-0.1	180	0	4.1	10.9	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1002C	1006	0.02	Initial:	Initial:	15	0	0.1	21.5	1	1	0.0	2.05
					30	0	0.1	21	1	1	0.0	
					45	0	0.1	21.3	1	1	0.0	
			0.1	0.0	60	0	0.1	21.3	1	1	0.0	
			Peak:	Peak:	75	0	0.1	21.4	1	1	0.0	
					90	0	0.1	21.5	1	1	0.0	
					105	0	0.1	21.5	1	1	0.0	
			0.1	0.4	120	0	0.1	21.5	1	1	0.0	
					135	0	0.1	21.6	1	1	0.0	
			Average:	Average:	150	0	0.1	21.7	0	1	0.0	
					165	0	0.1	21.7	1	1	0.0	
			0.1	0.3	180	0	0.1	21.7	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH1003E	1008	0	Initial:	Initial:	15	0	0.6	21.1	0	1	0.1	2.41
					30	0	0.6	20.7	0	1	0.0	
					45	0	0.6	20.7	0	1	0.0	
			0.0	0.0	60	0	0.6	20.7	0	1	0.0	
			Peak:	Peak:	75	0	0.6	20.7	0	1	0.0	
					90	0	0.6	20.8	0	1	0.0	
					105	0	0.6	20.8	0	1	0.0	
			0.1	0.0	120	0	0.6	20.8	0	1	0.0	
					135	0	0.6	20.8	0	1	0.0	
			Average:	Average:	150	0	0.6	20.8	0	1	0.0	
					165	0	0.6	20.8	0	1	0.0	
			0.0	0.0	180	0	0.6	20.8	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date: 18/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.2
Monitoring Engineer: JM **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Cool/Calm **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH1004	1006	2.69	**Initial:**	**Initial:**	**15**	0	3.2	21.2	2	0	0.2	1.94
					30	0	3.3	20.3	0	0	0.2	
					45	0	3.3	20.2	0	0	0.2	
			-22.0	0.0	**60**	0	3.3	20.2	0	1	0.1	
					75	0	3.3	20.2	0	1	0.1	
			Peak:	**Peak:**	**90**	0	3.3	20.1	0	1	0.1	
					105	0	3.3	20.1	0	1	0.1	
			-22.0	0.0	**120**	0	3.3	20.1	0	1	0.1	
					135	0	3.4	20.1	0	1	0.1	
			Average:	**Average:**	**150**	0	3.4	20.1	0	1	0.1	
					165	0	3.5	20	0	1	0.1	
			-18.0	0.0	**180**	0	3.5	20	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH1005	1006	1.52	**Initial:**	**Initial:**	**15**	0	1.1	22.1	0	1	0.9	2.34
					30	0	1.1	21.7	0	1	0.9	
					45	0	1.1	21.7	0	1	0.9	
			-17.0	0.1	**60**	0	1	21.7	0	1	0.9	
					75	0	1	21.8	0	1	0.8	
			Peak:	**Peak:**	**90**	0	1	21.8	0	1	0.8	
					105	0	0.9	21.9	0	1	0.8	
			-17.0	0.4	**120**	0	0.9	21.9	0	1	0.7	
					135	0	0.8	21.9	0	1	0.7	
			Average:	**Average:**	**150**	0	0.8	21.9	0	1	0.7	
					165	0	0.7	22	0	1	0.7	
			-14.3	0.3	**180**	0	0.7	22	0	1	0.6	
Borehole ID	**Atmospheric Barometric Pressure**	**Borehole Barometric Pressure**	**Flow**	**Second flow (after bung was placed back)**	**Time**	**Methane**	**Carbon Dioxide**	**Oxygen**	**Carbon Monoxide**	**Hydrogen Sulphide**	**Volatile Organic Compounds**	**Water Level**
	(mb)	**(mb)**	**(l/hr)**	**(l/hr)**	**(sec)**	**CH4 (%)**	**CO2 (%)**	**O2 (%)**	**CO (ppm)**	**H2S (ppm)**	**VOCs (ppm)**	**(m)**
BH2001	1006	0.07	**Initial:**	**Initial:**	**15**	0	0.4	22.2	1	1	0.5	2.14
					30	0	0.4	21.8	1	1	0.6	
					45	0	0.4	21.9	1	1	0.6	
			-5.0	0.1	**60**	0	0.3	21.9	1	1	0.5	
					75	0	0.3	22	1	1	0.5	
			Peak:	**Peak:**	**90**	0	0.3	22	1	1	0.5	
					105	0	0.3	22.1	1	1	0.5	
			-5.0	0.1	**120**	0	0.3	22.1	1	1	0.5	
					135	0	0.2	22.1	1	1	0.5	
			Average:	**Average:**	**150**	0	0.2	22.2	1	1	0.4	
					165	0	0.2	22.2	1	1	0.4	
			-3.0	0.1	**180**	0	0.2	22.2	0	1	0.4	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date: 18/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.2
Monitoring Engineer: JM **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Cool/Calm **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2002	1006	0.03	**Initial:**	**Initial:**	**15**	0	0.2	22.3	0	1	0.1	2.11
					30	0	0.2	22.3	0	1	0.0	
					45	0	0.1	22.4	0	1	0.0	
			0.0	0.0	**60**	0	0.1	22.5	0	1	0.0	
					75	0	0.1	22.5	0	1	0.0	
			Peak:	**Peak:**	**90**	0	0.1	22.5	0	1	0.0	
					105	0	0.1	22.5	0	1	0.0	
			0.0	0.0	**120**	0	0.1	22.5	0	1	0.0	
					135	0	0.1	22.5	0	1	0.0	
			Average:	**Average:**	**150**	0	0.1	22.5	0	1	0.0	
					165	0	0.1	22.5	0	1	0.0	
			0.0	0.0	**180**	0	0.1	22.5	0	1	0.0	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH2003	1006	0.33	**Initial:**	**Initial:**	**15**	0	0.2	22.5	0	1	0.4	2.00
					30	0	0.2	22.4	0	0	0.5	
					45	0	0.3	22.4	0	1	0.5	
			-19.9	0.1	**60**	0	0.3	22.4	0	1	0.5	
					75	0	0.3	22.4	0	1	0.5	
			Peak:	**Peak:**	**90**	0	0.2	22.4	0	1	0.5	
					105	0	0.2	22.4	0	1	0.5	
			-19.9	0.3	**120**	0	0.3	22.4	0	1	0.5	
					135	0	0.3	22.4	0	1	0.5	
			Average:	**Average:**	**150**	0	0.3	22.4	0	1	0.5	
					165	0	0.3	22.4	0	1	0.5	
			-18.1	0.2	**180**	0	0.3	22.4	0	1	0.5	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
BH2004	1006	0.21	**Initial:**	**Initial:**	**15**	0	0.2	22.4	0	1	0.5	2.21
					30	0	0.2	22.2	0	1	0.5	
					45	0	0.2	22.3	0	1	0.4	
			-3.3	0.1	**60**	0	0.2	22.3	0	1	0.3	
					75	0	0.2	22.4	0	1	0.3	
			Peak:	**Peak:**	**90**	0	0.1	22.4	0	1	0.2	
					105	0	0.1	22.4	0	1	0.2	
			-3.3	0.1	**120**	0	0.1	22.4	0	1	0.1	
					135	0	0.1	22.4	0	1	0.0	
			Average:	**Average:**	**150**	0	0.1	22.5	0	1	0.0	
					165	0	0.1	22.5	0	1	0.0	
			-2.2	0.1	**180**	0	0.1	22.5	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date: 18/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.2
Monitoring Engineer: JM **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A
Weather/Wind: Cool/Calm **Weather Trend:** Unsettled **Atm. Press. Trend** Falling
Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
BH2005	1006	-0.03	**Initial:**	**Initial:**	**15**	0	9.3	15.1	0	1	0.1	1.97 (Strong odour and sheen)
					30	0	9.4	9.7	0	1	0.1	
					45	0	9.5	9.2	0	1	0.1	
			0.1	0.0	**60**	0	9.5	9.2	0	1	0.1	
					75	0	9.4	9.2	0	1	0.1	
			Peak:	**Peak:**	**90**	0	9.4	9.2	0	1	0.1	
					105	0	9.4	9.2	0	1	0.1	
			0.2	0.0	**120**	0	9.5	9.2	0	1	0.1	
					135	0	9.5	9.2	0	1	0.1	
			Average:	**Average:**	**150**	0	9.6	9.1	0	1	0.1	
					165	0	9.9	8.7	0	1	0.1	
			0.1	0.0	**180**	0	10.2	8.2	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1003	1007	0.12	**Initial:**	**Initial:**	**15**	0	0.6	21.6	0	1	0.2	1.94
					30	0	0.6	21.3	0	1	0.2	
					45	0	0.5	21.3	0	1	0.3	
			-18.8	0.0	**60**	0	0.5	21.4	0	1	0.2	
					75	0	0.5	21.4	0	1	0.2	
			Peak:	**Peak:**	**90**	0	0.5	21.4	0	1	0.2	
					105	0	0.5	21.5	0	1	0.2	
			-18.8	0.0	**120**	0	0.5	21.5	0	1	0.2	
					135	0	0.5	21.5	0	1	0.2	
			Average:	**Average:**	**150**	0	0.5	21.5	0	1	0.2	
					165	0	0.5	21.6	0	1	0.2	
			-15.0	0.0	**180**	0	0.5	21.6	0	1	0.2	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1004	1007	-0.05	**Initial:**	**Initial:**	**15**	0	2.1	21.4	0	1	0.2	2.10
					30	0	2.1	21	0	1	0.2	
					45	0	2.1	21	0	1	0.2	
			-7.0	0.0	**60**	0	2	21	0	1	0.2	
					75	0	1.9	21.1	0	1	0.2	
			Peak:	**Peak:**	**90**	0	1.7	21.2	0	1	0.2	
					105	0	1.6	21.3	0	1	0.2	
			-7.0	0.0	**120**	0	1.4	21.4	0	1	0.1	
					135	0	1.2	21.6	0	1	0.1	
			Average:	**Average:**	**150**	0	1	21.7	0	1	0.1	
					165	0	0.9	21.8	0	1	0.1	
			-3.5	0.0	**180**	0	0.8	21.8	0	1	0.1	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date: 18/12/2019 **Ambient Gas Conc.:** **CH4 (%):** 0.0 **CO2 (%):** 0.1 **O2 (%):** 22.2

Monitoring Engineer: JM **CO (ppm):** 0.0 **H_2S (ppm):** 0.0 **VOCs (ppm):** N/A

Weather/Wind: Cool/Calm **Weather Trend:** Unsettled **Atm. Press. Trend** Falling

Remarks: - **Equipment:** **Geotech GA5000**

Borehole ID	Atmospheric Barometric Pressure (mb)	Borehole Barometric Pressure (mb)	Flow (l/hr)	Second flow (after bung was placed back) (l/hr)	Time (sec)	Methane CH4 (%)	Carbon Dioxide CO2 (%)	Oxygen O2 (%)	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H2S (ppm)	Volatile Organic Compounds VOCs (ppm)	Water Level (m)
WS1007	1007	0.02	**Initial:**	**Initial:**	**15**	0	0.7	22	0	1	0.2	2.00
					30	0	0.7	21.8	0	1	0.2	
			-20.2	2.6	**45**	0	0.7	21.8	0	1	0.2	
					60	0	0.6	21.8	0	1	0.1	
			Peak:	**Peak:**	**75**	0	0.6	21.8	0	1	0.1	
					90	0	0.6	21.9	0	1	0.1	
			-20.2	2.6	**105**	0	0.5	21.9	0	1	0.1	
					120	0	0.5	21.9	0	1	0.1	
			Average:	**Average:**	**135**	0	0.5	21.9	0	1	0.1	
					150	0	0.5	21.9	0	1	0.1	
			-18.5	2.2	**165**	0	0.5	21.9	0	1	0.1	
					180	0	0.5	22	0	1	0.1	
Borehole ID	**Atmospheric Barometric Pressure (mb)**	**Borehole Barometric Pressure (mb)**	**Flow (l/hr)**	**Second flow (after bung was placed back) (l/hr)**	**Time (sec)**	**Methane CH4 (%)**	**Carbon Dioxide CO2 (%)**	**Oxygen O2 (%)**	**Carbon Monoxide CO (ppm)**	**Hydrogen Sulphide H2S (ppm)**	**Volatile Organic Compounds VOCs (ppm)**	**Water Level (m)**
WS1019	1006	0.03	**Initial:**	**Initial:**	**15**	0	0.2	22.2	0	1	0.1	2.05 (Faint odour and sheen)
					30	0	0.2	22.2	0	1	0.0	
			0.1	0.0	**45**	0	0.2	22.3	0	0	0.0	
					60	0	0.1	22.3	0	1	0.0	
			Peak:	**Peak:**	**75**	0	0.1	22.3	0	1	0.0	
					90	0	0.1	22.3	0	1	0.0	
			0.4	0.0	**105**	0	0.1	22.3	0	1	0.0	
					120	0	0.1	22.4	0	1	0.0	
			Average:	**Average:**	**135**	0	0.1	22.4	0	1	0.0	
					150	0	0.1	22.4	0	1	0.0	
			0.3	0.0	**165**	0	0.1	22.4	0	1	0.0	
					180	0	0.1	22.4	0	1	0.0	

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

PAGE:	4200	**GAS MONITORING**
DATE: 18/12/2019	VASTERN ROAD, READING	

Monitoring Date:	18/12/2019	**Ambient Gas Conc.:**	**CH4 (%):**	0.0	**CO2 (%):** 0.1	**O2 (%):**	22.2
Monitoring Engineer:	JM		**CO (ppm):**	0.0	**H_2S (ppm):** 0.0	**VOCs (ppm):**	N/A
Weather/Wind:	Cool/Calm	**Weather Trend:**	Unsettled		**Atm. Press. Trend**	Falling	
Remarks: -					**Equipment:**	**Geotech GA5000**	



Site Visit: 10:30 - 14:00

Local Weather Station Atmospheric Pressure Records for 16th to 23rd December 2019.

NB Note: The weather station atmospheric pressure is normally corrected for attitude (providing an equivalent sea level atmospheric pressure), whereas the GA5000 gas analyser measures absolute atmospheric pressure at the sites altitude, therefore a difference in pressures is to be expected between the local station data and the gas analyser data. The graph above has been appended purely to give an indication of pressure trends prior to the monitoring visit.

Tests undertaken with a Geotechnical Instruments Infra-red gas analyser GA 94A GA5000plus

Attachment 4

Gas Analyser GA5000 Calibration Certificate

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 29-Jan-2019

Certificate Number: G504358_1/22429

Issued by: QED Environmental Systems Ltd.

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Calibrations marked 'Non-UKAS Accredited results' on this certificate have been included for completeness.

Non-UKAS accredited results after adjustment:

Barometer (mbar)	
Reference	**Instrument Reading**
989	989

Additional Gas Cells		
Gas	**Certified Gas (ppm)**	**Instrument Reading (ppm)**
CO	497	507
H_2S	257	251

Internal Flow	
Applied (l/hr)	**Instrument Reading (l/hr)**
5.00	5.00
10.00	9.90

Date of Issue : 30-Jan-2019 **Approved by Signatory** A. Tantoush Abdul Tantoush

Laboratory Inspection

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

Calibration Instance: 101 IGC Instance: 101

www.qedenv.com +44 (0) 333 800 0088 sales@qedenv.co.uk

QED Environmental Systems Ltd. Cyan Park - Unit 3, Jimmy Hill Way, Coventry, CV2 4QP, UNITED KINGDOM

Registered in England and Wales 1898734

CERTIFICATION OF CALIBRATION

4533

Date Of Calibration: 29-Jan-2019

Certificate Number: G504358_1/22429

Issued by: QED Environmental Systems Ltd.

Customer: **Terramech Investigations Ltd**
183 Long Lane Tilehurst READING
RG31 6YW UNITED KINGDOM

Description: Gas Analyser

Model: GA5000

Serial Number: G504358

UKAS Accredited results:

Results after adjustment :

Methane (CH_4)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.9	0.41
15.0	15.0	0.64
49.9	49.4	0.94

Carbon Dioxide (CO_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
5.0	4.8	0.43
15.0	14.8	0.70
50.1	50.3	1.1

Oxygen (O_2)		
Certified Gas (%)	**Instrument Reading (%)**	**Uncertainty (%)**
21.0	21.1	0.31

The inwards assessment was carried out 22-Jan-2019.
The maximum adjustment is larger than the inwards assessment uncertainty.
Inwards assessment data is available if requested.

All concentrations are molar.

CH_4, CO_2 readings recorded at : 31.4 °C ± 2.5 °C

O2 readings recorded at : 22.3 °C ± 2.5 °C

Barometric Pressure : 0989 mbar ± 4 mbar

Method of Test : The analyser is calibrated in a temperature controlled chamber using a series of reference gases, in compliance with procedure LP004.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

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SERVICE REPORT

Issued by: QED Environmental Systems Ltd.

Customer Name: Terramech Investigations Ltd

Model: GA5000
Part Number: GA5KB0C0-101
Serial Number: G504358

Date of Service: 30-Jan-2019
Service Engineer: David Edwards
Calibration Engineer: Suk Balrey

Verification / Approved By: Abdul Tantoush **Signature:** A.Tantoush

Reason for Return (inc. Customer Comments):

Returned for full service and calibration

Service Comments/Feedback:

Thank you for returning your gas analyser to the Geotech Service Centre for full service and calibration. We are pleased to inform you that the analyser was received and fully assessed by one of our experienced Service Engineers and no significant faults or issues were observed during the assessment. Our extensive service was carried out, and any necessary components replaced. The analyser has successfully passed all of our rigorous testing and quality checks and has been calibrated using our bespoke, state of the art calibration facility.

We are pleased to inform you that we have installed the latest version of firmware on your gas analyser, so you will be able to benefit from the latest features and improvements.

We have replaced the battery because it is over 2 years old. This is in accordance to the battery cell manufacturer's recommendation.

The CO and H2S electrochemical sensors have been replaced due to them being over 2 years old in accordance with the manufacturer's recommendations, and also as a proactive measure based on our experience of the typical lifetime of these types of sensor.

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17025	5	50	65	7,384	340	25
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SERVICE REPORT

Issued by: QED Environmental Systems Ltd.

17025	5	50	65	7,384	340	25
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APPENDIX VIII – OMNIA SUPPLEMENTARY GROUND INVESTIGATION (2023)

Phase II
Supplementary Geo-Environmental Site Assessment

55 Vastern Road, Reading, Berkshire, RG1 8BU

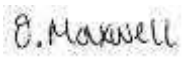
Prepared for:
Berkeley Homes (Oxford & Chiltern) Ltd
Mill Lane
Taplow
Maidenhead
SL6 0AG

April 2023

Omnia ref: A10967/3.2

ISO Accredited Certification (UKAS)

QUALITY ASSURANCE

Project Number: A10967 **November 2022**						
Geo-Environmental	**Phase II Geo-Environmental Assessment**					
	Prepared by:	O. Maxwell	**Date:**	11/11/22	**Signature:**	
	Checked and Authorised by:	A. King	**Date:**	29/11/22	**Signature:**	
	January 2023 Update	Document issued as Final following client comments				
	April 2023 Update	Clarification added to the change in site boundary, where the SSE compound is no longer included within the site boundary. Update to Revised CSM.				

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Executive Summary	
Site Address	55 Vastern Road, Reading, Berkshire, RG1 8BU
National Grid Reference	471566, 174120
Site Area	Approximately 0.76 ha
Current Site Use	At the time of the site investigation, the site was vacant and comprised of a single two-storey building occupying the southern area. Electricity power distribution infrastructure was located within the central section of the site and along the eastern boundary, however this area was demarcated with Heras fencing and falls outside of the red line boundary for the site. Within the central eastern and northern section of the site the area was utilised for parking associated with the vacant SSE building.
Site History	The site formed part of an open field until mapping dated 1900 when the site was developed into an electrical works with an ice rink built 1912. The site was then redeveloped during the 1970s to its current configuration.
Geology & Hydrogeology	Soils underlying the site are classified as Unproductive Strata, attributed to the clay and silt of the Langley Silt Member. This unit is underlain by the Kempton Park Gravels, classified as a Secondary A Aquifer. The site is further underlain at depth by a Principal Aquifer, the chalk of the Seaford Chalk and Newhaven Chalk Formation. Four (4no.) groundwater abstraction and three(3no.) potable groundwater abstractions are noted within 1km of the site. The closest surface water feature is located 4m to the northeast of the site.
Revised Conceptual Site Model	
Following the completion of the above risk assessment, a series of active pollution pathways have been identified by the RCSM. These relate to elevated metals, PAH, TPH and asbestos concentrations in the near surface and TPH within groundwater samples.	
Recommendations	
In order to mitigate this risk identified in the RCSM remediation works are required, which are likely to include: • Emplacement of soil capping system within all areas of proposed soft landscaping; • Provision of Vapour and Ground Gas Membranes within proposed building footprints; • Hotspot removal of impact in area of WS1002 and TP1007. Mitigation measures have been set out within a standalone Remediation Method Statement (A10967/2.4 April 2023), which it is recommended is agreed with the Regulator ahead of commencement on site. Near surface soils at the site are likely to be classified as Hazardous for disposal purposes due to asbestos content >0.1% in five of 47 samples across the proposed residential portion of the site. If during works any previously unidentified impact is encountered during development works, activities should be halted and contact made with a suitably qualified Environmental Consultant in order to further investigation identified materials. As determined appropriate by the Consultant further investigation and sampling may be required to determine appropriate actions. Upon completion contact should be made with the regulator to achieve sign off of the works.	

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1 INTRODUCTION

1.1 Background

Omnia have been commissioned by Berkeley Homes (Oxford & Chiltern) Ltd (BHOC) to undertake a Supplementary Environmental Site Assessment at the site comprising 55 Vastern Road, Reading, Berkshire, RG1 8BU (Figure 1.0). This work has been commissioned following previous phases of investigation undertaken by Omnia and others.

The site is situated in Reading Town centre, directly adjacent to the River Thames and is understood to have been previously owned and occupied by SSE with an office building located on the southern third of the site and associated parking and infrastructure towards the north. A significant proportion of the wider site, predominantly the eastern third, is utilised by SSE for electricity distribution, with a range of plant and structures in place including below ground oil-cooled cables. This area of the site falls outside of the current site boundary, as detailed within Figure 1.0 in Appendix III.

It is understood that BHOC have acquired the site in full but intend to redevelop only approximately 70% of the site, with SSE retaining the area it currently utilises for electricity distribution. The development itself is to comprise the construction of up to 5 new residential apartment blocks along with associated infrastructure and communal green space as indicated on the provided plans.

Since the initial investigation (A10967/1.1 April 2018) it is understood that the site boundary has changed, such that the SSE compound, previously located within eh centre and east of the site, now falls outside of the clients ownership boundary, and therefore the client is no longer responsible for any remediation required within this area. This area has now been excluded from the Revised Conceptual Site Model.

It is understood that since the previous investigation works, BHOC have submitted an application for the site as detailed under Planning Application ref: 200188.

It is understood that a pollution incident occurred at the site during July 2017 when an estimated 8,000 litres of cooling oil was released from a ruptured underground High Voltage (HV) cable run. The site is understood to have undergone three (3no.) previous phases of investigation, an initial investigation undertaken in October 2017 by Adler & Allan Ltd to identify the source of the leakage and facilitate a repair, with a subsequent phase of investigation and monitoring undertaken by Peter Brett Associates (PBA) between January – April 2018, and a further investigation and assessment undertaken by Omnia in April 2018.

Since the previous Omnia investigation in April 2018, it is understood there has been a further pollution incident on the SSE site, where cooling oil was released. The exact location and extent of this incident is unknown, and this report looks to assess if potential contamination has impacted the subject site.

The previous Omnia investigation (A10967/1.1 April 2018) and subsequent Remediation Method Statement (RMS) (A10967/2.1 April 2018) identified two areas of the site that required further investigation as a result of identified elevated Total Petroleum Hydrocarbon (TPH) concentrations.

This report provides further assessment of these two areas, the most recent SSE cooling oil pollution incident, and assessment of areas not previously accessible, and should be read in conjunction with the previously stated reports. Further detail for the rationale for investigating each area is provided in

Section 3.0.

1.2 Proposed Development

It is understood that the proposed development consists of the *'Demolition of existing structures and erection of a series of buildings ranging in height from 1 to 11 storeys, including residential dwellings (C3 use class) and retail floorspace (A3 use class), together with a new north-south pedestrian link, connecting Christchurch Bridge to Vastern Road'*

The outline proposed site layout is presented as Figure 2.0 (Appendix III).

1.3 Objectives

The objectives of the Supplementary Phase II Geo-Environmental Site Assessment are to:

- Provide an environmental data review including summary of existing reports, providing an overview of site conditions from both phases of investigation to assist the Tier 1 Risk Assessment;
- Provide an updated Conceptual Site Model (CSM) identifying potential risk from soils and made ground as well as surrounding land uses;
- Undertake an assessment of the near surface through intrusive site investigation;
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors; and,
- Provide a factual and interpretative report relating to the site and provide recommendations on any potential development issues with consideration of residential and environmental receptors.

1.4 Sources of Information

Background information was sought from the following sources:

- CC Ground Investigation Ltd Factual Report (report ref: 'C5925/01'dated March 2018);
- PBA Peter Brett Technical Note (report ref: 'Tn002/Rev0' dated March 2018);
- Omnia Phase I-II Geo-Environmental Site Assessment (ref: A10967/1.1 dated April 2018);
- Omnia Remediation Method Statement (ref: A10967/2.1 dated April 2018);
- Omnia Ground Gas Monitoring Assessment (ref: A11220/221115/L1 dated 15th November 2022)
- British Geological Survey Map Sheet 268, Reading, Solid & Drift Edition at a scale of 1:50,000.
- British Standard BS10175:2011+A2:2017 – Investigation of Potentially Contaminated Sites – Code of Practice;
- British Standard BS5930:2015+A1:2020 – *Code of Practice for Ground Investigations;*

1.5 Limitations

The limitations of this report are presented in Appendix I.

1.6 Confidentiality

Omnia has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Omnia; a charge may be levied against such approval.

2 SITE SETTING

2.1 Site Details

Table 2-1 Site Details

Site Address	55 Vastern Road, Reading, Berkshire, RG1 8BU
National Grid Reference	471566, 174120
Site Area	Approximately 0.76 ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location plan is presented as Figure 1.0 (Appendix III).

2.2 Current Site Use

2.2.1 Site Description

The area of investigation is located within Reading town centre, approximately 1km north of Reading train station on a roughly rectangular shaped parcel of land approximately 0.76 hectares in size. The site is located north of Vastern Road with the long axis aligned northeast to southwest. The site was accessed via a security gate located on Lynmouth Road.

The site was bound by a brick wall and wooden fence panels backing onto private gardens and residential housing to the west. Dense vegetation was present in front of the wall. To the north the site was bound by an approximately 2m tall chain link fence and public footpath beyond. The eastern boundary was marked with Heras fencing with the SSE site beyond. The south of the site comprised an office building fronting on to Vastern Road.

At the time of the site investigation, the site was vacant and comprised of a single two-storey building occupying the southern area. Electricity power distribution infrastructure was located within the central section of the site and along the eastern boundary, however this area was demarcated with Heras fencing and falls outside of the red line boundary for the site. Within the central, western and northern section of the site the area was utilised for parking associated with the vacant SSE building.

The two-storey building within the southern section of the site was aligned alongside Vastern Road in an approximate east west orientation, with the building fronting onto Vastern Road. The majority of the building was clad with white plastering, although it is assumed that the building is brick built. The building appeared to be in a relatively good state of repair, however internally office supplies had been removed and vandalised.

Within the north-eastern corner of the site a small area of soft landscaping was present, containing a double garage, a smoking area and an electrical substation. The area was in a good state of repair with grass cover across the area, with the substation enclosed by 1.5m wooden fencing.

The site was observed to be generally flat, with a previous topographic survey indicating an elevation of approximately 38.50m AOD.

An annotated site location plan showing observations from the walk-over survey is presented as Figure 3.0 within A10967/1.1 April 2018. Relevant photographs from the site walk-over survey are located in Appendix IV.

2.2.2 Hazardous Materials Storage

No hazardous material storage other than that associated with the substation infrastructure was observed during the site walkover.

2.2.3 Potential Asbestos Containing Material (PACM)

During the site walkover, no visible PACM was observed, however given that the onsite structure was built before the year 2000 there is the potential for asbestos containing material to be present within the building fabric. Given this, an asbestos survey should be undertaken in accordance with the Control of Asbestos Regulations (2012) ahead of any refurbishment or demolition work in line with current legislation.

2.2.4 Waste Storage

No waste storage was noted during the site works.

2.2.5 Tree Species

At the time of the site walkover the site largely comprised asphalt hardstanding, however dense vegetation was present along the western boundary and deciduous trees were noted in the north-western corner of the site.

2.2.6 Potential Invasive Species

During the site walkover no obvious signs of potential invasive species were identified. However, it should be noted that the site walkover was conducted during September/October, and it is recommended that a further inspection is undertaken during the growing season.

2.3 Surrounding Area

The surrounding land uses are summarised in Table 2-2 below:

Table 2-2 Land Use

Direction	Land Use
North	River Thames with Christchurch Playing Fields beyond.
East	Commercial/Industrial.
South	Commercial/Industrial with Railway Station beyond.
West	Residential Properties with private gardens.

3 PREVIOUS INVESTIGATIONS

The following documents have been made available to Omnia during the appraisal of the site:

- Peter Brett Associates (PBA) Technical Note Tn002/Rev0 – Preliminary Summary of Ground Investigation – SSE Site, Vastern Road, Reading, dated 20th March 2018.
- CC Ground Investigations (CCGI) Report C5925/01 – Draft Factual Report – SSE Site, Vastern Road, Reading, dated 12th March 2018.
- Email communication between SSE and their consultant Adler & Allan regarding the findings of the preliminary investigation to identify the location of the leakage – Dated October 2017.

Due to the factual nature of the reports provided no conclusions were drawn with regards to the risks posed to Human Health or the Environment except that it was considered that some remediation would likely be required by the Environment Agency to remove free product.

3.1 Omnia Phase I-II Geo-Environmental Assessment and DQRA ref: A10967/1.1 dated April 2018

Following review of the previous investigations completed on site, further site investigation and Detailed Qualitative Risk Assessment (DQRA) was undertaken. The Tier 1 risk assessment and DQRA identified a number of potential sources of contamination were present across the site that required remedial works. These included:

Human Health:

- Elevated concentration of metals within shallow soils samples across the site;
- Elevated concentrations of Polycyclic Aromatic Hydrocarbons (PAHs) within shallow soil samples across the site;
- Presence of asbestos within shallow soil samples across the site;
- Elevated Napthalene and TPH (C12-C16) concentrations identified;
- Elevated concentrations of Ground Gas (CH_4 and CO_2) identified;

Groundwater:

- Elevated concentrations of Aromatic TPH C12-C16 and C16-C21 identified within water samples;
- Elevated hotspot concentrations of TPH within WS1002 and TP1007

It was recommended the remedial works required were set out within a standalone RMS.

3.2 Omnia Remediation Method Statement ref: A10967/2.1 dated April 2018

Following the findings of the Omnia Geo-Environmental Assessment and DQRA (A10967/1.1) the following remedial measures were recommended:

Human Health Risk:

- Excavation of materials under proposed areas of soft landscaping to remove impacted near surface soils;
- Placement of geotextile membrane and installation of a clean cover system within areas of proposed soft landscaping; and,
- Installation of a ground gas and vapour protection membrane within proposed building footprints.

Controlled Waters Risk:

- Excavation and removal of localised high TPH concentrations in the vicinity of WS1002 and TP1007;
- Free phase hydrocarbon product removal- to be confirmed upon appointment of remediation contractor, however anticipated to comprise:
    - Installation of a series of large diameter (>200mm) wells within the substation compound area;
    - Installation of LNAPL skimmer pump system to recover free phase hydrocarbon product from the installed wells;
    - Timer controlled intermittent pumping to allow product to recharge into recovery wells; and,
    - Regular monitoring visits undertaken to perform checks on equipment, determine product recovery rates and quantities and arrange for disposal of recovered product to a suitably licensed facility when required.

It was recommended following the implementation of the remedial works a validation report should be prepared to confirm that works were undertaken in accordance with the relevant legislation and the RMS.

Since issue of this RMS, and the findings of this supplementary investigation, the RMS has been updated to bring it up to date with the latest findings, and is detailed within A10967/2.4 April 2023.

3.3 Omnia Ground Gas Assessment ref: A11220/221115/L1 dated 15th November 2022

A ground gas assessment was undertaken based on thirteen (13no.) monitoring visits undertaken by CC Ground Investigations and Terramech Investigations Ltd.

The findings of a total of thirteen (13no.) rounds of ground gas monitoring detected a maximum CH4 concentration of 0.1% v/v, a maximum CO2 concentration of 6.5% v/v, and a maximum ground gas flow rate of 27.4 l/hr. The elevated classification is restricted to just one borehole location, close to the south western boundary. The site was classified as below:

- The proposed Block A is classified as CS-3
- The remainder of the site is classified as CS-2

4 REVISED CONCEPTUAL SITE MODEL (CSM)

Following review of the previous reports summarised within Section 3.0, a revised conceptual site model has been prepared detailing the outstanding sources that require further assessment, as detailed within Table 4-1.

The conceptual site model has been colour coded, as detailed below

No further assessment or action required
The source has been assessed and further remedial measures are required to ensure the site is suitable for its proposed end use. No further assessment required.
Further assessment required

Table 4-1 Revised Conceptual Site Model

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
Area of the site to the south-east not previously investigated due to access constraints	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Further assessment required**
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Polycyclic Aromatic Hydrocarbons (PAH)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Total Petroleum Hydrocarbons (TPH)	Ingestion Dermal Contact Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
	Asbestos Fibres	Inhalation of fibres	Future Site Users	Moderate	Moderate	Moderate	
Pollution Incident since April 2018 – Leakage of cooling oil	Total Petroleum Hydrocarbons (TPH) PRO/DRO inc Linear Alkyl Benzene	Ingestion and Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Further Assessment Required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
July 2017 Pollution	Total Petroleum Hydrocarbons	Ingestion and Dermal	Future Site Users	Moderate	Moderate	Moderate	**It was considered that TPH concentrations identified were located at a suitable depth (>0.60m bgl) such that it was not**

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
Incident – Leakage of cooling oil	(TPH) PRO/DRO inc Linear Alkyl Benzene	Contact					**considered to pose a significant risk to future site users through ingestion and dermal contact. However, if the final site levels were to change that remediation may be required. Given the concentrations of other determinants identified on-site, remedial measures have been recommended that would render this pollution linkage inactive, should it be required. Remedial measures are set out in RMS A10967/2.4**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	**Hydrocarbon resistant membranes have been recommended within the RMS A10967/2.4 such that this pollutant linkage would be severed.**
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	**TPH Aromatic C12-16 and C16-21 identified at BH1005, BH2005 and BH2006 within water samples. Concentrations are considered to be consistent with the product lost during the pollution incident. Tier 2 Risk Assessment (DQRA) was recommended and determined that the concentrations are not above the Remedial Targets. Given the change in site ownership (SSE Transformer area outside of clients ownership boundary) no further works are required by the client.**
	Volatile Organic Compounds (VOCs)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	PCBs	Ingestion Dermal Contact Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action**
		Vertical and Lateral	Controlled Waters	Moderate	Moderate	Moderate	

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
		Migration					
Made Ground associated with development of the site.	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	**It was considered that metals do not pose a significant risk to controlled waters. No further action required.**
	Polycyclic Aromatic Hydrocarbons (PAH)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	**It was considered that PAHs do not pose a significant risk to controlled waters. No further action required.**
	Total Petroleum Hydrocarbons (TPH)	Ingestion Dermal Contact Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	**TPH C12-16, C16-21 and C21-35 detected at WS1002. TPH C16-21 and C21-35 detected at TP1007. Further investigation and remedial works required**
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
	Asbestos Fibres	Inhalation of fibres	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
	Ground Gas (CO_2 and CH_4)	Vertical and Lateral Migration	Future Sites Users	Moderate	Severe	High	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
Current and Historic Land Use as Power Station (Electrical Works)	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	**It was considered that metals do not pose a significant risk to controlled waters. No further action required.**
	Polycyclic Aromatic	Ingestion Dermal	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
	Hydrocarbons (PAH)	Contact					
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	**It was considered that PAHs do not pose a significant risk to controlled waters. No further action required.**
	Total Petroleum Hydrocarbons (TPH)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**TPH C16-21 and C21-35 detected at TP1007.** **Further investigation and remedial works required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low	
	Volatile Organic Compounds (VOC)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical & Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	Asbestos Fibres	Inhalation of fibres	Future Site Users	Moderate	Moderate	Moderate	**Exceedances identified across site – remedial measures required as set out in the RMS A10967/2.4**
	Polychlorinated Biphenyls (PCB)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action required**
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
Presence of underground oil cooled electrical cables	Total Petroleum Hydrocarbons (TPH) PRO/DRO inc Linear Alkyl Benzene	Ingestion Dermal Contact Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	**TPH C12-16 and C16-21 detected at BH1005, BH2005 and TPH Aromatic C12-16 and C16-21 identified at BH1005, BH2005 and BH2006 within water samples. Concentrations are considered to be consistent with the product lost during the pollution incident.**

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	**Further assessment required in area of site not previously accessible.**
	Volatile Organic Compounds (VOCs)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	PCBs	Ingestion Dermal Contact Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
Electrical substations, transformers and associated infrastructure	Polychlorinated Biphenyls (PCB)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No exceedances identified – no further action required**
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	TPH	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**No TPH exceedances identified considered to be attributed to this source– no further action required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
Historical Tanks within	Total Petroleum Hydrocarbons	Ingestion Dermal	Future Site Users	Moderate	Moderate	Moderate	**TPH C12-16, C16-21 and C21-35 detected at WS1002 (NW corner).**

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
NW corner of the site	(TPH)	Contact					**Further investigation and remedial works required**
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low	
Historic Skating Rink Southern section of the site.	Polycyclic Aromatic Hydrocarbons (PAH)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	**Further investigation required**
		Vertical and Lateral Migration	Controlled Waters	Low	Minor	Low	
	Total Petroleum Hydrocarbons (TPH)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
	Volatile Organic Compounds (VOC)	Ingestion Dermal Contact	Future Site Users	Moderate	Moderate	Moderate	
		Inhalation of Vapours	Future Site Users	Moderate	Moderate	Moderate	
		Vertical and Lateral Migration	Controlled Waters	Moderate	Minor	Low/Moderate	
Historic Ice Factory and Cold Storage adjacent to western boundary	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration	Future Site Users	Moderate	Moderate	Moderate	**Exceedances of PAH encountered within TP1007 – remedial measures required as set out in the RMS A10967/2.4**
	Total Petroleum Hydrocarbons (TPH)	Lateral Migration	Future Site Users	Moderate	Moderate	Moderate	**No exceedances of TPH encountered considered to be attributed to this off-site historic source – no further action required.**

Source	Contaminant	Potential migration pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Assessment to date
	Volatile Organic Compounds (VOC)	Lateral Migration	Future Site Users	Moderate	Moderate	Moderate	**No exceedances of VOC encountered considered to be attributed to this off-site historic source – no further action required.**
Historic engineering works ~ 10m east	Metals (As, Cd, Cr, Pb, Hg, Se, Ni)	Lateral Migration	Future Site Users	Low	Moderate	Low/Moderate	**No further assessment required following ground investigation**
	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration	Future Site Users	Low	Moderate	Low/Moderate	
	Total Petroleum Hydrocarbons (TPH)	Lateral Migration	Future Site Users	Moderate	Moderate	Moderate	
	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration	Future Site Users	Very Low	Moderate	Low	
	Polycyclic Aromatic Hydrocarbons (PAH)	Lateral Migration	Future Site Users	Very Low	Moderate	Low	

5 SITE INVESTIGATION

5.1 General

A ground investigation was designed based on the revised conceptual site model and the proposed site development as shown in Figure 2.0 (Appendix III).

Exploratory fieldwork was conducted over five (5no.) working days, commencing on 28th September 2022 and comprised the following:

Table 5-1 Site Investigation Summary

Potential Source/Rationale	Location Hole	Type	Maximum Depth (m bgl)	Borehole Response Zone (m bgl)
Area of the site to the south-east not previously investigated due to access constraints	Aii-WS01	Window Sample	2.80	N/A
	Aii-WS02		3.00	
	Aii-WS03		3.00	
	Aii-WS04		3.00	
	Aii-WS05	Hand Pit	0.55	
Pollution Incident on SSE site since April 2018 – Leakage of cooling oil	C-WS01	Hand Pit	0.40	N/A
	C-WS01A	Window Sample	3.00	1.00 – 2.00
	C-WS02	Hand Pit	0.40	N/A
	C-WS02A	Window Sample	3.00	1.00 – 2.00
	C-WS03	Hand Pit	0.40	N/A
	C-WS04	Hand Pit	0.40	
Made Ground associated with development of the site. Historical Tanks within northwest corner of the site TPH C12-16, C16-21 and C21-35 identified at WS1002, therefore further investigation required in the area.	Bii-WS01	Window Sample	4.00	1.00 – 2.00
	Bii-WS02		3.70	N/A
	Bii-WS03		3.00	
Made Ground associated with development of the site. Current and Historic Land Use as Power Station (Electrical Works) TPH C16-21 and C21-35 detected at TP1007, therefore further investigation required in the area.	Bi-TP01	Machine Excavated Trial Pit	0.80	N/A
	Bi-TP02		0.80	
	Bi-TP03		0.70	
Historic Skating Rink Southern section of the site.	Ai-WS01	Handheld Window Sample	2.80	N/A
	Ai-WS02		3.00	
	Ai-WS03		3.00	
	Ai-WS04		3.00	

The exploratory hole locations are illustrated on Figure 3.0 (Appendix III) and illustrated on Figure 3.1 when compared to the Revised Conceptual Site Model. The ground conditions encountered are indicated on the exploratory hole logs, which are provided in Appendix V.

5.2 Scope Adjustments

Due to the presence of a concrete slab within the near surface, the following locations could not be advanced to the full depth of the scope:

- Aii-WS05
- Bi-TP01
- Bi-TP02
- Bi-TP03
- C-WS01
- C-WS02
- C-WS03
- C-WS04

Within Area Bi, four (4no.) trial pits were proposed, however given the presence of a concrete slab within the very near surface, two trial pits could not be advanced. As a result, Bi-TP03 was advanced to the west. Within Bi-TP03 suspected concrete footings were encountered, and the trial pit was advanced between to the two footings, to a maximum depth of 0.70m bgl, where another concrete slab was encountered.

Within Area C, four window sample positions were proposed, due the presence of a concrete slab within the near surface, the hand pit could not be completed. Two suitable locations were identified, and advanced as C-WS01A and C-WS02A.

Within Area Bii two (2no.) window sample positions were proposed, with no installs. However, when advancing Bii-WS01 a “sheen” was identified on the water during recovery at a depth of 2.00m bgl. The borehole was advanced to a greater depth of 4.00m bgl compared to the proposed depth of 3.00m bgl to ensure natural soils were encountered. The borehole was installed with groundwater monitoring pipe to facilitate further groundwater sampling. An additional borehole was advanced (Bii-WS03) to provide further information to potentially limit the extent of the hotspot being targeted at WS1002.

5.3 Laboratory Analysis

Selected soil samples were submitted for a range of chemical analysis including:

- Asbestos fibres in soil;
- CLEA Metals;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Speciated Total Petroleum Hydrocarbons (TPH CWG);
- Banded Total Petroleum Hydrocarbons (GRO and EPH);
- pH;
- Phenol;
- Total Cyanide;
- Total Organic Carbon;
- Water-Soluble Sulphate (2:1 extract)

Selected water samples were submitted for a range of chemical analysis including:

- CLEA Metals;

- Polycyclic Aromatic Hydrocarbons (PAHs);
- Speciated Total Petroleum Hydrocarbons (TPH CWG);
- Banded Total Petroleum Hydrocarbons (GRO and EPH);
- pH;
- Total Cyanide;
- Sulphate

Element Materials Technology of Deeside undertook the analytical work in accordance with UKAS accreditation where applicable and the laboratory analysis certificates are presented as Appendix VI and discussed in Section 7.

6 GROUND AND GROUNDWATER CONDITIONS

6.1 Summary of Ground Conditions

British Geological Survey (BGS) map for the site (Reading, Sheet 268, Solid and Drift Edition at a scale of 1:50,000 dated 2000) indicates that the superficial geology on-site comprises the Langley Silt Member of clayey and sandy silt, further underlain by the Kempton Park Gravel of sand and gravel. Bedrock Deposits are recorded as the Seaford and Newhaven Chalk Formation across the entire site.

Geology encountered on site generally corresponds with that highlighted within BGS Mapping and the findings have been outlined below. Bedrock was not encountered during the investigation.

6.1.1 Made Ground

Made Ground was encountered within all intrusive locations on site and generally comprised asphalt over various compositions of black and brown sand, gravel and clay. Gravel comprised brick, flint, wood, concrete, clinker, coal, chalk and sandstone.

The locations advanced within the building footprint comprised a suspended floor of carpet and MDF over concrete within Ai-WS01, Ai-WS03 and Ai-WS04, and carpet and concrete at surface within Ai-WS02, overlying various compositions of black and brown sand, gravel and clay. Gravel comprised brick, flint, concrete, clinker, coal, chalk and sandstone.

Made Ground was encountered to a minimum proven depth of 1.10m bgl within C-WS02A and a maximum proven depth of 2.00m bgl within Bii-WS01. The depth of Made Ground was not proven within Aii-WS05, Bi-TP01 – Bi-TP03 or C-WS01 – C-WS04 due to obstructions within the advanced locations.

6.1.2 Superficial Deposits

6.1.2.1 Langley Silt Member

Superficial deposits of the Langley Silt Member were encountered within all intrusive locations that were advanced beyond Made Ground. The Langley Silt Member was encountered directly beneath Made Ground to a maximum depth of 4.00m bgl in Bii-WS01. The encountered thickness of the Langley Silt Member varied from 0.80m to 2.30m, however it should be noted that the base of the Langley Silt member was not proven at the majority of intrusive locations with the base of the unit not proven at the location containing the maximum encountered thickness of 2.30m (Bii-WS02).

The Langley Silt Member generally comprised a soft greenish grey CLAY with rare shells, pyrite, flint and relic rootlets.

6.1.2.2 Kempton Park Gravel Member

Superficial deposits of the Kempton Park Gravel Member were encountered within four intrusive positions (Ai-WS03 and Aii-WS01 – Aii-WS03) beneath the Langley Silt Member to a maximum encountered depth of 3.00m bgl. The thickness of Kempton Park Gravel encountered ranged from 0.05m to 0.40m but it should be noted that the base of the unit was not proven during the course of ground investigation.

The Kempton Park Gravel Member generally comprised brown slightly sandy fine to coarse angular to subangular GRAVEL of flint.

6.1.3 Groundwater Conditions

Groundwater strikes were encountered during works as summarised in Table 6-1.

Table 6-1. Summary of Groundwater Conditions

Location	Depth (m bgl)	Strata	Type of Water Strike
Aii-WS01	2.10	LSM	Strike
Aii-WS03	2.30	LSM	Strike
Aii-WS04	2.50	LSM	Strike
Ai-WS01	2.10	LSM	Strike
Ai-WS02	2.60	LSM	Strike
Ai-WS03	2.30	LSM	Strike
Ai-WS04	2.30	LSM	Strike
Bii-WS01	2.00	LSM	Strike
Bii-WS02	2.30	LSM	Strike
Bii-WS03	2.20	LSM	Strike
C-WS01A	1.50	Made Ground	Strike
C-WS02A	2.90	LSM	Wet Soil Recovery

Notes: LSM = Langley Silt Member

6.2 In-Situ Testing

6.2.1 In-Situ VOC Screening

In-situ VOC screening was undertaken on selected samples during the site investigation using a Photo-Ionisation Detector (PID). All PID screening results were below the equipment Limit of Detection (<0.1 ppm) and have therefore not been assessed further.

7 TIER 1 QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT

Omnia has undertaken a Tier 1 qualitative risk assessment to determine if any potential contaminants within the underlying soils pose an unacceptable level of risk to the identified receptors.

7.1 Human Health Risk Assessment

At a Tier 1 stage the long term (chronic) human health toxicity of the soil has been assessed by comparing the on-site concentrations of organic and inorganic compounds with reference values published by the EA (Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGV)) and where absent, Generic Assessment Criteria (GACs) published by LQM/CIEH Suitable for Use Levels (S4UL) 2015. Based on the proposed development comprising apartment blocks with communal soft planting, Omnia has adopted screening values for a residential end use without home grown produce. The origin of the GAC values are presented within Appendix VII.

The Tier 1 screening values have been summarised by target area below.

7.1.1 Area Ai – Targeting the southern office building/Historic Skating Rink

Table 7-1. Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use without Home Grown Produce for Area Ai

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Metals							
Arsenic	mg/kg	40	6	28	N/A	1	No Further Action
Beryllium	**mg/kg**	**1.7**	**6**	**5.7**	**Ai-WS04 1.40 – 1.80**	**1**	**Further Assessment Required**
				2.0	**Ai-WS01 0.80 – 1.00**		
				1.8	**Ai-WS02 1.70 – 2.00**		
Boron	mg/kg	11000	6	7	N/A	1	No Further Action
Cadmium	mg/kg	85	6	<0.1	N/A	1	No Further Action
Chromium (III)	mg/kg	910	6	93.2	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	6	<0.3	N/A	1	No Further Action
Copper	mg/kg	7,100	6	112	N/A	1	No Further Action
Lead	**mg/kg**	**310**	**6**	**433**	**Ai-WS03 0.70 – 1.00**	**1**	**Further Assessment Required**
				410	**Ai-WS01 0.80 – 1.00**		
				292	**Ai-WS02 0.50 – 0.70**		
				289	**Ai-WS04 1.40 – 1.80**		
Mercury	mg/kg	56	6	24.6	N/A	4	No Further Action
Nickel	mg/kg	180	6	68.9	N/A	1	No Further Action
Selenium	mg/kg	430	6	2	N/A	1	No Further Action
Vanadium	mg/kg	1200	6	77	N/A	1	No Further Action
Zinc	mg/kg	40,000	6	792	N/A	1	No Further Action
General Inorganics							

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Total Cyanide*	mg/kg	50	6	3.9	N/A	1	No Further Action
Asbestos	%	0.001% Chrysotile	6	NAD	N/A	6	No Further Action
General Organics							
Phenol	mg/kg	750	6	<0.15	N/A	4,1	No Further Action
PAHs							
Naphthalene	mg/kg	2.3	6	0.26	N/A	4	No Further Action
Acenaphthylene	mg/kg	2,900	6	0.18	N/A	1	No Further Action
Acenaphthene	mg/kg	3,000	6	<0.05	N/A	1	No Further Action
Fluorene	mg/kg	2,800	6	<0.04	N/A	1	No Further Action
Phenanthrene	mg/kg	1,300	6	0.53	N/A	1	No Further Action
Anthracene	mg/kg	31,000	6	0.15	N/A	1	No Further Action
Fluoranthene	mg/kg	1,500	6	1.72	N/A	1	No Further Action
Pyrene	mg/kg	3,700	6	1.66	N/A	1	No Further Action
Benzo(a)Anthracene(	mg/kg	11	6	0.99	N/A	1	No Further Action
Chrysene	mg/kg	30	6	0.95	N/A	1	No Further Action
Benzo(b)Fluoranthene	mg/kg	3.9	6	1.3	N/A	1	No Further Action
Benzo(k)Fluoranthene	mg/kg	110	6	0.51	N/A	1	No Further Action
Benzo(a)Pyrene	mg/kg	3.2	6	1.06	N/A	1	No Further Action
Indeno(123-cd)Pyrene	mg/kg	45	6	0.82	N/A	1	No Further Action
Dibenzo(a,h)Anthracene	mg/kg	0.31	6	0.13	N/A	1	No Further Action
Benzo(ghi)Perylene	mg/kg	360	6	0.71	N/A	1	No Further Action
Banded TPH							
TPH EC 5-6**	mg/kg	42	6	<0.1	N/A	4	No Further Action
TPH EC >6-8**	mg/kg	100	6	<0.1	N/A	4	No Further Action
TPH EC >8-10**	mg/kg	27	6	<5	N/A	4	No Further Action
TPH EC> 10-12**	mg/kg	74	6	<10	N/A	4	No Further Action
TPH EC> 12-16**	mg/kg	140	6	<10	N/A	1	No Further Action
TPH EC> 16-21**	mg/kg	260	6	59	N/A	1	No Further Action
TPH EC> 21-35**	mg/kg	1,100	6	445	N/A	1	No Further Action
TPH EC> 35-44**	mg/kg	1,100	6	63	N/A	1	No Further Action

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.

Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. Omnia has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(sol) – GAC presented exceeds the solubility saturation limit.
(vap) – GAC presented exceeds the vapour saturation limit.

Referring to Table 7-1 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for the following determinants:

- Beryllium
- Lead

Elevated metal concentrations were encountered within the near surface and to a depth of 2.00m bGL across Area Ai of the site. Review of the potential pollution linkage for the identified concentrations indicates that soil ingestion and indoor dust are the predominant exposure pathways for metals. Given this, it is considered that the identified concentrations have the potential to present a significant risk to human health within areas of proposed soft landscaping, where concentrations have been encountered between ground level and 0.60m bFGL.

This pollution linkage would be limited between ground level and 0.60m bFGL, and therefore given the depth at which some of these concentrations are present (0.80 – 1.80m bgl) deeper concentrations (>0.80m bGL) are not considered to have the potential to present a significant risk to human health. However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.60m of the near surface. Given that final site levels are at this stage unknown, and that concrete was encountered to a depth of 0.30-0.80m bgl in these locations, which it is assumed will be removed, a risk averse approach has been adopted and for risk assessment purposes the elevated concentrations encountered are considered to have the potential to present a significant risk to human health within areas of proposed soft landscaping where an exposure pathway is considered likely to remain post-development.

Concentrations encountered within Ai-WS01 (0.80 – 1.00m bgl), Ai-WS02 (0.50 – 0.70m bgl), Ai-WS03 (0.70 – 1.00m bgl) and Ai-WS04 (1.40 – 1.80m bgl) were encountered within Made Ground, whereas the exceedance of Beryllium encountered within Ai-WS02 (1.70 – 2.00m bgl) was encountered within natural deposits of the Langley Silt Member.

Concentrations of Beryllium have been found at a concentration of 1.8mg/kg, compared to the GAC for Beryllium of 1.7mg/kg in natural deposits. However, given that the concentration of Beryllium in UK soils has been reported as ranging from 0.47- 6.21mg/kg with a median value of 2.33mg/kg by Alloway, et. al. (1998) together with the fact that Beryllium is naturally found in argillaceous sediments such as clay and shale (UKSHS Report No. 7) and taking into consideration that the exceedance is marginal, it is considered likely that the concentrations recorded in the natural deposits are indicative of naturally occurring background concentrations of Beryllium. It is therefore considered that the elevated concentration of Beryllium at Ai-WS02 (1.70 – 2.00 mg/kg) does not have the potential to pose a significant risk to the end users of the site.

7.1.2 Area Aii – Targeting the area to the southeast of the site

Table 7-2. Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use without Home Grown Produce for Area Aii

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Metals							
Arsenic	mg/kg	40	8	31.6	N/A	1	No Further Action

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Beryllium	**mg/kg**	**1.7**	**8**	**6.0**	**Aii-WS03 0.40 – 0.70**	**1**	**Further Assessment Required**
				4.2	**Aii-WS03 0.80 – 1.00**		
				4.1	**Aii-WS01 0.50 – 1.00**		
				2.5	**Aii-WS02 0.50 – 0.70**		
				2.4	**Aii-WS04 0.40 – 0.60**		
				1.9	**Aii-WS03 1.90 – 2.00**		
Boron	mg/kg	11000	8	15.7	N/A	1	No Further Action
Cadmium	mg/kg	85	8	1.3	N/A	1	No Further Action
Chromium (III)	mg/kg	910	8	62.3	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	8	<0.3	N/A	1	No Further Action
Copper	mg/kg	7,100	8	177	N/A	1	No Further Action
Lead	**mg/kg**	**310**	**8**	**1177**	**Aii-WS01 1.50 – 1.70**	**1**	**Further Assessment Required**
				405	**Aii-WS03 0.40 – 0.70**		
				383	**Aii-WS01 0.50 – 1.00**		
				369	**Aii-WS03 0.80 – 1.00**		
Mercury	mg/kg	56	8	13.7	N/A	4	No Further Action
Nickel	mg/kg	180	8	61.1	N/A	1	No Further Action
Selenium	mg/kg	430	8	2	N/A	1	No Further Action
Vanadium	mg/kg	1200	8	78	N/A	1	No Further Action
Zinc	mg/kg	40,000	8	815	N/A	1	No Further Action
General Inorganics							
Total Cyanide*	mg/kg	50	8	2.4	N/A	1	No Further Action
Asbestos	**%**	**0.001% Chrysotile**	**8**	**Chrysotile 0.037%**	**Aii-WS03 0.80 – 1.00**	**6**	**No Further Action**
General Organics							
Phenol	mg/kg	750	8	<0.15	N/A	4,1	No Further Action
PAHs							
Naphthalene	**mg/kg**	**2.3**	**8**	**2.32**	**Aii-WS02 0.50 – 0.70**	**4**	**Further Assessment Required**
Acenaphthylene	mg/kg	2,900	8	9.25	N/A	1	No Further Action
Acenaphthene	mg/kg	3,000	8	1.78	N/A	1	No Further Action
Fluorene	mg/kg	2,800	8	4.05	N/A	1	No Further Action
Phenanthrene	mg/kg	1,300	8	35.09	N/A	1	No Further Action
Anthracene	mg/kg	31,000	8	20.73	N/A	1	No Further Action
Fluoranthene	mg/kg	1,500	8	95.65	N/A	1	No Further Action
Pyrene	mg/kg	3,700	8	86.16	N/A	1	No Further Action
Benzo(a)Anthracene	mg/kg	11	8	54.79	**Aii-WS02 0.50 – 0.70**	**1**	**Further Assessment Required**

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Chrysene	mg/kg	30	8	47.00	**Aii-WS02 0.50 – 0.70**	**1**	**Further Assessment Required**
Benzo(b)Fluoranthene	**mg/kg**	**3.9**	**8**	**64.97**	**Aii-WS02 0.50 – 0.70**	**1**	**Further Assessment Required**
				9.53	**Aii-WS03 0.80 – 1.00**		
				5.45	**Aii-WS05 0.20 – 0.30**		
Benzo(k)Fluoranthene	mg/kg	110	8	25.26	N/A	1	No Further Action
Benzo(a)Pyrene	**mg/kg**	**3.2**	**8**	**50.73**	**Aii-WS02 0.50 – 0.70**	**1**	**Further Assessment Required**
				8.42	**Aii-WS03 0.80 – 1.00**		
				4.55	**Aii-WS05 0.20 – 0.30**		
Indeno(123-cd)Pyrene	mg/kg	45	8	40.68	N/A	1	No Further Action
Dibenzo(a,h)Anthracene	**mg/kg**	**0.31**	**8**	**9.98**	**Aii-WS02 0.50 – 0.70**	**1**	**Further Assessment Required**
				1.90	**Aii-WS03 0.80 – 1.00**		
				0.71	**Aii-WS05 0.20 – 0.30**		
				0.41	**Aii-WS01 0.50 – 1.00**		
				0.34	**Aii-WS01 0.40 – 0.60**		
Benzo(ghi)Perylene	mg/kg	360	8	33.16	N/A	1	No Further Action
Banded TPH							
TPH EC 5-6**	mg/kg	42	8	<0.1	N/A	4	No Further Action
TPH EC >6-8**	mg/kg	100	8	<0.1	N/A	4	No Further Action
TPH EC >8-10**	mg/kg	27	8	<5	N/A	4	No Further Action
TPH EC> 10-12**	mg/kg	74	8	<10	N/A	4	No Further Action
TPH EC> 12-16**	mg/kg	140	8	96	N/A	1	No Further Action
TPH EC> 16-21**	**mg/kg**	**260**	**8**	**899**	**Aii-WS02 0.50 – 0.70**	1	**Further Assessment Required**
TPH EC> 21-35**	**mg/kg**	**1,100**	**8**	**2,260**	**Aii-WS01 0.50 – 1.00**	1	**Further Assessment Required**
				2,201	**Aii-WS02 0.50 – 0.70**		
				1,678	**Aii-WS01 1.50 – 1.70**		
TPH EC> 35-44**	mg/kg	1,100	8	518	N/A	1	No Further Action

Notes
Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.
Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. Omnia has utilised the lowest of

the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(sol) – GAC presented exceeds the solubility saturation limit.

(vap) – GAC presented exceeds the vapour saturation limit

Referring to Table 7-2 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for a number of determinants. Elevated determinants comprise:

- Beryllium
- Lead
- Naphthalene
- Benzo(b)Fluoranthene
- Benzo(a)Pyrene
- Dibenzo(a,h)Anthracene
- Total Petroleum Hydrocarbon C16-C21
- Total Petroleum Hydrocarbon C21-C35
- Asbestos

Metals and PAHs:

Elevated metal and PAH concentrations were encountered within the near surface to depths of 1.00m bgl (PAH) and 2.00m bgl (metals) across Area Aii of the site. Review of the potential pollution linkage for the identified concentrations indicates that soil ingestion and indoor dust are the predominant exposure pathways for metals and PAHs, with the exception of Naphthalene, which is predominantly associated with vapour inhalation risk. Given this, it is considered that the identified concentrations have the potential to present a significant risk to human health within areas of proposed soft landscaping, where elevated concentrations have been encountered between ground level and 0.60m bgl. As well as below building footprints in the case of Naphthalene (Aii-WS02) where a vapour inhalation risk is considered likely t remain active.

The soil ingestion pollution linkage would be limited between ground level and 0.60m bgl, and therefore given the depth at which some of these concentrations are present (0.80 – 2.00m bgl) would not present a significant risk to human health. However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.6m of the near surface. Given that final site levels are at this stage unknown, a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

Concentrations encountered within Aii-WS01 (0.40 – 0.60, 0.80 – 1.00 and 1.50-1.70m bgl), Aii-WS02 (0.50 – 0.70m bgl), Aii-WS03 (0.40 – 0.70, 0.80 – 1.00m bgl) and Aii-WS04 (0.40 – 0.60m bgl) were encountered within Made Ground, whereas the exceedance of Beryllium encountered within Aii-WS03 (1.90 – 2.00m bgl) was encountered within natural deposits of the Langley Silt Member.

Concentrations of Beryllium have been found at a concentration of 1.9mg/kg, compared to the GAC for Beryllium of 1.7mg/kg in natural deposits. However, given that the concentration of Beryllium in UK soils has been reported as ranging from 0.47- 6.21mg/kg with a median value of 2.33mg/kg by Alloway, et. al. (1998) together with the fact that Beryllium is naturally found in argillaceous sediments such as clay and shale (UKSHS Report No. 7) and taking into consideration that the exceedance is marginal, it is considered likely that the concentrations recorded in the natural deposits are indicative of naturally occurring background concentrations of Beryllium. It is therefore considered that the

elevated concentration of Beryllium at Aii-WS03 (1.90 – 2.00 mg/kg) does not pose a significant risk to the end users of the site.

Hydrocarbons:

Elevated concentrations of TPH C16-21 and C21-C35 were identified on site that exceeded the adopted Tier 1 screening values within Aii-WS01 (0.80 – 1.00 and 1.50 – 1.70m bgl) and Aii-WS02 (0.50 – 0.70m bgl). The main exposure pathway for TPH C16-21 and C21-35 is via soil ingestion. This pollution linkage would be limited between ground level and 0.60m bFGL, and therefore given the depth at which these concentrations are present within Aii-WS01 these are not considered to have the potential to present a significant risk to human health.
However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.60m of the near surface. Given that final site levels are at this stage unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

The impact of Hydrocarbons on groundwater has been assessed within Section 7.3.

Asbestos:

Asbestos fibres were detected within one (1no.) location from the six (6no.) scheduled for asbestos analysis in Area Aii.

The main exposure pathway for asbestos is via fibre inhalation, and therefore the identified concentrations are considered to have the potential to present a significant risk to future site users within areas of proposed soft landscaping. However, this pollution linkage would be limited between ground level and 0.60m bFGL, and therefore given the depth at which these concentrations are present within Aii-WS03 (0.80 – 1.00m bgl) would not present a significant risk to human health.

However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.6m of the near surface. Given that final site levels are at this stage unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

The presence of asbestos is also considered to have the potential to pose a risk to construction workers; therefore the presence of asbestos should be conveyed to all parties involved in development works across the site, such that appropriate mitigation measures can be put in place in line with guidance set out in line with current asbestos legislation (Control of Asbestos Regulations, 2012).

Consideration should also be given to the quantified result in view of disposal of any soil arisings as may be required in remedial works, and future construction works. A soil with a result greater than 0.1% asbestos content is considered a hazardous waste. Results included within the earlier reports, where concentrations were encountered at >0.1%, should be reviewed for a full site analysis for the purposes of waste disposal.

7.1.3 Area Bi – Targeting the area around TP1007

The purpose of the investigation within this area was to further characterise the soils around location TP1007 completed as part of a previous investigation, and therefore the laboratory results obtained for TP1007 have also been included within the below table.

Table 7-3. Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use without Home Grown Produce for Area Bi

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
BTEX & MTBE							
Benzene	mg/kg	0.38	4	0.012	N/A	4	No Further Action
Toluene	mg/kg	880	4	0.008	N/A	4	No Further Action
Ethylbenzene	mg/kg	83	4	<0.005	N/A	4	No Further Action
Xylenes	mg/kg	79	4	0.011	N/A	4	No Further Action
MTBE	mg/kg	73	4	<0.005	N/A	4	No Further Action
TPH-CWG							
Aliphatic							
Aliphatic EC 5-6	mg/kg	42	4	<0.1	N/A	4	No Further Action
Aliphatic EC >6-8	mg/kg	100	4	<0.1	N/A	4	No Further Action
Aliphatic EC >8-10	mg/kg	27	4	<0.1	N/A	4	No Further Action
Aliphatic EC >10-12	mg/kg	130(vap)	4	6.7	N/A	4	No Further Action
Aliphatic EC > 12-16	mg/kg	1,100(sol)	4	27	N/A	4	No Further Action
Aliphatic EC > 16-21	mg/kg	65,000(sol)	4	147	N/A	1	No Further Action
Aliphatic EC >21-35	mg/kg	65,000(sol)	4	915	N/A	1	No Further Action
Aromatic							
Aromatic EC 5-7	mg/kg	70	4	<0.1	N/A	4	No Further Action
Aromatic EC>7-8	mg/kg	130	4	<0.1	N/A	4	No Further Action
Aromatic EC> 8-10	mg/kg	34	4	<0.1	N/A	4	No Further Action
Aromatic EC> 10-12	mg/kg	74	4	26.1	N/A	4	No Further Action
Aromatic EC> 12-16	**mg/kg**	**140**	**4**	**215**	**Bi-TP02 0.70 – 0.80**	1	**Further Assessment Required**
Aromatic EC> 16-21	**mg/kg**	**260**	**4**	**1,912**	**Bi-TP02 0.70 – 0.80**	1	**Further Assessment Required**
				564	**Bi-TP01 0.70 – 0.80**		
				419	**Bi-TP01 0.40 – 0.70**		
				410	**TP1007 0.20**		
Aromatic EC> 21-35	**mg/kg**	**1,100**	**4**	**4,170**	**Bi-TP02 0.70 – 0.80**	**1**	**Further Assessment Required**
				1,552	**Bi-TP01 0.70 – 0.80**		
				1,200	**TP1007 0.20**		

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.
Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

(sol) – GAC presented exceeds the solubility saturation limit.
(vap) – GAC presented exceeds the vapour saturation limit.

Referring to Table 7-3 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for the following determinants:

- Aromatic Total Petroleum Hydrocarbon C12-16
- Aromatic Total Petroleum Hydrocarbon C16-21
- Aromatic Total Petroleum Hydrocarbon C21-35

Elevated Aromatic TPH C12-16, C16-21 and C21-C35 concentrations were present on site that exceeded the adopted Tier 1 screening values within Bi-TP01 (0.40 – 0.70 and 0.70 – 0.80m bgl), Bi-TP02(0.70 – 0.8m bgl) and TP1007 (0.20m bgl). The main exposure pathway for Aromatic TPH C12-C16, C16-21 and C21-35 is via the ingestion of soil and indoor dust. This pollution linkage would be limited to soils between ground level and 0.60m bgl, and therefore given the depth at which these concentrations are present within Bi-TP01 (0.70 – 0.80m bgl) and Bi-TP02 would not present a significant risk to human health.

However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.6m of the near surface. Given that final site levels are at this stage unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

The impact of Hydrocarbons on groundwater has been assessed within Section 7.3.

7.1.4 Area Bii – Targeting the area around WS1002

The purpose of the investigation within this area was to further characterise the soils around location WS1002 completed as part of a previous investigation, and therefore the laboratory results obtained for WS1002 have also been included within the below table.

Table 7-4. Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use without Home Grown Produce for Area Bii

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
BTEX & MTBE							
Benzene	mg/kg	0.38	7	<0.005	N/A	4	No Further Action
Toluene	mg/kg	880	7	<0.005	N/A	4	No Further Action
Ethylbenzene	mg/kg	83	7	<0.005	N/A	4	No Further Action
Xylenes	mg/kg	79	7	<0.005	N/A	4	No Further Action
MTBE	mg/kg	73	7	<0.005	N/A	4	No Further Action
TPH-CWG							

Aliphatic							
Aliphatic EC 5-6	mg/kg	42	7	<0.1	N/A	4	No Further Action
Aliphatic EC >6-8	mg/kg	100	7	<0.1	N/A	4	No Further Action
Aliphatic EC >8-10	mg/kg	27	7	<0.1	N/A	4	No Further Action
Aliphatic EC >10-12	mg/kg	130(vap)	7	46	N/A	4	No Further Action
Aliphatic EC > 12-16	mg/kg	1,100(sol)	7	89	N/A	4	No Further Action
Aliphatic EC > 16-21	mg/kg	65,000(sol)	7	1,000	N/A	1	No Further Action
Aliphatic EC >21-35	mg/kg	65,000(sol)	7	11,000	N/A	1	No Further Action
Aromatic							
Aromatic EC 5-7	mg/kg	70	7	<0.1	N/A	4	No Further Action
Aromatic EC>7-8	mg/kg	130	7	<0.1	N/A	4	No Further Action
Aromatic EC> 8-10	mg/kg	34	7	<0.1	N/A	4	No Further Action
Aromatic EC> 10-12	mg/kg	74	7	28	N/A	4	No Further Action
Aromatic EC> 12-16	**mg/kg**	**140**	**7**	**280**	**WS1002 1.70**	**1**	**Further Assessment Required**
Aromatic EC> 16-21	**mg/kg**	**260**	**7**	**1,900**	**WS1002 1.70**	**1**	**Further Assessment Required**
Aromatic EC> 21-35	**mg/kg**	**1,100**	**7**	**8,200**	**WS1002 1.70**	**1**	**Further Assessment Required**

Notes
Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.
Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

(sol) – GAC presented exceeds the solubility saturation limit.
(vap) – GAC presented exceeds the vapour saturation limit.

Referring to Table 7-4 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for the following determinants:

- Aromatic Total Petroleum Hydrocarbon C12-16
- Aromatic Total Petroleum Hydrocarbon C16-21
- Aromatic Total Petroleum Hydrocarbon C21-35

Elevated Aromatic TPH C12-16, C16-21 and C21-C35 concentrations were present on site that exceeded the adopted Tier 1 screening values within WS1002 (1.70m bgl), no exceedances were identified during this phase of investigation within Bii-WS01 – Bii-WS03. The main exposure pathway for Aromatic TPH C12-C16, C16-21 and C21-35 is via the ingestion of soil and indoor dust. This pollution linkage would be limited to soils between ground level and 0.60m bFGL, and therefore given the depth at which these concentrations are present within WS1002 are not considered to have the potential to present a significant risk to human health.

However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.60m of the near surface. Given that final site levels are at this stage

unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

7.1.5 Area C – Targeting the eastern boundary to assess SSE pollution incident

Table 7-5. Summary of Inorganic and Hydrocarbon Toxicity Assessment for a Residential End Use without Home Grown Produce for Area C

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Metals							
Arsenic	mg/kg	40	6	38.1	N/A	1	No Further Action
Beryllium	**mg/kg**	**1.7**	**6**	**3.7**	**C-WS01A 0.20 – 0.40**	**1**	**Further Assessment Required**
				3.6	**C-WS01A 0.50 – 0.70**		
				3.4	**C-WS02A 0.80 – 1.00**		
Boron	mg/kg	11000	6	15.8	N/A	1	No Further Action
Cadmium	mg/kg	85	6	<0.1	N/A	1	No Further Action
Chromium (III)	mg/kg	910	6	67	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	6	<0.3	N/A	1	No Further Action
Copper	mg/kg	7,100	6	85	N/A	1	No Further Action
Lead	mg/kg	310	6	308	N/A	1	No Further Action
Mercury	mg/kg	56	6	0.9	N/A	4	No Further Action
Nickel	mg/kg	180	6	38.3	N/A	1	No Further Action
Selenium	mg/kg	430	6	2	N/A	1	No Further Action
Vanadium	mg/kg	1200	6	61	N/A	1	No Further Action
Zinc	mg/kg	40,000	6	342	N/A	1	No Further Action
General Inorganics							
Total Cyanide*	mg/kg	50	6	<0.5	N/A	1	No Further Action
Asbestos	**%**	**0.001% Chrysotile**	**6**	**Chrysotile 0.211%**	**C-WS01A 0.20 – 0.40**	**6**	**Further Assessment Required**
				Chrysotile 0.014%	**C-WS02A 0.80 – 1.00**		
				Chrysotile 0.001%	**C-WS01A 0.50 – 0.70**		
General Organics							
Phenol	mg/kg	750	6	<0.15	N/A	4,1	No Further Action
PAHs							
Naphthalene	mg/kg	2.3	6	0.06	N/A	4	No Further Action
Acenaphthylene	mg/kg	2,900	6	0.13	N/A	1	No Further Action
Acenaphthene	mg/kg	3,000	6	<0.05	N/A	1	No Further Action
Fluorene	mg/kg	2,800	6	<0.04	N/A	1	No Further Action
Phenanthrene	mg/kg	1,300	6	0.53	N/A	1	No Further Action
Anthracene	mg/kg	31,000	6	0.14	N/A	1	No Further Action
Fluoranthene	mg/kg	1,500	6	1.44	N/A	1	No Further Action
Pyrene	mg/kg	3,700	6	1.3	N/A	1	No Further Action

Determinant	Unit	GAC	n	MC	Loc. Of Ex	Exposure Pathway	Assessment
Benzo(a)Anthracene(	mg/kg	11	6	0.64	N/A	1	No Further Action
Chrysene	mg/kg	30	6	0.70	N/A	1	No Further Action
Benzo(b)Fluoranthene	mg/kg	3.9	6	1.1	N/A	1	No Further Action
Benzo(k)Fluoranthene	mg/kg	110	6	0.43	N/A	1	No Further Action
Benzo(a)Pyrene	mg/kg	3.2	6	0.90	N/A	1	No Further Action
Indeno(123-cd)Pyrene	mg/kg	45	6	0.77	N/A	1	No Further Action
Dibenzo(a,h)Anthracene	mg/kg	0.31	6	0.15	N/A	1	No Further Action
Benzo(ghi)Perylene	mg/kg	360	6	0.67	N/A	1	No Further Action
BTEX & MTBE							
Benzene	mg/kg	0.38	4	<0.005	N/A	4	No Further Action
Toluene	mg/kg	880	4	0.019	N/A	4	No Further Action
Ethylbenzene	mg/kg	83	4	<0.005	N/A	4	No Further Action
Xylenes	mg/kg	79	4	0.016	N/A	4	No Further Action
MTBE	mg/kg	73	4	<0.005	N/A	4	No Further Action
TPH-CWG							
Aliphatic							
Aliphatic EC 5-6	mg/kg	42	4	<0.1	N/A	4	No Further Action
Aliphatic EC >6-8	mg/kg	100	4	<0.1	N/A	4	No Further Action
Aliphatic EC >8-10	mg/kg	27	4	<0.1	N/A	4	No Further Action
Aliphatic EC >10-12	mg/kg	130(vap)	4	0.7	N/A	4	No Further Action
Aliphatic EC > 12-16	mg/kg	1,100(sol)	4	14	N/A	4	No Further Action
Aliphatic EC > 16-21	mg/kg	65,000(sol)	4	70	N/A	1	No Further Action
Aliphatic EC >21-35	mg/kg	65,000(sol)	4	84	N/A	1	No Further Action
Aromatic							
Aromatic EC 5-7	mg/kg	70	4	<0.1	N/A	4	No Further Action
Aromatic EC>7-8	mg/kg	130	4	<0.1	N/A	4	No Further Action
Aromatic EC> 8-10	mg/kg	34	4	<0.1	N/A	4	No Further Action
Aromatic EC> 10-12	mg/kg	74	4	<0.2	N/A	4	No Further Action
Aromatic EC> 12-16	mg/kg	140	4	<4	N/A	1	No Further Action
Aromatic EC> 16-21	mg/kg	260	4	27	N/A	1	No Further Action
Aromatic EC> 21-35	mg/kg	1,100	4	107	N/A	1	No Further Action
Banded TPH							
TPH EC 5-6**	mg/kg	42	2	<0.1	N/A	4	No Further Action
TPH EC >6-8**	mg/kg	100	2	<0.1	N/A	4	No Further Action
TPH EC >8-10**	mg/kg	27	2	<5	N/A	4	No Further Action
TPH EC> 10-12**	mg/kg	74	2	<10	N/A	4	No Further Action
TPH EC> 12-16**	mg/kg	140	2	48	N/A	1	No Further Action
TPH EC> 16-21**	mg/kg	260	2	186	N/A	1	No Further Action
TPH EC> 21-35**	mg/kg	1,100	2	379	N/A	1	No Further Action
TPH EC> 35-44**	mg/kg	1,100	2	106	N/A	1	No Further Action

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil; 3 = Dermal Contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor); 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.
Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. Omnia has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(sol) – GAC presented exceeds the solubility saturation limit.
(vap) – GAC presented exceeds the vapour saturation limit.

Referring to Table 7-5 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for the following determinants:

- Beryllium
- Asbestos

Metals:
Elevated metal concentrations were encountered within the near surface to a depth of 1.00m bgl across Area C of the site. Review of the potential pollution linkage for the identified concentrations identifies that soil ingestion and indoor dust are the predominant pathways for metals. Given this it is considered that the identified concentrations have the potential to present a significant risk to human health within areas of proposed soft landscaping, where concentrations have been encountered between ground level and 0.60m bGL.

The soil ingestion pollution linkage would be limited between ground level and 0.60m bFGL, and therefore given the depth at which some of these concentrations are present (0.70 – 1.00m bgl) would not present a significant risk to human health. However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.60m of the near surface. Given that final site levels are at this stage unknown, a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

Concentrations encountered within C-WS01A (0.20 – 0.40 and 0.50 – 0.70m bgl) and C-WS02A (0.80 – 1.00m bgl) were encountered within Made Ground.

Asbestos:

Asbestos fibres were detected within three (3no.) locations from the six (6no.) scheduled for asbestos analysis in Area C.

The main exposure pathway for asbestos is via fibre inhalation, and therefore the identified concentrations are considered to have the potential to present a significant risk to future site users within areas of proposed soft landscaping. However, this pollution linkage would be limited between ground level and 0.60m bGL, and therefore given the depth at which these concentrations are present within C-WS02A (0.80 – 1.00m bgl) would not present a significant risk to human health.

However, should site levels vary in the future, and given the concentrations identified within shallower soils (C-WS01A 0.20 – 0.40m bgl at 0.211% and C-WS01A 0.50 – 0.70m bgl at 0.001%) the concentrations considered to have the potential to present a significant risk to human health.

The presence of asbestos is also considered to have the potential to pose a risk to construction workers, therefore the presence of asbestos should be conveyed to all parties involved in development works across the site, such that appropriate mitigation measures can be put in place in line with guidance set out in line with current asbestos legislation (Control of Asbestos Regulations, 2012).

This should be undertaken for tasks due to be undertaken in the affected areas prior to the construction and groundworks phase to ensure the provision of suitable PPE for construction workers and to ensure that adequate mitigation measures, which may include damping down and perimeter fibre monitoring, are in place to mitigate against and monitor for airborne fibre release.

Consideration should also be given to the quantified result in view of disposal of any soil arisings as may be required in remedial works, and future construction works. A soil with a result greater than 0.1% asbestos content is considered a hazardous waste (C-WS01A was identified at a concentration of 0.211%). Results included within the earlier reports should be reviewed for a full site analysis for the purposes of waste disposal.

7.2 Controlled Waters Assessment

For the purpose of the Tier 1 assessment, laboratory data has been compared directly to the UK Freshwater EQS (FW EQS), given the presence of the River Thames approximately 5m northeast of the northernmost site boundary, which is considered as the principal receptor. In cases where a determinant does not have a FW EQS screening value, the measured concentrations have also been compared the UK Drinking Water Standards (UK DWS) and World Health Organisation Drinking Water Standards (WHO DWS) screening values in order to adopt a conservative approach.

Hardness sensitive metal screening values have been selected based on an average measured groundwater hardness of 351 mg/l.

7.2.1 Area Bii – Targeting the area around WS1002

The purpose of the investigation within this area was to further characterise the soils around location WS1002 completed as part of a previous investigation.

Table 7-6 Controlled Waters Tier 1 Risk Assessment – Area Bii

Determinant	Units	GAC	n	MC	Loc. of Ex	Assessment
Metals						
Arsenic	µg/l	50	1	3.9	N/A	No Further Action
Boron	µg/l	2000	1	455	N/A	No Further Action
Cadmium	µg/l	0.25	1	<0.5	N/A	No Further Action
Chromium (Total)	µg/l	50	1	<1.5	N/A	No Further Action
Copper	µg/l	28	1	<7	N/A	No Further Action
Lead	µg/l	7.2	1	<5	N/A	No Further Action
Mercury	µg/l	0.05	1	<1	N/A	No Further Action
Nickel	µg/l	20	1	3	N/A	No Further Action
Selenium	µg/l	10	1	<3	N/A	No Further Action

Zinc	µg/l	125	1	36	N/A	No Further Action
General Inorganics						
Cyanide	µg/l	1	1	<0.01	N/A	No Further Action
General Organics						
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	µg/l	2.4	1	<0.1	N/A	No Further Action
Anthracene	µg/l	0.1	1	0.051	N/A	No Further Action
Fluoranthene	**µg/l**	**0.1**	**1**	**0.253**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Benzo(b)Fluoranthene	**µg/l**	**0.03**	**1**	**0.119**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Benzo(k)Fluoranthene	**µg/l**	**0.03**	**1**	**0.046**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Benzo(b/k)Fluoranthene (sum)	**µg/l**	**0.03**	**1**	**0.165**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Benzo(a)Pryene	**µg/l**	**0.05**	**1**	**0.082**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Indeno(123-cd)Pyrene	**µg/l**	**0.002**	**1**	**0.047**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
Benzo(ghi)Perylene	**µg/l**	**0.002**	**1**	**0.039**	**Bii-WS01 2.7 28/10/22**	**Further Assessment Required**
BTEX						
Benzene	µg/l	10	2	<5	N/A	No Further Action
Toluene	µg/l	50	2	<5	N/A	No Further Action
Ethylbenzene	µg/l	300	2	<5	N/A	No Further Action
Xylenes	µg/l	30	2	<5	N/A	No Further Action
MTBE	µg/l	15*	2	<5	N/A	No Further Action
Total Petroleum Hydrocarbons (TPH) (Banded)						
Aliphatic C5-C6	µg/l	15000	1	<10	N/A	No Further Action
Aliphatic C6-C8	µg/l	10	1	<10	N/A	No Further Action
Aliphatic C8-C10	µg/l	300	1	<10	N/A	No Further Action
Aromatic C10-12	µg/l	100	1	<10	N/A	No Further Action
Aromatic C12-16	µg/l	100	1	<10	N/A	No Further Action
Aromatic C16-21	µg/l	90	1	<10	N/A	No Further Action
Aromatic C21-35	µg/l	90	1	<10	N/A	No Further Action
Aromatic C35-44	µg/l	90	1	<10	N/A	No Further Action
Total Petroleum Hydrocarbons (TPH) (Speciated)						
Aliphatic						
Aliphatic C5-C6	µg/l	15000	1	<10	N/A	No Further Action
Aliphatic C6-C8	µg/l	15000	1	<10	N/A	No Further Action
Aliphatic C8-C10	µg/l	300	1	<10	N/A	No Further Action
Aliphatic C10-C12	µg/l	300	1	<5	N/A	No Further Action
Aliphatic C12-C16	µg/l	30	1	<10	N/A	No Further Action
Aliphatic C16-C21	µg/l	90	1	<10	N/A	No Further Action
Aliphatic C21-35	µg/l	90	1	<10	N/A	No Further Action
Aliphatic C35-C44	µg/l	90	1	<10	N/A	No Further Action
Aromatic						
Aromatic C5-C6	µg/l	10	1	<10	N/A	No Further Action
Aromatic C6-C8	µg/l	10	1	<10	N/A	No Further Action

Aromatic C8-C10	µg/l	300	1	<10	N/A	No Further Action
Aromatic C10-C12	µg/l	100	1	<5	N/A	No Further Action
Aromatic C12-C16	µg/l	100	1	<10	N/A	No Further Action
Aromatic C16-C21	µg/l	90	1	<10	N/A	No Further Action
Aromatic C21-C35	µg/l	90	1	<10	N/A	No Further Action
Aromatic C35-C44	µg/l	90	1	<10	N/A	No Further Action

*No health based value as a guideline value would exceed the 15ug/l concentration at which MTBE would be detected by odour.

Referring to Table 7-6 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for a number of determinants. Elevated determinants comprise:

- Fluoranthene
- Benzo(b)Fluoranthene
- Benzo(k)Fluoranthene
- Benzo(b,k)Fluoranthene
- Benzo(a)Pyrene
- Indeno(123-cd)Pyrene
- Benzo(ghi)Perylene

Groundwater concentrations exceeding the adopted Tier 1 Screening Criteria for Controlled Waters were identified for PAHs. Water samples were obtained via low flow methodology; however, it should be noted that it was not possible to obtain samples in full accordance with the low-flow sampling methodology as the recharge rate of the monitoring well was lower than the slowest pump speed.

Therefore, the water level dropped throughout the sampling procedure, and cloudy water samples were collected. It is therefore considered the water samples obtained are representative of standing water contained within the standpipe rather than formation water. It is therefore considered the elevated concentrations of PAH are likely attributed to the presence of suspended solids within the sample as PAHs are generally hydrophobic, have a low aqueous solubility, are strongly adsorbed onto soil particles, and therefore tend to be retained within the soil ecosystem which becomes a sink for PAHs (Patel, et. al. 2000). It is therefore considered that PAHs do not present a significant risk to Controlled Waters in this location and have not been considered further.

7.2.2 Area C – Targeting the eastern boundary to assess SSE pollution incident

Table 7-7 Controlled Waters Tier 1 Risk Assessment – Area C

Determinant	Units	GAC	n	MC	Loc. of Ex	Assessment
Metals						
Arsenic	µg/l	50	3	3.9	N/A	No Further Action
Boron	µg/l	2000	3	406	N/A	No Further Action
Cadmium	µg/l	0.25	3	<0.5	N/A	No Further Action
Chromium (Total)	µg/l	50	3	<1.5	N/A	No Further Action
Copper	µg/l	28	3	<7	N/A	No Further Action
Lead	µg/l	7.2	3	<5	N/A	No Further Action
Mercury	µg/l	0.05	3	<1	N/A	No Further Action
Nickel	µg/l	20	3	7	N/A	No Further Action
Selenium	**µg/l**	**10**	**3**	**27**	**C-WS02A 2.5 28/10/22**	**Further Assessment Required**
				14	**C-WS01A 2.35**	

Determinant	Units	GAC	n	MC	Loc. of Ex	Assessment
Metals						
					19/10/22	
Zinc	µg/l	125	3	36	N/A	No Further Action
General Inorganic						
Cyanide	µg/l	1	3	<0.01	N/A	No Further Action
Organics						
Polycyclic Aromatic Hydrocarbons (PAH)						
Naphthalene	µg/l	2.4	3	<0.1	N/A	No Further Action
Anthracene	µg/l	0.1	3	0.051	N/A	No Further Action
Fluoranthene	µg/l	0.1	3	0.062	N/A	No Further Action
Benzo(b)Fluoranthene	**µg/l**	**0.03**	**3**	**0.059**	**C-WS02A 2.5 28/10/22**	**Further Assessment Required**
Benzo(k)Fluoranthene	µg/l	0.03	3	0.023	N/A	No Further Action
Benzo(b/k)Fluoranthene (sum)	**µg/l**	**0.03**	**3**	**0.082**	**C-WS02A 2.5 28/10/22**	**Further Assessment Required**
Benzo(a)Pryene	µg/l	0.05	3	0.032	N/A	No Further Action
Indeno(123-cd)Pyrene	**µg/l**	**0.002**	**3**	**0.031**	**C-WS02A 2.5 28/10/22**	**Further Assessment Required**
				0.017	**C-WS01A 2.35 19/10/22**	
				<0.005	**C-WS01A 2.35 28/10/22**	
Benzo(ghi)Perylene	**µg/l**	**0.002**	**3**	**0.024**	**C-WS02A 2.5 28/10/22**	**Further Assessment Required**
				0.010	**C-WS01A 2.35 19/10/22**	
				<0.005	**C-WS01A 2.35 28/10/22**	
BTEX						
Benzene	µg/l	10	3	<5	N/A	No Further Action
Toluene	µg/l	50	3	<5	N/A	No Further Action
Ethylbenzene	µg/l	300	3	<5	N/A	No Further Action
Xylenes	µg/l	30	3	<5	N/A	No Further Action
MTBE	µg/l	15*	3	<5	N/A	No Further Action
Total Petroleum Hydrocarbons (TPH) (Banded)						
Aliphatic C5-C6	µg/l	15000	3	<10	N/A	No Further Action
Aliphatic C6-C8	µg/l	10	3	<10	N/A	No Further Action
Aliphatic C8-C10	µg/l	300	3	<10	N/A	No Further Action
Aromatic C10-12	µg/l	100	3	<10	N/A	No Further Action
Aromatic C12-16	µg/l	100	3	<10	N/A	No Further Action
Aromatic C16-21	µg/l	90	3	<10	N/A	No Further Action
Aromatic C21-35	µg/l	90	3	<10	N/A	No Further Action
Aromatic C35-44	µg/l	90	3	<10	N/A	No Further Action
Total Petroleum Hydrocarbons (TPH) (Speciated)						
Aliphatic						
Aliphatic C5-C6	µg/l	15000	2	<10	N/A	No Further Action
Aliphatic C6-C8	µg/l	15000	2	<10	N/A	No Further Action

Determinant	Units	GAC	n	MC	Loc. of Ex	Assessment
Metals						
Aliphatic C8-C10	µg/l	300	2	<10	N/A	No Further Action
Aliphatic C10-C12	µg/l	300	2	<5	N/A	No Further Action
Aliphatic C12-C16	µg/l	30	2	<10	N/A	No Further Action
Aliphatic C16-C21	**µg/l**	**90**	**2**	**130**	**C-WS02A 2.7 19/10/22**	**Further Assessment Required**
Aliphatic C21-35	**µg/l**	**90**	**2**	**660**	**C-WS02A 2.7 19/10/22**	**Further Assessment Required**
Aliphatic C35-C44	µg/l	90	2	<10	N/A	No Further Action
Aromatic						
Aromatic C5-C6	µg/l	10	2	<10	N/A	No Further Action
Aromatic C6-C8	µg/l	10	2	<10	N/A	No Further Action
Aromatic C8-C10	µg/l	300	2	<10	N/A	No Further Action
Aromatic C10-C12	µg/l	100	2	<5	N/A	No Further Action
Aromatic C12-C16	µg/l	100	2	<10	N/A	No Further Action
Aromatic C16-C21	µg/l	90	2	<10	N/A	No Further Action
Aromatic C21-C35	µg/l	90	2	<10	N/A	No Further Action
Aromatic C35-C44	µg/l	90	2	<10	N/A	No Further Action

*No health based value as a guideline value would exceed the 15ug/l concentration at which MTBE would be detected by odour.

Referring to Table 7-7 the results of this direct comparison indicates that the Tier I screening criteria has been exceeded for a number of determinants. Elevated determinants comprise:

- Selenium
- Benzo(b)Fluoranthene
- Benzo(b,k)Fluoranthene
- Indeno(123-cd)Pyrene
- Benzo(ghi)Perylene
- Aliphatic TPH C12-C21
- Aliphatic TPH C21-35

Groundwater concentrations exceeding the adopted Tier 1 Screening Criteria for Controlled Waters were identified for Selenium, PAHs and TPHs. Water samples were obtained via the low-flow sampling methodology; however, it was not possible to obtain samples in full accordance with the low-flow sampling methodology as the recharge rate of the monitoring well was lower than the slowest pump speed. Therefore, the water level dropped throughout the sampling procedure, and cloudy water samples were collected. It is therefore considered the water samples obtained are representative of standing water present within the standpipe rather than being representative of formation water.

Given the low mobility of metals, presence of suspended solids and relatively marginal exceedances of Selenium, it is not considered that metals present a significant risk to Controlled Waters and have therefore not been considered further.

It is considered that the elevated concentrations of PAH are likely attributed to the presence of suspended solids within the sample as PAHs are generally hydrophobic, have a low aqueous solubility, are strongly adsorbed onto soil particles, and therefore tend to be retained within the soil ecosystem

which becomes a sink for PAHs (Patel, et. al. 2000). It is therefore considered that PAHs do not present a significant risk to Controlled Waters in this location and have not been considered further.

Given that TPH exceedances were only identified in low-quality water samples, the fact only one (1no.) exceedance was identified from a total of five (5no.) water samples, and that no concentrations greater than the LOD were identified within better-quality samples, it is considered that TPH does not present a significant risk to Controlled Waters and has therefore not been considered further.

7.3 Tier 1 Results Discussion

7.3.1 Area Ai – Targeting southern office/Historic Skating Rink

Elevated metal concentrations were encountered within the near surface across Area Ai of the site. Review of the potential pollution linkage for the identified concentrations identifies that soil ingestion and indoor dust are the predominant exposure pathways for metals. Given this it is considered that the identified concentrations have the potential to present a significant risk to human health within areas of proposed soft landscaping, where concentrations have been encountered between ground level and 0.60m bgl and it is considered that an active exposure pathway could remain active post-development.

It is therefore considered that remedial measures will be required in all areas of proposed soft landscaping, as set out within RMS A10967/2.4 April 2023 and is to comprise the excavation of soils within soft landscaped areas, the placement of a high visibility geotextile and placement of clean soils comprising a mixture of true subsoils and topsoil.

7.3.2 Area Aii – Targeting the area to the southeast of the site

Elevated metals, PAH, TPH and Asbestos concentrations were encountered within the near surface and at depth across Area Aii of the site. Review of the potential pollution linkage for the identified concentrations indicates that the ingestion of soil and indoor dust are the predominant pathways for the identified metals, PAH and TPH, with the exception of Naphthalene, which is predominantly associated with vapour risk and asbestos which is associated with dust inhalation. Given this it is considered that the identified concentrations of the above determinants are likely to have the potential to present a significant risk to human health within areas of proposed soft landscaping, where concentrations have been encountered between ground level and 0.60m bgl. As well as beneath building footprints in the case of Naphthalene (Aii-WS02) where a vapour inhalation risk is considered likely to remain active. Given that final site levels are at this stage unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

It is therefore considered that remedial measures will be required in all areas of soft landscaping, as set out within RMS A10967/2.4 April 2023 and are to comprise the excavation of soils within soft landscaped areas, the placement of a high visibility geotextile membrane and placement of clean soils comprising a mixture of true subsoils and topsoil.

Remedial measures will also be required in building footprints, as set out within RMS A10967/2.4 April 2023 and are to comprise the installation of a ground gas and hydrocarbon vapour resistant protection membrane to sever the pollution linkage from Naphthalene, which presents a risk through vapour inhalation.

The presence of asbestos will also have the potential to pose a significant risk to construction workers, therefore the presence of asbestos should be conveyed to all parties involved in development works across the site, such that appropriate mitigation measures can be put in place in line with guidance set out in line with current asbestos legislation (Control of Asbestos Regulations, 2012).

It is not considered that concentrations of PAH identified within the soils present a significant risk to controlled waters as PAHs are generally hydrophobic, have a low aqueous solubility, are strongly

adsorbed onto soil particles, and therefore tend to be retained within the soil ecosystem which becomes a sink for PAHs (Patel, et. al. 2000).

Elevated TPH concentrations were identified within this area of the site at Aii-WS02 (0.50 – 1.00m bgl and 1.50 – 1.70m bgl) and Aii-WS02 0.50 – 0.70m bgl comprising elevated concentrations of Banded TPH C16-21 at a concentration of 899mg/kg and Banded TPH C21-35 at concentrations of 1,678mg/kg – 2,260mg/kg.

Due to the significant exceedances identified, the potential risk to groundwater has been further assessed using the DQRA model outlined within the previous Omnia Report (A10967/1.1 April 2018). The model has been updated for Banded TPH C16-21 and Banded TPH C21-35 within Area Aii.

The model is included within Appendix VIII and details the following remedial target values.

Determinant	Level 2 Soil Target Values to be protective of the identified receptors mg/kg	Level 3 Soil Target Values to be protective of the identified receptors mg/kg	Maximum identified soil concentration mg/kg	Pass/Fail
Banded TPH EC> 16-21	29.8	1,440	899	Pass Level 3
Banded TPH EC> 21-35	387,000	N/A	2,260	Pass Level 2

As can be seen from review of the above table, the soil concentrations within the soils at Aii-WS01 and Aii-WS02 pass the Remedial Target Concentration values at a Level 2 or a Level 3 stage, such that it is not considered that the TPH concentrations within the soils have the potential to pose a significant risk to the end receptor (River Thames).

7.3.3 Area Bi – Targeting the area around TP1007

Elevated Aromatic TPH C12-16, C16-21 and C21-C35 concentrations were present on site that exceeded the adopted Tier 1 screening values within Bi-TP01 (0.40 – 0.70 and 0.70 – 0.80m bgl), Bi-TP02 (0.70 – 0.8m bgl) and TP1007 (0.20m bgl).

Given that all Trial Pits excavated in the area encountered a concrete slab at the base of the pit at 0.70m bgl, it is considered likely that this concrete slab formed a ground bearing floor slab, rather than individual historic foundations. It is therefore considered that the concrete slab will have acted as an impermeable barrier. Therefore, it is not considered that the concentrations of TPH encountered in soils overlying the slab will have the potential to present a significant risk to groundwater in their current state, due to the slab acting as a barrier to downward migration. However, the soils are considered to have the potential to generate leachable concentrations of TPH and are therefore not considered suitable for re-use on site given the potential risk to groundwater.

Given the proposed development layout (Figure 2.0), and the main exposure pathway for Aromatic TPH C12-C16, C16-21 and C21-35 is via soil ingestion and consumption of homegrown produce it is considered that remedial measures will be required in areas of soft landscaping, as set out within RMS A10967/2.4 April 2023 and is to comprise the excavation of soils within soft landscaped areas, the placement of a high visibility geotextile and placement of clean soils comprising a mixture of true subsoils and topsoil.

It is considered likely that the concrete slab will be required to be removed as part of the demolition and construction works on-site, therefore the soils will be required to be adequately excavated,

segregated, managed, and disposed of by the Principal Contractor to a suitably licensed waste site via a registered waste carrier.

As set out above, the soils will not be suitable for re-use on site. If the soils are to stockpiled prior to disposal, they will need to be placed on an impermeable membrane to prevent the leaching of TPH into underlying soils elsewhere on the site.

7.3.4 Area Bii – Targeting the area around WS1002

Elevated Aromatic TPH C12-16, C16-21 and C21-C35 concentrations were present on site that exceeded the adopted Tier 1 screening values within WS1002 (1.70m bgl), no exceedances were identified during this phase of investigation within Bii-WS01 – Bii-WS03.

The main exposure pathway for Aromatic TPH C12-C16, C16-21 and C21-35 is via the ingestion of soil and indoor dust. This pollution linkage would be limited to soils between finished ground level and 0.60m bFGL, and therefore given the depth at which these concentrations are present within WS1002 are not considered to have the potential to present a significant risk to human health.

However, should site levels vary in the future the concentrations could potentially present a significant risk should the values be within 0.60m of the near surface. Given that final site levels are at this stage unknown a risk averse approach has been adopted and for risk assessment purposes the concentrations considered to have the potential to present a significant risk to human health.

It is considered the additional boreholes completed as part of this investigation have successfully limited the lateral extent of TPH impact and the area that is required to be excavated for removal off-site. The area requiring removal will be detailed within a standalone RMS.

Although a “sheen” was identified on groundwater encountered during the drilling of Bii-WS01, it is considered that this is likely attributed to the high organic content within the Langley Silt Member as no free phase product was identified during return groundwater monitoring visits, nor were concentrations of TPH identified above the LOD within the water samples collected and subjected to laboratory analysis.

The risk posed to groundwater by concentrations identified within WS1002 was assessed within Omnia Report A10967/1.1 April 2018, and it was considered the concentrations fell below the Remedial Target Values, however, due to the proximity to the River Thames (8m) it is recommended soils are removed in the area of WS1002 in order to sever the potential pollution linkage and limit potential impact to the Thames. Details of the required remedial measures are set out within RMS A10967/2.4 April 2023.

7.3.5 Area C – Targeting the eastern boundary to assess SSE pollution incident

Elevated metals and asbestos concentrations were encountered within the near surface and at 2.35m bgl and 2.50m bgl across Area C of the site. Review of the potential pollution linkage for the identified concentrations identifies that soil ingestion and indoor dust are the main exposure pathways for metals, while fibre inhalation is the main exposure pathway for asbestos. Given this it is considered that the identified concentrations have the potential to present a significant risk to human health within areas of proposed soft landscaping, where concentrations have been encountered between ground level and 0.60m bgl.

It is therefore considered that remedial measures will be required in all areas of soft landscaping, as set out within RMS A10967/2.4 April 2023 and is to comprise the excavation of soils within soft landscaped areas, the placement of a high visibility geotextile and placement of clean soils comprising a mixture of true subsoils and topsoil.

The near surface soils in this area are also considered to the potential to present a significant risk to construction workers, therefore the presence of asbestos should be conveyed to all parties involved in development works across the site, such that appropriate mitigation measures can be put in place in line with guidance set out in line with current asbestos legislation (Control of Asbestos Regulations, 2012).

This should be undertaken for tasks due to be undertaken in the affected areas prior to the construction and groundworks phase to ensure the provision of suitable PPE for construction workers and to ensure that adequate mitigation measures, which may include damping down and perimeter fibre monitoring, are in place to mitigate against and monitor for airborne fibre release.

Consideration should also be given to the quantified result in view of disposal of any soil arisings as may be required in remedial works, and future construction works. A soil with a result greater than 0.1% asbestos content is considered a hazardous waste. Results included within the earlier reports should be reviewed for a full site analysis for the purposes of waste disposal.

8 REVISED CONCEPTUAL SITE MODEL

Following completion of the Tier 1 risk assessment above, and earlier work completed by Omnia as detailed within A10967/1.1 April 2018, active pollution pathways have been identified based on a residential end use without homegrown produce.

Table 8-1 Revised Conceptual Site Model

Source	Potential Migration Pathway	Potential Receptors	Discussion of Pollutant Linkage
Soils			
Elevated concentrations of heavy metals and PAH within shallow soil samples across the proposed residential development.	Ingestion of soils and dust within areas of proposed soft landscaping	Future Site Users	It is considered that the presence of elevated concentrations of heavy metals and PAH within shallow soil samples across the site have the potential to pose a significant risk to future site users within areas of proposed soft landscaping where an exposure pathway is considered likely to remain active post-development. Mitigation measures which involve the implementation of a soil capping system are detailed within RMS A10967/2.4 April 2023.
Presence of Asbestos within shallow soils across the site	Fibre inhalation	Future Site Users and	It is considered that the presence of elevated concentrations of asbestos within shallow soil have to potential to present a significant risk to future site users within proposed areas of soft landscaping where an exposure pathway is considered likely to remain active post-development. Mitigation measures which involve the implementation of a soil capping system as detailed within RMS A10967/2.4 April 2023.
		Construction workers	Elevated concentrations of asbestos contained within shallow soils across the site are considered to have the potential to present a significant risk to site workers during the construction phase. The presence of asbestos should be conveyed to all parties involved in development works across the site, such that an appropriate risk assessment and mitigation measures can be put in place in line with guidance set out in line with current asbestos legislation (Control of Asbestos Regulations, 2012). Consideration should be given to the use of dust suppression and perimeter fibre monitoring should works result in the generation of airborne dust.

Source	Potential Migration Pathway	Potential Receptors	Discussion of Pollutant Linkage
Elevated Naphthalene and TPH (C12-C16) Concentrations in the area of the proposed residential development.	Indoor Vapour Inhalation	Future Site Users	It is considered that the presence of Naphthalene within shallow soil samples across the site has the potential to pose a significant risk to future site users through indoor vapour inhalation within proposed building footprints. Mitigation measures should involve the installation of hydrocarbon resistant gas protection membranes within all proposed building footprints as detailed within RMS A10967/2.4 April 2023.
	Ingestion of Soils & Indoor Dust	Future Site Users	It is considered that the presence of elevated concentrations of TPH C12-C16 within shallow soil samples across the site has the potential to pose a significant risk to future site users through the ingestion of soils and indoor dust within areas of proposed communal soft landscaping where an active exposure pathway is considered likely to remain post-development. Mitigation measures which involve the implementation of a soil capping system are detailed within RMS A10967/2.4 April 2023.
Ground Gas (CH_4 and CO_2)	Migration into Confined Spaces	Future Site Users	Concentrations of CH_4 up to 3.0%v/v have been detected with GSV results of 0.1482(l/hr) have been calculated for the site. It is considered that the site has been classified as a CS-3 for the proposed Block A, and CS-2 for the remainder of the site, in line with the methodology outlined within BS8485:2015+A1:2019. Mitigation measures comprise the installation of ground gas protection measures, which should also be resistant to hydrocarbon vapours, as detailed within RMS A10967/2.4 April 2023.
Groundwater			
Hotspot of TPH Aromatic C_{12}-C_{16}, C_{16}-C_{21} and C_{21}-C_{35} concentrations in area of WS1002	Vertical and lateral migration	Controlled Waters	Remedial works have been set out in RMS A10967/2.4 April 2023 and involve source removal. The extent of the area to be removed has been reduced in extent, as detailed within Figure 5.0.

9 CONCLUSIONS AND RECOMMENDATIONS

Revised Conceptual Site Model
Following the completion of the above risk assessment, a series of active pollution pathways have been identified by the RCSM. These relate to elevated metals, PAH, TPH and asbestos concentrations in the near surface and TPH within groundwater samples.
Recommendations
In order to mitigate this risk identified in the RCSM remediation works are required, which are likely to include: - Emplacement of soil capping system within all areas of proposed soft landscaping; - Provision of Vapour and Ground Gas Membranes within proposed building footprints; - Hotspot removal of impact in area of WS1002 and TP1007. Mitigation measures have been set out within a standalone Remediation Method Statement (A10967/2.4 April 2023), which it is recommended is agreed with the Regulator ahead of commencement on site. Near surface soils at the site are likely to be classified as Hazardous for disposal purposes due to asbestos content >0.1% in five of 47 samples across the proposed residential portion of the site. If during works any previously unidentified impact is encountered during development works, activities should be halted and contact made with a suitably qualified Environmental Consultant in order to further investigation identified materials. As determined appropriate by the Consultant further investigation and sampling may be required to determine appropriate actions. Upon completion contact should be made with the regulator to achieve sign off of the works.

APPENDIX I - LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Omnia and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. Omnia cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by Omnia is owned by them, and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by Omnia in this connection without their explicit written agreement there to by Omnia.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II – GLOSSARY

AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (Chlorinated Solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (Petrol, Diesel, Kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo-Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCS	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

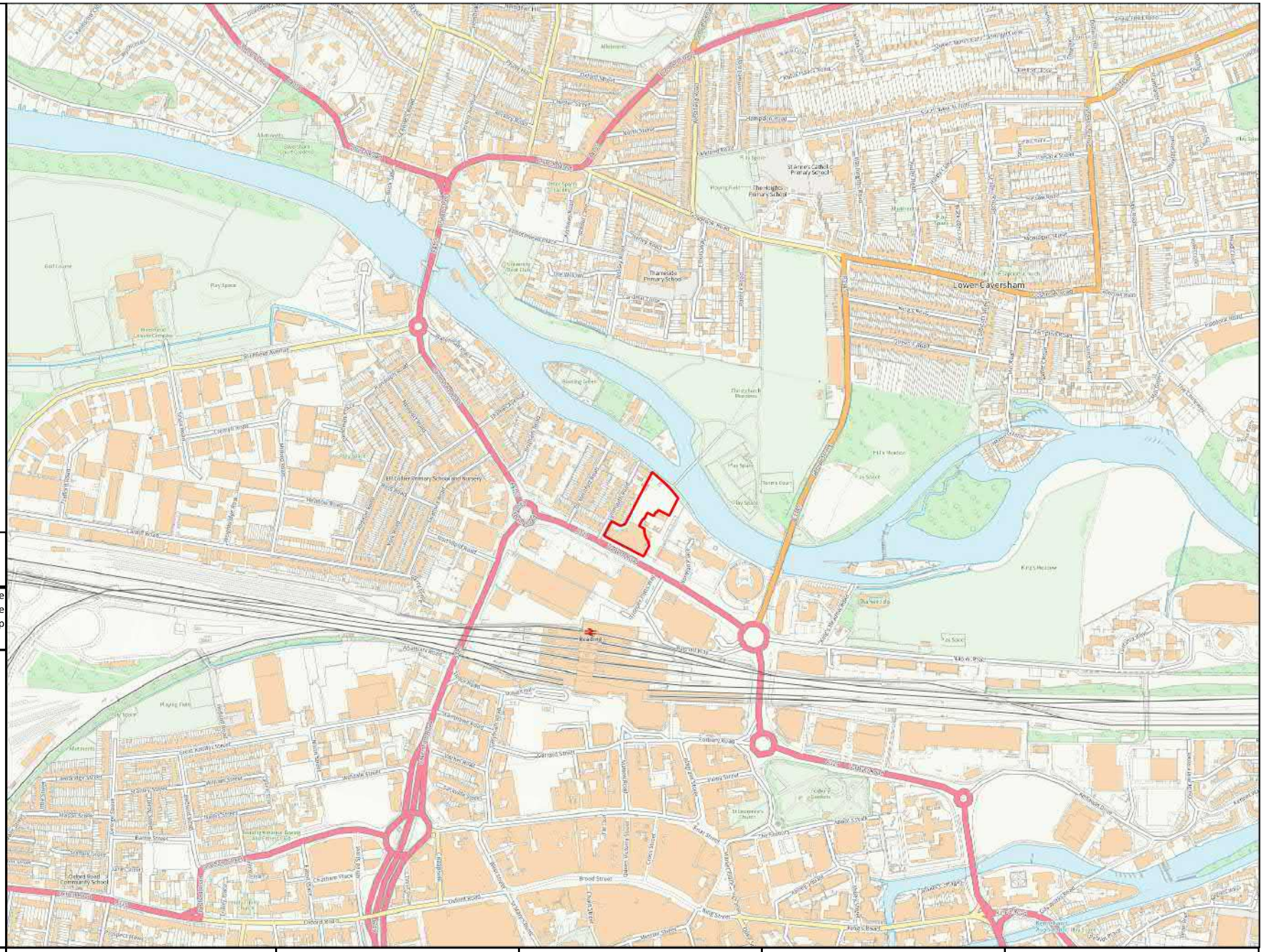
M	Metres
KM	Kilometres
%	Percent
%V/V	Percent Volume in Air
MB	Milli Bars (Atmospheric Pressure)
L/HR	Litres Per Hour
µG/L	Micrograms Per Litre (Parts Per Billion)
PPB	Parts Per Billion
MG/KG	Milligrams Per Kilogram (Parts Per Million)
PPM	Parts Per Million
MG/M^3	Milligram Per Metre Cubed
M BGL	Metres Below Ground Level
M BCL	Metres Below Cover Level

MAOD	Metres Above Ordnance Datum (Sea Level)
KN/M^2	Kilo Newtons Per Metre Squared
µM	Micrometre

APPENDIX III - DRAWINGS

Key

Site Boundary



100 0 100 200 300 m

Scale	Paper Size
1:10,000	A4

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OMNIA

Job Title:	Client:	Project Number:	Date:	Drawing Title:
Vastern Road	Berkeley Homes (Oxford and Chiltern Ltd)	A10967	13/11/22	Figure 1.0 Site Location
		Drawn By: O. Maxwell	Authorised By: A. King	

Key

Site Boundary



10 0 10 20 30 m

Scale	Paper Size
1:1,000	A4

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OMNIA

Project Number: A10967	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Drawn By: O. Maxwell	Drawing Title:
Job Title: Vastern Road	Date: 13/11/2022	Authorised By: A. King	Figure 2.0 Proposed Development

Key

- Site Boundary
- PBA 2018 Locations
- OEC 2018 Locations

Sept 22 Intrusive Locations

- A(i)WS
- A(ii)WS
- B(i)TP
- B(ii)WS
- CWS

10 0 10 20 30 40 m

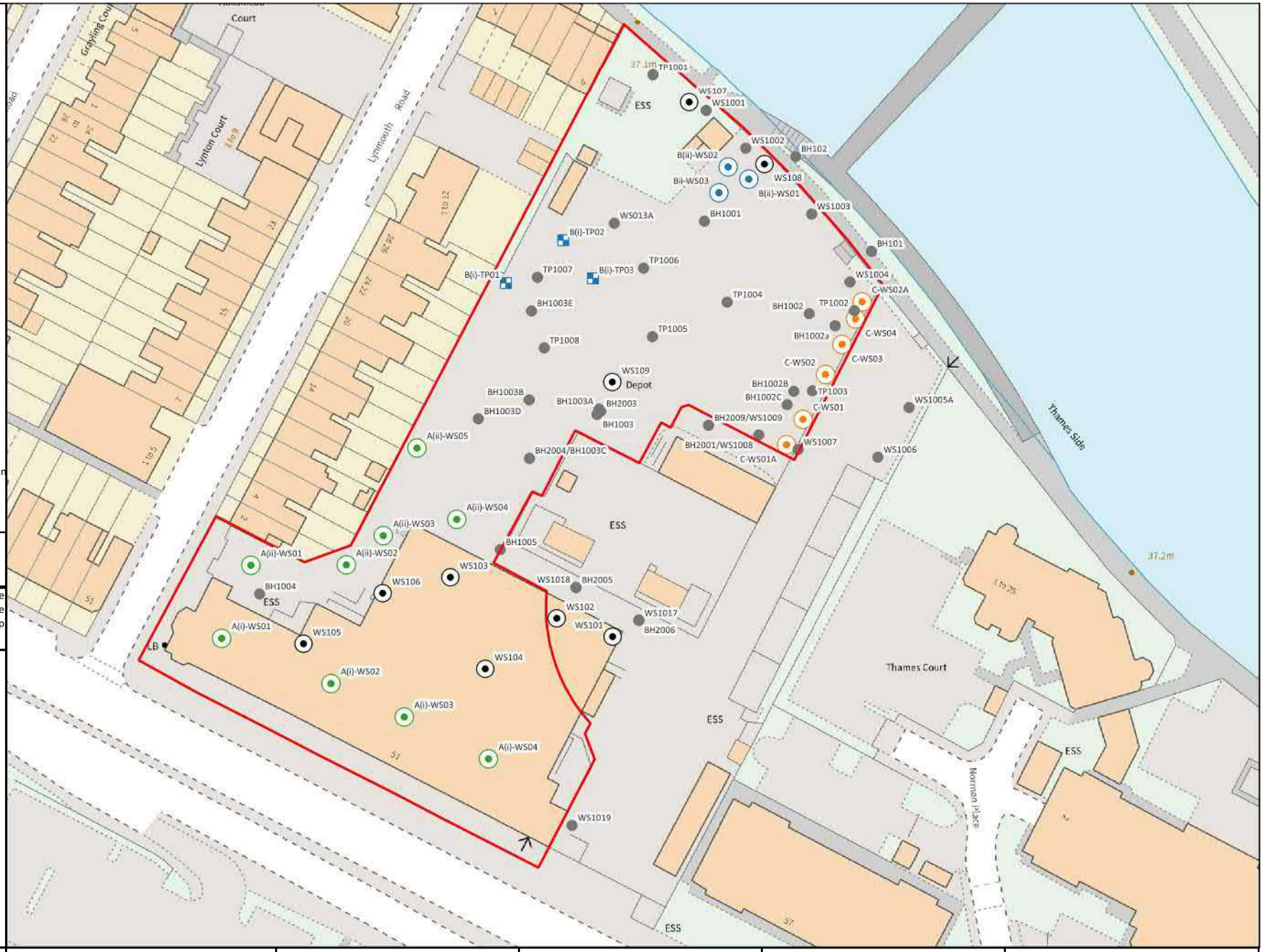
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OMNIA	Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 13/11/2022
			Drawn By: O. Maxwell	Authorised By: A. King

Drawing Title: Figure 3.0 Intrusive Location Plan

Key

- Site Boundary
- PBA 2018 Locations
- OEC 2018 Locations

Sept 22 Intrusive Locations

- A(i)WS
- A(ii)WS
- B(i)TP
- B(ii)WS
- CWS

10 0 10 20 30 40 m

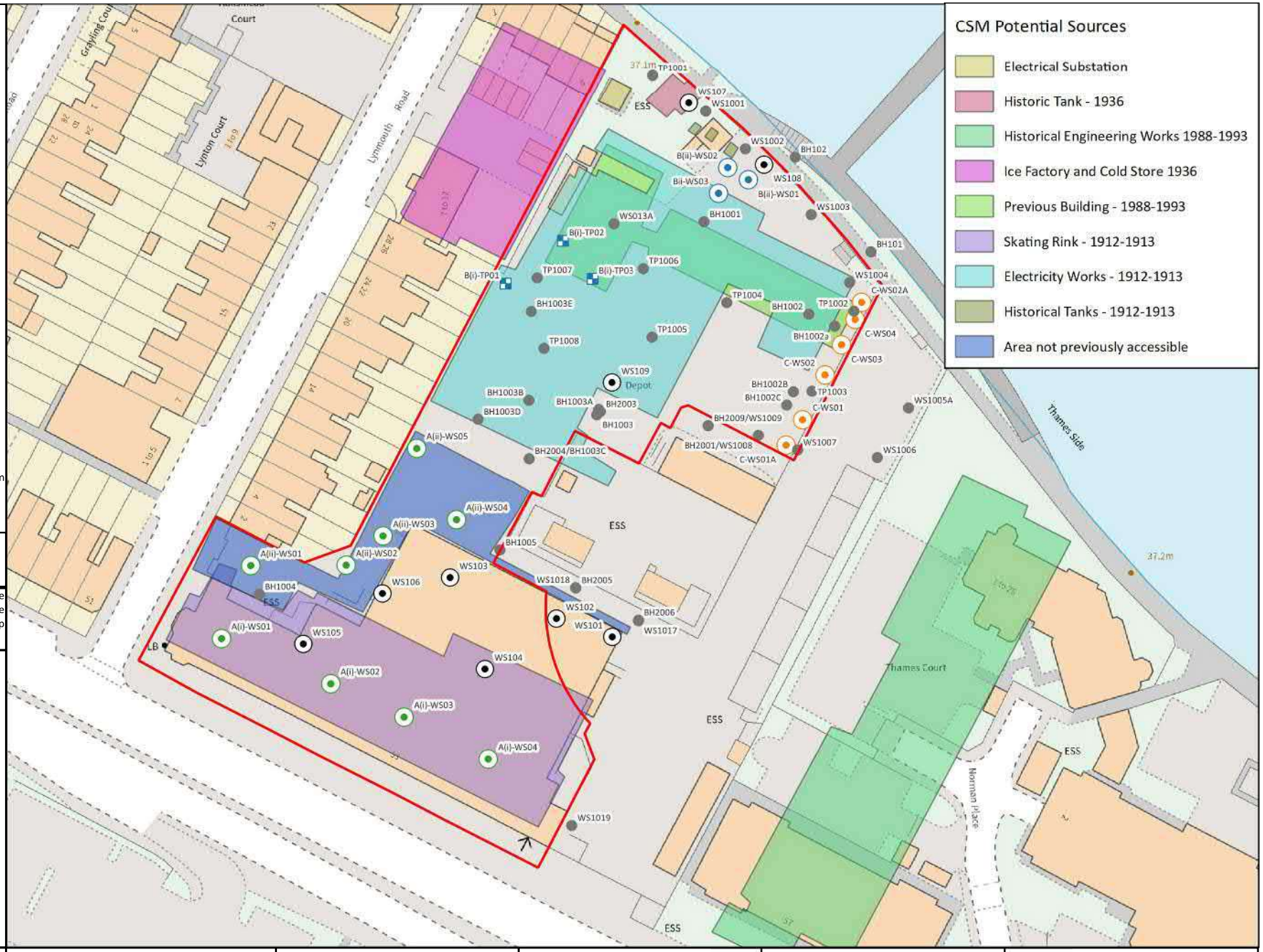
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OMNIA	Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 13/11/2022
			Drawn By: O. Maxwell	Authorised By: A. King

Drawing Title: Figure 3.1 Intrusive Location Plan with CSM

Key

- Site Boundary
- PBA 2018 Locations
- OEC 2018 Locations

Sept 22 Intrusive Locations

- A(i)WS
- A(ii)WS
- B(i)TP
- B(ii)WS
- CWS

10 0 10 20 30 40 m

Scale	Paper Size
1:1,000	A4

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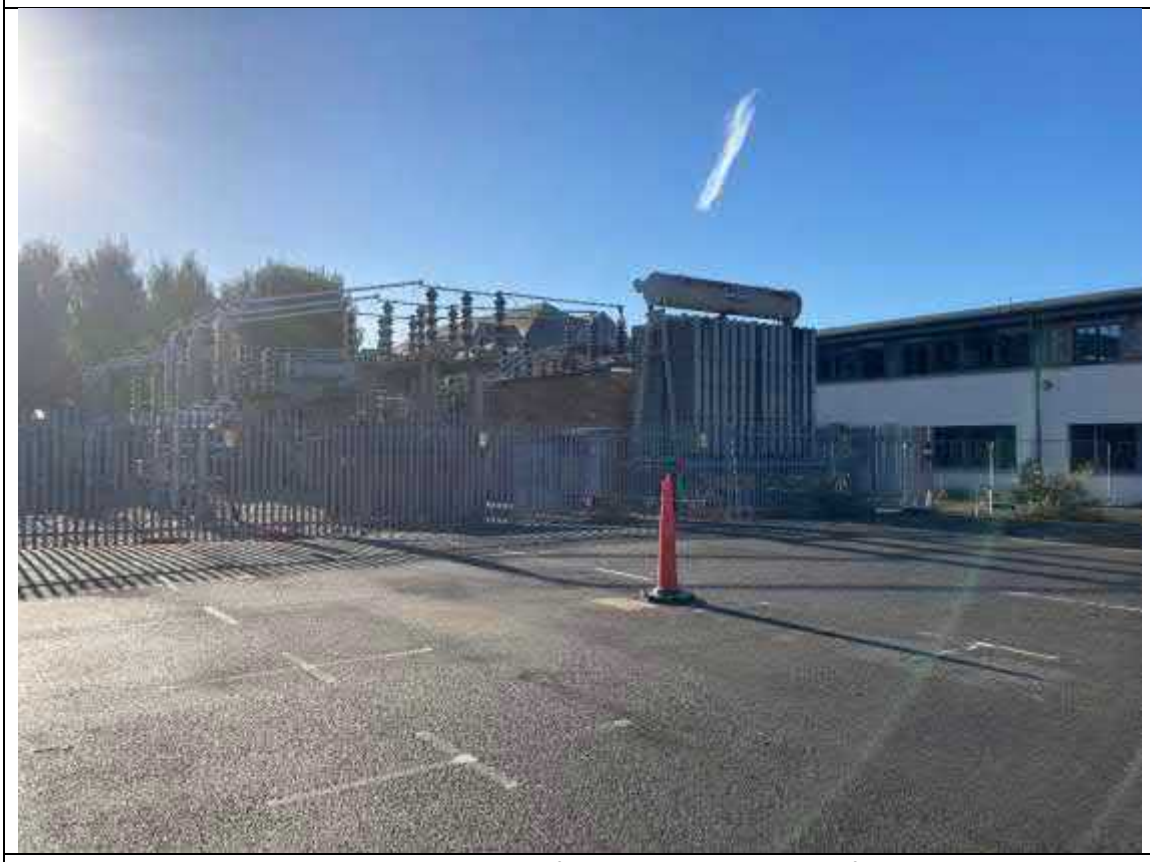
OMNIA	Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 13/11/2022
			Drawn By: O. Maxwell	Authorised By: A. King

Drawing Title: Figure 3.2 Intrusive Location Plan with Proposed Development

APPENDIX IV - PHOTOGRAPHS



Photograph 1 – View of site facing north, showing western site boundary



Photograph 2 – View of SSE Substation in centre of site



Photograph 3 – Presence of brick wall within western extent of Bi-TP02



Photograph 4 – Presence of organic rich material within Bii-WS01

APPENDIX V- EXPLORATORY HOLE LOGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Aii-WS01** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471491.41 - 174116.45	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.13	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 30/09/2022 - 30/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.40	ES		0.15	37.98		Tarmac [MADE GROUND]
		0.50 - 0.70	ES					Black sandy fine to coarse angular GRAVEL of brick, flint, wood, chalk, sandstone. [MADE GROUND]
		0.80 - 1.00	ES					
		1.00		N=2 (1,0/1,0,1,0)	1.00	37.13		
		1.10 - 1.30	ES					Grey mottled brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick and flint. [MADE GROUND] *From 1.00-2.00m bgl 70% Recovery*
		1.50 - 1.70	ES		1.45	36.68		Black gravelly fine to coarse SAND. Gravel is fine to coarse angular wood and organic matter. [MADE GROUND]
		1.80 - 2.00	ES		1.70	36.43		Soft greenish grey CLAY with rare fine subangular flint gravel. [LANGLEY SILT MEMBER]
	▼	2.00		N=14 (0,1/3,3,4,4)				*Fom 2.00-3.00m bgl 70% Recovery.*
		2.40 - 2.60	ES					
		2.50 - 2.80	ES		2.50	35.63		Brown slightly sandy fine to coarse angular to subangular GRAVEL of flint. [KEMPTON PARK GRAVEL]
		2.80		N=50 (7,11/11,11,14,14)	2.80	35.33		End of borehole at 2.80 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.10m bgl

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Aii-WS02** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471509.98 - 174117.07	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.34	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 30/09/2022 - 30/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.40	ES		0.15	38.19		Tarmac [MADE GROUND]
		0.50 - 0.70	ES					Black sandy fine to coarse angular GRAVEL of brick, flint, clinker, with occasional cobbles of brick and occasional pockets of clay. [MADE GROUND]
		0.80 - 1.00	ES					
		1.30 - 1.60	ES		1.30	37.04		Orangeish brown slightly gravelly clayey fine to medium SAND. Gravel is medium to coarse angular to subangular brick, sandstone, and asphalt. [MADE GROUND]
		1.70 - 1.90	ES		1.60 1.65	36.74 36.69		Asphalt GRAVEL. [MADE GROUND] Soft dark greenish grey CLAY with rare shells, pyrite, flint. [LANGLEY SILT MEMBER]
		2.40 - 2.60	ES					
		2.70 - 3.00	ES		2.70	35.64		Orangeish brown sandy fine to coarse angular to subangular GRAVEL of flint. [KEMPTON PARK GRAVEL]
					3.00	35.34		End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered.

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	# Borehole Log	Borehole No. **Aii-WS03** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471515.52 - 174123.68	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.23	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 30/09/2022 - 30/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES		0.10	38.13		Tarmac [MADE GROUND]
		0.40 - 0.70	ES					Black sandy fine to coarse angular GRAVEL of asphalt, concrete, flint, chalk, brick. [MADE GROUND]
		0.80 - 1.00	ES					
					1.00	37.23		Soft brown gravelly CLAY. Gravel is fine to coarse angular chalk, clinker, coal, brick. [MADE GROUND]
		1.20 - 1.40	ES					
					1.60	36.63		Soft dark greenish grey CLAY with occaisonal medium subangular gravel of flint and fossils. [LANGLEY SILT MEMBER]
		1.90 - 2.00	ES					
	▼							
		2.60 - 2.80	ES		2.60	35.63		Orangeish brown sandy fine to coarse subangular GRAVEL of flint. [KEMPTON PARK GRAVEL]
					3.00	35.23		End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.30m bgl.

AGS

Omnia Environmental Consulting
10 Manor Court
2 Barnes Wallis Road
Fareham
PO15 5TH

Borehole Log

Borehole No.
Aii-WS04
Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471529.84 - 174126.04	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.52	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 30/09/2022 - 30/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.30	ES		0.10	38.42		Tarmac [MADE GROUND]
		0.40 - 0.60	ES					Dark grey to black sandy fine to coarse angular GRAVEL of brick, concrete, asphalt, chalk, with occasional cobbles of brick, chalk, concrete, and asphalt. [MADE GROUND]
		0.70 - 0.90	ES					
		1.00		N=8 (1,2/2,2,2,2)				*From 1.00-2.00m bgl 50% Recovery.*
		1.90 - 2.00	ES		1.90	36.62		Soft dark greenish grey CLAY with frequent fossils. [LANGLEY SILT MEMBER]
		2.00		N=8 (1,1/2,2,2,2)				
	▼	2.50 - 2.70	ES					*From 2.50-3.00m bgl Fossils are frequent.*
		3.00		N=22 (3,4/5,5,6,6)	3.00	35.52		End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.50m bgl.

AGS

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10 Manor Court
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Fareham
PO15 5TH

Borehole Log

Borehole No.
Aii-WS05
Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471523.99 - 174138.91	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.54	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 29/09/2022 - 29/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.50	ES		0.20	38.34		Tarmac [MADE GROUND]
					0.55	37.99		Greyish brown and orange sandy fine to coarse angular to subangular GRAVEL of brick, concrete, asphalt, with frequent cobbles of concrete and brick. [MADE GROUND]
								End of borehole at 0.55 m

1
2
3
4
5

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered. Borehole terminated due to concrete slab obstructing progression.

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10 Manor Court
2 Barnes Wallis Road
Fareham
PO15 5TH

Borehole Log

Borehole No.
Ai-WS01
Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471487.00 - 174103.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 04/10/2022 - 04/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Suspended floor comprised of carpet and MDF wood on metal suspension over harcore concrete. [MADE GROUND]
		0.80 - 1.00	ES		0.80			Soft brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to subangular brick, chalk, coal/ clinker. [MADE GROUND]
								From 0.80-1.80m bgl 80% Recovery.
		1.30 - 1.50	ES					
		1.50 - 1.80	ES		1.50			Soft dark greenish grey mottled black clay with frequent orangic content and fossils. [LANGLEY SILT MEMBER]
	▼							
		2.30 - 2.50	ES					
					2.80			End of borehole at 2.80 m

1
2
3
4
5

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.10m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Ai-WS02** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471507.00 - 174095.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 04/10/2022 - 04/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 - 0.50	ES		0.30			Carpet and plyboard over hardcore concrete. [MADE GROUND]	
		0.50 - 0.70	ES		0.50			Brown sandy fine to coarse GRAVEL of brick, flint, chalk. [MADE GROUND]	
		0.80 - 1.00	ES					Black and dark grey gravelly CLAY. Gravel is fine to coarse angular to subangular flint, brick, chalk. [MADE GROUND]	
								From 0.80-1.50m bgl Colour becomes mottled light brown.	
		1.00		N=6 (1,1/1,1,2,2)				*From 1.00-2.00m bgl 80% Recovery*	1
		1.20 - 1.40	ES						
					1.50			Soft brown slightly gravelly CLAY. Gravel is fine to medium subangular flint and shells. [LANGLEY SILT MEMBER]	
		1.70 - 2.00	ES						
		2.00		N=0 (0,0/0,0,0,0)				*From 2.00-3.00m bgl 70% Recovery*	2
		2.40 - 2.70	ES		2.40			Soft dark greenish grey mottled dark brown CLAY with frequent shells and relic rootlets. [LANGLEY SILT MEMBER]	
	▼								
		3.00		N=30 (7,7/7,7,7,9)	3.00			End of borehole at 3.00 m	3
									4
									5

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Grounwater Strike at 2.60m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Ai-WS03** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471521.00 - 174089.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 04/10/2022 - 04/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Suspended floor comprised of carpet and MDF wood on metal suspension over harcore concrete. [MADE GROUND]
		0.70 - 1.00	ES		0.65			Brown sandy fine to coarse GRAVEL of brick, flint, chalk, sandstone with pockets of clay. [MADE GROUND]
		1.50 - 1.80	ES					
					1.80 1.90			Black coarse angular GRAVEL of flint. [MADE GROUND]
	▼	2.30 - 2.50	ES					Soft dark grey CLAY with frequent shells. [LANGLEY SILT MEMBER] *From 2.10-2.95m bgl colour becomes greenish grey.*
		2.70 - 2.90	ES					
					2.95 3.00			Brown sandy fine to coarse angular to subangular GRAVEL of flint. [KEMPTON PARK GRAVEL] End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.30m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Ai-WS04** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471536.00 - 174081.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 04/10/2022 - 04/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.80 - 1.00	ES		0.80			Suspended floor comprised of carpet on metal suspension over harcore concrete. [MADE GROUND]
		1.40 - 1.80	ES		1.40			Brown sandy fine to coarse angular to subangular GRAVEL of brick, concrete, sandstone. [MADE GROUND] *From 1.00-1.40m bgl becomes clayey.*
		1.80 - 2.00	ES		1.80			Black sandy fine to coarse angular to subangular GRAVEL of flint and organic matter. [MADE GROUND]
	▼	2.20 - 2.40	ES					Soft dark grey CLAY with frequent shells and relic roots. [LANGLEY SILT MEMBER]
		2.80 - 3.00	ES		3.00			End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.30m bgl.

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Borehole Log

Borehole No.
Bii-WS01
Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471583.99 - 174188.07	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.31	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 29/09/2022 - 29/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.40	ES		0.10	38.21		Tarmac [MADE GROUND]
		0.40 - 0.70	ES					Black slightly clayey sandy fine to coarse angular GRAVEL of brick, chalk, sandstone, asphalt. Sand is fine to coarse. [MADE GROUND]
		0.80 - 1.10	ES		0.80	37.51		Soft orangeish brown mottled greenish grey gravelly CLAY. Gravel is fine to coarse brick, chalk, asphalt. [MADE GROUND]
		1.40 - 1.50	ES					*From 1.40-1.60m bgl frequent black fine to medium GRAVEL of coal with black staining.*
		1.70 - 1.90	ES					
	▼	2.10 - 2.30	ES		2.00	36.31		Soft dark greenish grey mottled black slightly sandy SILT. [LANGLEY SILT MEMBER]
								From 2.00-3.00m bgl 50% Recovery
								From 2.50-3.00m bgl No Recovery
								From 3.00-4.00m bgl 60% Recovery
					4.00	34.31		End of borehole at 4.00 m

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Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.00m bgl and identified to have a sheen.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Bii-WS02** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471580.43 - 174191.98	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.33	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 29/09/2022 - 29/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.40	ES		0.10	38.23		Tarmac [MADE GROUND]
								Black sandy fine to coarse angular GRAVEL of brick, asphalt, concrete. [MADE GROUND]
		0.40 - 0.70	ES		0.40	37.93		Light brown clayey gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, asphalt, sandstone, flint with low cobble content of angular brick. [MADE GROUND]
		0.70 - 1.00	ES					
								From 1.00-2.00m bgl 70% Recovery
		1.40 - 1.60	ES		1.40	36.93		Soft greenish black mottled black CLAY with rare medium subangular gravel of flint. [LANGLEY SILT MEMBER]
					2.00	36.33		Soft greenish grey slightly sandy CLAY with frequent fossils. SAND is fine to coarse. [LANGLEY SILT MEMBER]
		2.10 - 2.30	ES					*From 2.00-3.00m bgl 70% Recovery*
		2.80 - 3.00	ES					*From 2.80-3.70m bgl becomes sandy SILT.*
								From 3.00-4.00m bgl 70% Recovery
		3.50 - 3.70	ES					*From 3.50-3.70m bgl becomes gravelly. Gravel is coarse angular flint.*
					3.70	34.63		End of borehole at 3.70 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation.Groundwater strike at 2.30m bgl.

AGS

Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **Bii-WS03** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471579.00 - 174186.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 03/10/2022 - 03/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.50	ES		0.15			Tarmac [MADE GROUND]
		0.60 - 0.80	ES		0.50			Brown sandy fine to coarse angular to subangular GRAVEL brick, flint, concrete. [MADE GROUND]
		0.90 - 1.10	ES		0.80			Black gravelly clayey fine to coarse SAND. Gravel fine to coarse angular to subangular brick, sandstone, chalk. [MADE GROUND]
		1.50 - 1.70	ES		1.50			Soft brown slightly gravelly CLAY. Gravel is fine to coarse angular to subangular brick, chalk, organic fragments. [MADE GROUND]
		1.70 - 2.00	ES					Soft dark greenish grey CLAY with frequent fossils and relic roots. [LANGLEY SILT MEMBER]
	▼							*From 1.70-2.00m bgl Colour becomes mottled black.*
		2.50 - 2.70	ES					*From 2.70-3.00m bgl Colour becomes mottled light brown.*
					3.00			End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 2.20m bgl.

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Trial Pit Log

Trialpit No
Bi-TP01
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords: 471539.25 - 174167.81 Level: 38.77	Date 28/09/2022
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU	Dimensions (m): Depth 0.80	1.5 × 0.4	Scale 1:20
Client:	Berkeley Homes (Oxford & Chiltern) Ltd			Logged OM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.10 - 0.40	ES		0.10	38.67		Tarmac [MADE GROUND]
	0.40 - 0.70	ES					Orangish brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, concrete, chalk, asphalt, with occasional angular cobbles of brick and concrete. [MADE GROUND]
	0.70 - 0.80	ES					*At 0.60m bgl two bolders of asphalt identified measuring 200x200x200mm and 400x300x300mm.*
				0.80	37.97		End of pit at 0.80 m

Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered.

Stability: Stable

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Trial Pit Log

Trialpit No
Bi-TP02
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords: 471551.15 - 174168.15 Level: 38.74	Date 28/09/2022
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU	Dimensions (m): Depth 0.80	1.5 × 0.4	Scale 1:20
Client:	Berkeley Homes (Oxford & Chiltern) Ltd			Logged OM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.50	ES		0.20	38.54		Tarmac [MADE GROUND]
	0.50 - 0.70	ES					Orange and brown gravelly fine to coarse SAND. Gravel is fine to coarse angular brick, concrete, sandstone, asphalt, black brick, tile, rare metal, fabric strap, with frequent cobble and boulders of conglomerate, brick and sandstone. [MADE GROUND]
	0.70 - 0.80	ES					
				0.80	37.94		End of pit at 0.80 m

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Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered.

Stability: Unstable

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Trial Pit Log

Trialpit No
Bi-TP03
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords: 471554.98 - 174173.86 Level: 38.73	Date 28/09/2022
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU	Dimensions (m): Depth 0.70	1.4 × 0.7	Scale 1:20
Client:	Berkeley Homes (Oxford & Chiltern) Ltd			Logged OM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20 - 0.40	ES		0.20	38.53		Tarmac [MADE GROUND]
	0.40 - 0.70	ES					Grey and dark brown sandy fine to coarse angular GRAVEL of concrete, sandstone, brick with occasional cobble and boulders of concrete, sandstone, brick with occaisonal metal and wood. [MADE GROUND]
				0.70	38.03		End of pit at 0.70 m

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Remarks: 1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered.

Stability: Stable

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Borehole Log

Borehole No.
C-WS01
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords: 471592.99 - 174144.95
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.42
Client:	Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 29/09/2022 - 29/09/2022

Hole Type: WS
Scale: 1:25
Logged By: OM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10	38.32		Tarmac [MADE GROUND]
								Hardcore concrete slab [MADE GROUND]
					0.40	38.02		End of borehole at 0.40 m

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Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered. Hole terminated due to no progression through concrete slab encountered at 0.40m bgl.

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Omnia Environmental Consulting 10 Manor Court 2 Barnes Wallis Road Fareham PO15 5TH	**Borehole Log**	Borehole No. **C-WS01A** Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471591.00 - 174137.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 03/10/2022 - 03/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.40	ES		0.15			Tarmac [MADE GROUND]
		0.50 - 0.70	ES					Orangeish brown sandy fine to coarse angular to subangular GRAVEL of brick, flint, chalk, concrete, asphalt. [MADE GROUND]
		0.80 - 1.00	ES		0.70			Orangeish brown clayey gravelly fine to coarse SAND. Gravel is fine to coarse angular to subangular flint, concrete, brick. [MADE GROUND]
	▼	1.50 - 1.70	ES					
		1.80 - 2.00	ES		1.70			Firm dark grey CLAY with frequent shells and fossils. [LANGLEY SILT MEMBER] *At 1.75m bgl Hydrocarbon odour* *From 2.00-3.00m bgl Colour becomes dark greenish grey.* *From 2.80-3.00m bgl CLAY becomes soft.*
		2.50 - 2.70	ES		3.00			End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. Groundwater strike at 1.50m bgl.

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Borehole Log

Borehole No.
C-WS02
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords:	471596.37 - 174152.49	Hole Type WS
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	38.35	Scale 1:25
Client:	Berkeley Homes (Oxford & Chiltern) Ltd		Dates:	29/09/2022 - 29/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	38.25		Tarmac [MADE GROUND]
								Hardcore concrete slab [MADE GROUND]
					0.40	37.95		End of borehole at 0.40 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered. Hole terminated due to no progression through concrete slab encountered at 0.40m bgl.

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Borehole Log

Borehole No.
C-WS02A
Sheet 1 of 1

Project Name: Vastern Road, Reading	Project No. A10967	Co-ords: 471609.00 - 174164.00	Hole Type WS
Location: 55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	Scale 1:25
Client: Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 03/10/2022 - 03/10/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.40	ES		0.15			Tarmac [MADE GROUND]
		0.50 - 0.70	ES					Fdark grey to black sandy fine to coarse angular to subrounded GRAVEL of brick, asphalt, flint, sandstone, brick, chalk. [MADE GROUND]
		0.80 - 1.00	ES					*From 0.80-1.10m bgl becomes clayey.*
		1.00		N=12 (1,3/3,3,3,3)	1.10			Soft dark greenish grey CLAY with frequent rootlets and fossils. [LANGLEY SILT MEMBER]
		1.20 - 1.40	ES					
		1.90 - 2.10	ES					
		2.00		N=4 (2,1/1,1,1,1)				
		2.60 - 2.80	ES					
		3.00		N=0 (0,0/0,0,0,0)	2.90 3.00			Greenish grey fine to coarse SAND. [LANGLEY SILT MEMBER] End of borehole at 3.00 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater strike, however samples were wet between 2.90-3.00m bgl

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PO15 5TH

Borehole Log

Borehole No.
C-WS03
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords: 471600.12 - 174158.43
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU		Level: 38.33
Client:	Berkeley Homes (Oxford & Chiltern) Ltd		Dates: 29/09/2022 - 29/09/2022

Hole Type: WS
Scale: 1:25
Logged By: OM

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10	38.23		Tarmac [MADE GROUND]
								Hardcore concrete slab [MADE GROUND]
					0.40	37.93		End of borehole at 0.40 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered. Hole terminated due to no progression through concrete slab encountered at 0.40m bgl.

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PO15 5TH

Borehole Log

Borehole No.
C-WS04
Sheet 1 of 1

Project Name:	Vastern Road, Reading	Project No. A10967	Co-ords:	471603.81 - 174165.21	Hole Type WS
Location:	55 Vastern Road, Reading, Berkshire, RG1 8BU		Level:	38.41	Scale 1:25
Client:	Berkeley Homes (Oxford & Chiltern) Ltd		Dates:	29/09/2022 - 29/09/2022	Logged By OM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10	38.31		Tarmac [MADE GROUND]
								Hardcore concrete slab [MADE GROUND]
					0.40	38.01		End of borehole at 0.40 m

Remarks
1. Position scanned with calibrated CAT & 'Genny' prior to excavation. No Groundwater encountered. Hole terminated due to no progression through concrete slab encountered at 0.40m bgl.

APPENDIX VI - CHEMICAL ANALYSIS CERTIFICATES

Element Materials Technology
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Omnia
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Portsmouth
PO6 4TP

Attention :	Olivia Maxwell
Date :	7th November, 2022
Your reference :	A10967
Our reference :	Test Report 22/16164 Batch 1
Location :	Vastern Road, Reading
Date samples received :	5th October, 2022
Status :	Final Report
Issue :	1

Forty five samples were received for analysis on 5th October, 2022 of which fifteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	4-6	13-15	28-30	52-54	58-60	70-72	73-75	85-87	97-99	100-102	LOD/LOR	Units	Method No.
Sample ID	AII-WS01	AII-WS01	AII-WS02	AII-WS03	AII-WS03	BII-WS03	AII-WS03	AII-WS04	AII-WS05	C-WS01A			
Depth	0.50-1.00	1.50-1.70	0.50-0.70	0.40-0.70	0.80-1.00	1.70-2.00	1.90-2.00	0.40-0.60	0.20-0.50	0.20-0.40			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	03/10/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022			
Arsenic #	11.7	31.6	16.3	16.1	18.2	-	23.9	15.1	3.8	12.9	<0.5	mg/kg	TM30/PM15
Barium #	383	222	381	1204	1022	-	108	191	66	275	<1	mg/kg	TM30/PM15
Beryllium	4.1	1.4	2.5	6.0	4.2	-	1.9	2.4	<0.5	3.7	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	1.3	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #	36.4	44.2	31.1	35.7	35.6	-	62.3	54.5	26.0	67.0	<0.5	mg/kg	TM30/PM15
Copper #	80	177	106	151	113	-	18	54	13	28	<1	mg/kg	TM30/PM15
Lead #	383	1177	239	405	369	-	25	106	51	52	<5	mg/kg	TM30/PM15
Mercury #	0.4	13.7	0.9	0.5	0.4	-	<0.1	0.6	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	41.3	24.4	38.9	61.1	48.9	-	33.4	31.6	7.8	18.4	<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	<1	<1	<1	-	2	1	<1	1	<1	mg/kg	TM30/PM15
Vanadium	64	32	47	73	56	-	78	47	15	52	<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.5	15.7	1.1	1.0	1.1	-	6.3	1.9	0.3	1.4	<0.1	mg/kg	TM74/PM32
Zinc #	185	815	315	205	70	-	89	85	32	94	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.09	<0.04	2.32	0.06	0.25	-	<0.04	0.05	1.06	0.06	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.29	<0.03	9.25	0.08	0.05	-	<0.03	0.14	0.21	0.13	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	1.78	<0.05	0.09	-	<0.05	<0.05	1.44	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	0.10	4.05	<0.04	0.10	-	<0.04	<0.04	1.16	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.53	0.56	>>35.09	0.59	1.16	-	<0.03	0.36	10.22	0.53	<0.03	mg/kg	TM4/PM8
Anthracene #	0.30	0.22	>>20.73	0.12	0.21	-	<0.04	0.18	2.66	0.14	<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.85	1.11	>>95.65	1.59	5.04	-	<0.03	1.23	11.62	1.44	<0.03	mg/kg	TM4/PM8
Pyrene #	1.98	0.84	>>86.16	1.51	5.59	-	<0.03	1.19	9.96	1.30	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.10	0.40	>>54.79	0.76	4.59	-	<0.06	1.02	4.55	0.59	<0.06	mg/kg	TM4/PM8
Chrysene #	1.51	0.40	>>47.00	0.98	5.59	-	<0.02	1.17	4.59	0.70	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	3.49	0.58	>>90.23	1.87	13.23	-	<0.07	3.03	7.57	1.53	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.04	0.31	>>50.73	1.04	8.42	-	<0.04	1.67	4.55	0.90	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.93	0.19	>>40.68	0.86	7.47	-	<0.04	1.58	3.48	0.77	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.41	<0.04	9.98	0.22	1.90	-	<0.04	0.34	0.71	0.15	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.79	0.18	>>33.16	0.76	7.68	-	<0.04	1.21	2.94	0.67	<0.04	mg/kg	TM4/PM8
PAH 16 Total	17.3	4.9	581.6	10.4	61.4	-	<0.6	13.2	66.7	8.9	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	2.51	0.42	64.97	1.35	9.53	-	<0.05	2.18	5.45	1.10	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.98	0.16	25.26	0.52	3.70	-	<0.02	0.85	2.12	0.43	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	97	96	95	100	-	97	95	97	97	<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	13	<10	96	<10	<10	-	<10	<10	13	48	<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	136	155	899	32	114	-	<10	82	112	186	<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	2260	1678	2201	301	670	-	<10	407	499	379	<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	518	350	172	102	114	-	<10	45	118	106	<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	2927	2183	3368	435	898	-	<30	534	742	719	<30	mg/kg	TM5/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	4-6	13-15	28-30	52-54	58-60	70-72	73-75	85-87	97-99	100-102	LOD/LOR	Units	Method No.
Sample ID	AII-WS01	AII-WS01	AII-WS02	AII-WS03	AII-WS03	BII-WS03	AII-WS03	AII-WS04	AII-WS05	C-WS01A			
Depth	0.50-1.00	1.50-1.70	0.50-0.70	0.40-0.70	0.80-1.00	1.70-2.00	1.90-2.00	0.40-0.60	0.20-0.50	0.20-0.40			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	03/10/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022			
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) #	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) #	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) #	-	-	-	-	-	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) #	-	-	-	-	-	<4	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) #	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) #	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-	-	<19	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR) #	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) #	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) #	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) #	-	-	-	-	-	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) #	-	-	-	-	-	<4	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) #	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) #	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR) #	-	-	-	-	-	<19	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-	-	<38	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
GRO (>C4-C6)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
GRO (>C6-C8) (HS_1D_Total) #	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
GRO (>C4-C8)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
MTBE #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene #	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	18.9	47.6	15.2	18.8	29.4	59.7	34.6	17.4	15.7	23.5	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0243	0.7178	0.0291	0.0340	0.0576	-	0.0315	0.1277	0.0308	0.0932	<0.0015	g/l	TM38/PM20
Chromium III	36.4	44.2	31.1	35.7	35.6	-	62.3	54.5	26.0	67.0	<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	2.4	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	8.74	-	-	-	-	-	-	-	-	-	<0.02	%	TM21/PM24
pH #	9.64	7.78	9.51	9.45	9.54	-	7.73	9.62	9.38	9.52	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	103-105	112-114	124-126	127-129	133-135						LOD/LOR	Units	Method No.
Sample ID	C-WS01A	C-WS01A	C-WS02A	C-WS02A	C-WS02A								
Depth	0.50-0.70	1.80-2.00	0.80-1.00	1.20-1.40	2.60-2.80								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022								
Arsenic #	20.6	15.3	38.1	10.2	13.5						<0.5	mg/kg	TM30/PM15
Barium #	331	78	276	88	63						<1	mg/kg	TM30/PM15
Beryllium	3.6	1.5	3.4	1.4	1.1						<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Chromium #	47.4	43.1	49.2	47.4	32.1						<0.5	mg/kg	TM30/PM15
Copper #	56	34	85	18	9						<1	mg/kg	TM30/PM15
Lead #	115	88	308	78	8						<5	mg/kg	TM30/PM15
Mercury #	0.9	0.3	0.5	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Nickel #	26.9	23.9	38.3	26.4	19.4						<0.7	mg/kg	TM30/PM15
Selenium #	<1	2	<1	1	1						<1	mg/kg	TM30/PM15
Vanadium	56	50	61	53	36						<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.0	15.8	1.3	2.8	1.6						<0.1	mg/kg	TM74/PM32
Zinc #	141	88	342	83	58						<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	0.06	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.06	<0.03	0.09	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.31	<0.03	0.45	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Anthracene #	0.13	<0.04	0.14	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.01	0.15	0.98	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Pyrene #	0.89	0.12	0.94	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.44	0.14	0.64	<0.06	<0.06						<0.06	mg/kg	TM4/PM8
Chrysene #	0.49	0.11	0.68	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.92	0.22	1.40	<0.07	<0.07						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.51	<0.04	0.81	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.43	0.08	0.64	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.08	<0.04	0.14	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.36	0.06	0.57	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
PAH 16 Total	5.6	0.9	7.5	<0.6	<0.6						<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.66	0.16	1.01	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.26	0.06	0.39	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	96	97	103	96						<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	-	-	-	<5	-						<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	-	-	-	<30	-						<30	mg/kg	TM5/PM8

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	103-105	112-114	124-126	127-129	133-135						LOD/LOR	Units	Method No.
Sample ID	C-WS01A	C-WS01A	C-WS02A	C-WS02A	C-WS02A								
Depth	0.50-0.70	1.80-2.00	0.80-1.00	1.20-1.40	2.60-2.80								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022								
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	0.7	<0.2	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	14	<4	<4	-	<4						<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	70	<7	<7	-	<7						<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	84	<7	29	-	<7						<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	169	<19	29	-	<19						<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4	<4	-	<4						<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	27	<7	<7	-	<7						<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	107	44	49	-	<7						<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	134	44	49	-	<19						<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	303	44	78	-	<38						<38	mg/kg	TM5/TM36/PM8/PM12/PM16
GRO (>C4-C6)	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
GRO (>C6-C8) (HS_1D_Total)#	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
GRO (>C4-C8)	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
MTBE#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
Benzene#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
Toluene#	14 SV	<5	19 SV	-	<5						<5	ug/kg	TM36/PM12
Ethylbenzene#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
m/p-Xylene#	15 SV	<5	16 SV	-	<5						<5	ug/kg	TM36/PM12
o-Xylene#	8 SV	<5	7 SV	-	<5						<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15						<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	19.0	36.2	16.5	35.9	21.8						<0.1	%	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3						<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)#	0.0973	0.0811	0.0624	0.0501	0.0049						<0.0015	g/l	TM38/PM20
Chromium III	47.4	43.1	49.2	47.4	32.1						<0.5	mg/kg	NONE/NONE
Total Cyanide#	<0.5	<0.5	<0.5	<0.5	<0.5						<0.5	mg/kg	TM89/PM45
Total Organic Carbon#	-	-	-	-	-						<0.02	%	TM21/PM24
pH#	9.20	7.97	9.74	8.07	8.48						<0.01	pH units	TM73/PM11

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/16164	1	AII-WS01	0.50-1.00	6	Charlotte Taylor	11/10/2022	**General Description (Bulk Analysis)**	brown soil/stones
					Charlotte Taylor	11/10/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS01	1.50-1.70	15	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS02	0.50-0.70	30	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS03	0.40-0.70	54	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS03	0.80-1.00	60	Anthony Carman	17/10/2022	**General Description (Bulk Analysis)**	Soil
					Anthony Carman	17/10/2022	**Asbestos Fibres**	Fibre Bundles
					Anthony Carman	17/10/2022	**Asbestos ACM**	NAD
					Anthony Carman	17/10/2022	**Asbestos Type**	Chrysotile
					Remigiusz Blichowski	04/11/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Detailed Gravimetric Quantification (% Asb)**	0.037 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	0.037 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos Gravimetric & PCOM Total**	0.037 (mass %)
22/16164	1	AII-WS03	1.90-2.00	75	Charlotte Taylor	11/10/2022	**General Description (Bulk Analysis)**	brown soil/stones
					Charlotte Taylor	11/10/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS04	0.40-0.60	87	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	grey soil and stones
					Andrew Alker	11/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	11/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	11/10/2022	**Asbestos Type**	NAD

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/16164	1	AII-WS05	0.20-0.50	99	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	red soil and stones
					Andrew Alker	11/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	11/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	11/10/2022	**Asbestos Type**	NAD
22/16164	1	C-WS01A	0.20-0.40	102	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	11/10/2022	**Asbestos Fibres**	Fibre Bundles
					Andrew Alker	11/10/2022	**Asbestos ACM**	Asbestos Cement
					Andrew Alker	11/10/2022	**Asbestos Type**	Chrysotile
					Remigiusz Blichowski	04/11/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Detailed Gravimetric Quantification (% Asb)**	0.211 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	0.211 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos Gravimetric & PCOM Total**	0.211 (mass %)
22/16164	1	C-WS01A	0.50-0.70	105	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	Fibre Bundles
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	Chrysotile
					Remigiusz Blichowski	04/11/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Detailed Gravimetric Quantification (% Asb)**	0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos Gravimetric & PCOM Total**	0.001 (mass %)
22/16164	1	C-WS01A	1.80-2.00	114	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	C-WS02A	0.80-1.00	126	Andrew Alker	12/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	12/10/2022	**Asbestos Fibres**	Fibre Bundles
					Andrew Alker	12/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	12/10/2022	**Asbestos Type**	Chrysotile
					Remigiusz Blichowski	04/11/2022	**Total ACM Gravimetric Quantification (% Asb)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Detailed Gravimetric Quantification (% Asb)**	0.014 (mass %)
					Remigiusz Blichowski	04/11/2022	**Total Gravimetric Quantification (ACM + Detailed) (% Asb)**	0.014 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					Remigiusz Blichowski	04/11/2022	**Asbestos Gravimetric & PCOM Total**	0.014 (mass %)
22/16164	1	C-WS02A	1.20-1.40	129	Simon Postlewhite	17/10/2022	**General Description (Bulk Analysis)**	Brown oil/stones
					Simon Postlewhite	17/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	17/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	17/10/2022	**Asbestos Type**	NAD
22/16164	1	C-WS02A	2.60-2.80	135	Catherine Coles	12/10/2022	**General Description (Bulk Analysis)**	green/brown clay, stone
					Catherine Coles	12/10/2022	**Asbestos Fibres**	NAD
					Catherine Coles	12/10/2022	**Asbestos ACM**	NAD
					Catherine Coles	12/10/2022	**Asbestos Type**	NAD

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/16164						

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

EMT Job No.: 22/16164

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM131	Quantification of Asbestos Fibres and ACM based on HSG 248 Second edition:2021, HSG 264 Second edition:2012, HSE Contract Research Report No.83/1996, MDHS 87:1998, WM3 1st Edition v1.1:2018	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

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Attention :	Olivia Maxwell
Date :	14th October, 2022
Your reference :	A10967
Our reference :	Test Report 22/16272 Batch 1
Location :	Vastern Road, Reading
Date samples received :	6th October, 2022
Status :	Final Report
Issue :	1

Nineteen samples were received for analysis on 6th October, 2022 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Liza Klebe
Project Co-ordinator

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16272

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	1-3	15-17	24-26	30-32	41-43	44-46					LOD/LOR	Units	Method No.
Sample ID	Ai-WS01	Ai-WS02	Ai-WS02	Ai-WS03	Ai-WS04	Ai-WS04							
Depth	0.80-1.00	0.50-0.70	1.70-2.00	0.70-1.00	0.80-1.00	1.40-1.80							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022							
Arsenic #	28.0	17.4	19.4	10.7	15.2	18.9					<0.5	mg/kg	TM30/PM15
Barium #	183	115	104	168	59	463					<1	mg/kg	TM30/PM15
Beryllium	2.0	1.3	1.8	0.7	1.1	5.7					<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Chromium #	78.2	93.2	65.7	41.1	55.9	69.7					<0.5	mg/kg	TM30/PM15
Copper #	79	65	47	51	20	112					<1	mg/kg	TM30/PM15
Lead #	410	292	140	433	107	289					<5	mg/kg	TM30/PM15
Mercury #	7.4	5.1	2.0	0.4	<0.1	24.6					<0.1	mg/kg	TM30/PM15
Nickel #	31.3	68.9	30.8	16.4	22.3	45.5					<0.7	mg/kg	TM30/PM15
Selenium #	1	2	2	<1	<1	<1					<1	mg/kg	TM30/PM15
Vanadium	56	38	60	28	40	77					<1	mg/kg	TM30/PM15
Water Soluble Boron #	7.0	1.4	4.0	1.0	1.5	2.2					<0.1	mg/kg	TM74/PM32
Zinc #	766	792	133	126	51	130					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	0.10	<0.04	0.26	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.18	0.18	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.53	0.40	0.07	0.16	0.06	0.22					<0.03	mg/kg	TM4/PM8
Anthracene #	0.15	0.12	<0.04	<0.04	<0.04	0.05					<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.72	0.84	0.18	0.33	<0.03	0.29					<0.03	mg/kg	TM4/PM8
Pyrene #	1.66	1.31	0.15	0.29	<0.03	0.28					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.99	0.36	0.13	0.19	<0.06	0.23					<0.06	mg/kg	TM4/PM8
Chrysene #	0.95	0.46	0.10	0.19	0.05	0.24					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	1.81	1.47	0.18	0.27	<0.07	0.37					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.06	0.87	<0.04	0.16	<0.04	0.22					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.73	0.82	0.07	0.11	<0.04	0.16					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.12	0.13	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.62	0.71	<0.04	0.08	<0.04	0.15					<0.04	mg/kg	TM4/PM8
PAH 16 Total	10.5	7.8	0.9	2.0	<0.6	2.2					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.30	1.06	0.13	0.19	<0.05	0.27					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.51	0.41	0.05	0.08	<0.02	0.10					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	103	98	98	99	94					<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	<5	<5	<5	<5	<5	<5					<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	55	59	<10	<10	<10	<10					<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	212	445	72	<10	<10	97					<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	50	63	27	<10	<10	<10					<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	317	567	99	<30	<30	97					<30	mg/kg	TM5/PM8
GRO (>C4-C6)	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12

Element Materials Technology

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16272

Report : Solid

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

EMT Sample No.	1-3	15-17	24-26	30-32	41-43	44-46					LOD/LOR	Units	Method No.
Sample ID	Ai-WS01	Ai-WS02	Ai-WS02	Ai-WS03	Ai-WS04	Ai-WS04							
Depth	0.80-1.00	0.50-0.70	1.70-2.00	0.70-1.00	0.80-1.00	1.40-1.80							
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T							
Sample Date	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022	04/10/2022							
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil							
Batch Number	1	1	1	1	1	1							
Date of Receipt	06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022	06/10/2022							
GRO (>C6-C8) (HS_1D_Total) #	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
GRO (>C4-C8)	<0.1	<0.1 SV	<0.1	<0.1	<0.1	<0.1 SV					<0.1	mg/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15					<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	24.5	28.0	22.3	21.0	17.6	27.1					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.3835	1.3661	0.0535	0.3898	0.1156	0.0348					<0.0015	g/l	TM38/PM20
Chromium III	78.2	93.2	65.7	41.1	55.9	69.7					<0.5	mg/kg	NONE/NONE
Total Cyanide #	3.9	0.6	<0.5	<0.5	<0.5	<0.5					<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	-	1.53	-	-	-	-					<0.02	%	TM21/PM24
pH #	7.79	8.27	7.98	9.02	8.25	8.19					<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/16272	1	Ai-WS01	0.80-1.00	3	Andrew Alker	12/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	12/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	12/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	12/10/2022	**Asbestos Type**	NAD
22/16272	1	Ai-WS02	0.50-0.70	17	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	brown clay
					Andrew Alker	11/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	11/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	11/10/2022	**Asbestos Type**	NAD
22/16272	1	Ai-WS02	1.70-2.00	26	Catherine Coles	12/10/2022	**General Description (Bulk Analysis)**	soft brown soil
					Catherine Coles	12/10/2022	**Asbestos Fibres**	NAD
					Catherine Coles	12/10/2022	**Asbestos ACM**	NAD
					Catherine Coles	12/10/2022	**Asbestos Type**	NAD
22/16272	1	Ai-WS03	0.70-1.00	32	Catherine Coles	12/10/2022	**General Description (Bulk Analysis)**	stone,brick
					Catherine Coles	12/10/2022	**Asbestos Fibres**	NAD
					Catherine Coles	12/10/2022	**Asbestos ACM**	NAD
					Catherine Coles	12/10/2022	**Asbestos Type**	NAD
22/16272	1	Ai-WS04	0.80-1.00	43	Andrew Alker	12/10/2022	**General Description (Bulk Analysis)**	brown clay and stone
					Andrew Alker	12/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	12/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	12/10/2022	**Asbestos Type**	NAD
22/16272	1	Ai-WS04	1.40-1.80	46	Andrew Alker	12/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	12/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	12/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	12/10/2022	**Asbestos Type**	NAD

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/16272						

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

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/16272

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 22/16272

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

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Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP

Attention :	Olivia Maxwell
Date :	17th October, 2022
Your reference :	A10967
Our reference :	Test Report 22/16164 Batch 1
Location :	Vastern Road, Reading
Date samples received :	5th October, 2022
Status :	Final Report
Issue :	1

Forty five samples were received for analysis on 5th October, 2022 of which fifteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	4-6	13-15	28-30	52-54	58-60	70-72	73-75	85-87	97-99	100-102	LOD/LOR	Units	Method No.
Sample ID	AII-WS01	AII-WS01	AII-WS02	AII-WS03	AII-WS03	BII-WS03	AII-WS03	AII-WS04	AII-WS05	C-WS01A			
Depth	0.50-1.00	1.50-1.70	0.50-0.70	0.40-0.70	0.80-1.00	1.70-2.00	1.90-2.00	0.40-0.60	0.20-0.50	0.20-0.40			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	03/10/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022			
Arsenic #	11.7	31.6	16.3	16.1	18.2	-	23.9	15.1	3.8	12.9	<0.5	mg/kg	TM30/PM15
Barium #	383	222	381	1204	1022	-	108	191	66	275	<1	mg/kg	TM30/PM15
Beryllium	4.1	1.4	2.5	6.0	4.2	-	1.9	2.4	<0.5	3.7	<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	1.3	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Chromium #	36.4	44.2	31.1	35.7	35.6	-	62.3	54.5	26.0	67.0	<0.5	mg/kg	TM30/PM15
Copper #	80	177	106	151	113	-	18	54	13	28	<1	mg/kg	TM30/PM15
Lead #	383	1177	239	405	369	-	25	106	51	52	<5	mg/kg	TM30/PM15
Mercury #	0.4	13.7	0.9	0.5	0.4	-	<0.1	0.6	<0.1	<0.1	<0.1	mg/kg	TM30/PM15
Nickel #	41.3	24.4	38.9	61.1	48.9	-	33.4	31.6	7.8	18.4	<0.7	mg/kg	TM30/PM15
Selenium #	<1	1	<1	<1	<1	-	2	1	<1	1	<1	mg/kg	TM30/PM15
Vanadium	64	32	47	73	56	-	78	47	15	52	<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.5	15.7	1.1	1.0	1.1	-	6.3	1.9	0.3	1.4	<0.1	mg/kg	TM74/PM32
Zinc #	185	815	315	205	70	-	89	85	32	94	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	0.09	<0.04	2.32	0.06	0.25	-	<0.04	0.05	1.06	0.06	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.29	<0.03	9.25	0.08	0.05	-	<0.03	0.14	0.21	0.13	<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	1.78	<0.05	0.09	-	<0.05	<0.05	1.44	<0.05	<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	0.10	4.05	<0.04	0.10	-	<0.04	<0.04	1.16	<0.04	<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.53	0.56	>>35.09	0.59	1.16	-	<0.03	0.36	10.22	0.53	<0.03	mg/kg	TM4/PM8
Anthracene #	0.30	0.22	>>20.73	0.12	0.21	-	<0.04	0.18	2.66	0.14	<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.85	1.11	>>95.65	1.59	5.04	-	<0.03	1.23	11.62	1.44	<0.03	mg/kg	TM4/PM8
Pyrene #	1.98	0.84	>>86.16	1.51	5.59	-	<0.03	1.19	9.96	1.30	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.10	0.40	>>54.79	0.76	4.59	-	<0.06	1.02	4.55	0.59	<0.06	mg/kg	TM4/PM8
Chrysene #	1.51	0.40	>>47.00	0.98	5.59	-	<0.02	1.17	4.59	0.70	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	3.49	0.58	>>90.23	1.87	13.23	-	<0.07	3.03	7.57	1.53	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.04	0.31	>>50.73	1.04	8.42	-	<0.04	1.67	4.55	0.90	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.93	0.19	>>40.68	0.86	7.47	-	<0.04	1.58	3.48	0.77	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.41	<0.04	9.98	0.22	1.90	-	<0.04	0.34	0.71	0.15	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.79	0.18	>>33.16	0.76	7.68	-	<0.04	1.21	2.94	0.67	<0.04	mg/kg	TM4/PM8
PAH 16 Total	17.3	4.9	581.6	10.4	61.4	-	<0.6	13.2	66.7	8.9	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	2.51	0.42	64.97	1.35	9.53	-	<0.05	2.18	5.45	1.10	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.98	0.16	25.26	0.52	3.70	-	<0.02	0.85	2.12	0.43	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	98	97	96	95	100	-	97	95	97	97	<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	<5	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	13	<10	96	<10	<10	-	<10	<10	13	48	<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	136	155	899	32	114	-	<10	82	112	186	<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	2260	1678	2201	301	670	-	<10	407	499	379	<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	518	350	172	102	114	-	<10	45	118	106	<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	2927	2183	3368	435	898	-	<30	534	742	719	<30	mg/kg	TM5/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	4-6	13-15	28-30	52-54	58-60	70-72	73-75	85-87	97-99	100-102	LOD/LOR	Units	Method No.
Sample ID	AII-WS01	AII-WS01	AII-WS02	AII-WS03	AII-WS03	BII-WS03	AII-WS03	AII-WS04	AII-WS05	C-WS01A			
Depth	0.50-1.00	1.50-1.70	0.50-0.70	0.40-0.70	0.80-1.00	1.70-2.00	1.90-2.00	0.40-0.60	0.20-0.50	0.20-0.40			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	30/09/2022	03/10/2022			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022			
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	-	-	-	-	-	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	-	-	-	-	-	<4	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	-	-	-	-	-	<19	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	-	-	-	-	-	<0.1	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	-	-	-	-	-	<0.2	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	-	-	-	-	-	<4	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	-	-	-	-	-	<7	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	-	-	-	-	-	<19	-	-	-	-	<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	-	-	-	-	-	<38	-	-	-	-	<38	mg/kg	TM5/TM36/PM8/PM12/PM16
GRO (>C4-C6)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
GRO (>C6-C8) (HS_1D_Total)#	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
GRO (>C4-C8)	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	<0.1 SV	-	<0.1	<0.1 SV	<0.1	<0.1	<0.1	mg/kg	TM36/PM12
MTBE#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene#	-	-	-	-	-	<5	-	-	-	-	<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	18.9	47.6	15.2	18.8	29.4	59.7	34.6	17.4	15.7	23.5	<0.1	%	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)#	0.0243	0.7178	0.0291	0.0340	0.0576	-	0.0315	0.1277	0.0308	0.0932	<0.0015	g/l	TM38/PM20
Chromium III	36.4	44.2	31.1	35.7	35.6	-	62.3	54.5	26.0	67.0	<0.5	mg/kg	NONE/NONE
Total Cyanide#	<0.5	2.4	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon#	8.74	-	-	-	-	-	-	-	-	-	<0.02	%	TM21/PM24
pH#	9.64	7.78	9.51	9.45	9.54	-	7.73	9.62	9.38	9.52	<0.01	pH units	TM73/PM11

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

EMT Sample No.	103-105	112-114	124-126	127-129	133-135						LOD/LOR	Units	Method No.
Sample ID	C-WS01A	C-WS01A	C-WS02A	C-WS02A	C-WS02A								
Depth	0.50-0.70	1.80-2.00	0.80-1.00	1.20-1.40	2.60-2.80								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022								
Arsenic #	20.6	15.3	38.1	10.2	13.5						<0.5	mg/kg	TM30/PM15
Barium #	331	78	276	88	63						<1	mg/kg	TM30/PM15
Beryllium	3.6	1.5	3.4	1.4	1.1						<0.5	mg/kg	TM30/PM15
Cadmium #	<0.1	<0.1	<0.1	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Chromium #	47.4	43.1	49.2	47.4	32.1						<0.5	mg/kg	TM30/PM15
Copper #	56	34	85	18	9						<1	mg/kg	TM30/PM15
Lead #	115	88	308	78	8						<5	mg/kg	TM30/PM15
Mercury #	0.9	0.3	0.5	<0.1	<0.1						<0.1	mg/kg	TM30/PM15
Nickel #	26.9	23.9	38.3	26.4	19.4						<0.7	mg/kg	TM30/PM15
Selenium #	<1	2	<1	1	1						<1	mg/kg	TM30/PM15
Vanadium	56	50	61	53	36						<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.0	15.8	1.3	2.8	1.6						<0.1	mg/kg	TM74/PM32
Zinc #	141	88	342	83	58						<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	0.06	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.06	<0.03	0.09	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.31	<0.03	0.45	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Anthracene #	0.13	<0.04	0.14	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.01	0.15	0.98	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Pyrene #	0.89	0.12	0.94	<0.03	<0.03						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.44	0.14	0.64	<0.06	<0.06						<0.06	mg/kg	TM4/PM8
Chrysene #	0.49	0.11	0.68	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.92	0.22	1.40	<0.07	<0.07						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.51	<0.04	0.81	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.43	0.08	0.64	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.08	<0.04	0.14	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.36	0.06	0.57	<0.04	<0.04						<0.04	mg/kg	TM4/PM8
PAH 16 Total	5.6	0.9	7.5	<0.6	<0.6						<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.66	0.16	1.01	<0.05	<0.05						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.26	0.06	0.39	<0.02	<0.02						<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	97	96	97	103	96						<0	%	TM4/PM8
EPH >C8-C10 (EH_1D_Total) #	-	-	-	<5	-						<5	mg/kg	TM5/PM8
EPH >C10-C12 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C12-C16 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C16-C21 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C21-C35 (EH_1D_Total) #	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C35-C44 (EH_1D_Total)	-	-	-	<10	-						<10	mg/kg	TM5/PM8
EPH >C8-C44 (EH_1D_Total)	-	-	-	<30	-						<30	mg/kg	TM5/PM8

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16164

Report : Solid

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

Please see attached notes for all abbreviations and acronyms

EMT Sample No.	103-105	112-114	124-126	127-129	133-135						LOD/LOR	Units	Method No.
Sample ID	C-WS01A	C-WS01A	C-WS02A	C-WS02A	C-WS02A								
Depth	0.50-0.70	1.80-2.00	0.80-1.00	1.20-1.40	2.60-2.80								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	03/10/2022	03/10/2022	03/10/2022	03/10/2022	03/10/2022								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1								
Date of Receipt	05/10/2022	05/10/2022	05/10/2022	05/10/2022	05/10/2022								
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	0.7	<0.2	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	14	<4	<4	-	<4						<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	70	<7	<7	-	<7						<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	84	<7	29	-	<7						<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	169	<19	29	-	<19						<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1 SV	<0.1	<0.1 SV	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	<0.2	<0.2	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	<4	<4	<4	-	<4						<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	27	<7	<7	-	<7						<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	107	44	49	-	<7						<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	134	44	49	-	<19						<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	303	44	78	-	<38						<38	mg/kg	TM5/TM36/PM8/PM12/PM16
GRO (>C4-C6)	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
GRO (>C6-C8) (HS_1D_Total)#	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
GRO (>C4-C8)	-	-	-	<0.1	-						<0.1	mg/kg	TM36/PM12
MTBE#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
Benzene#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
Toluene#	14 SV	<5	19 SV	-	<5						<5	ug/kg	TM36/PM12
Ethylbenzene#	<5 SV	<5	<5 SV	-	<5						<5	ug/kg	TM36/PM12
m/p-Xylene#	15 SV	<5	16 SV	-	<5						<5	ug/kg	TM36/PM12
o-Xylene#	8 SV	<5	7 SV	-	<5						<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15						<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	19.0	36.2	16.5	35.9	21.8						<0.1	%	PM4/PM0
Hexavalent Chromium#	<0.3	<0.3	<0.3	<0.3	<0.3						<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext)#	0.0973	0.0811	0.0624	0.0501	0.0049						<0.0015	g/l	TM38/PM20
Chromium III	47.4	43.1	49.2	47.4	32.1						<0.5	mg/kg	NONE/NONE
Total Cyanide#	<0.5	<0.5	<0.5	<0.5	<0.5						<0.5	mg/kg	TM89/PM45
Total Organic Carbon#	-	-	-	-	-						<0.02	%	TM21/PM24
pH#	9.20	7.97	9.74	8.07	8.48						<0.01	pH units	TM73/PM11

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/16164	1	AII-WS01	0.50-1.00	6	Charlotte Taylor	11/10/2022	**General Description (Bulk Analysis)**	brown soil/stones
					Charlotte Taylor	11/10/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS01	1.50-1.70	15	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS02	0.50-0.70	30	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS03	0.40-0.70	54	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS03	0.80-1.00	60	Anthony Carman	17/10/2022	**General Description (Bulk Analysis)**	Soil
					Anthony Carman	17/10/2022	**Asbestos Fibres**	Fibre Bundles
					Anthony Carman	17/10/2022	**Asbestos ACM**	NAD
					Anthony Carman	17/10/2022	**Asbestos Type**	Chrysotile
22/16164	1	AII-WS03	1.90-2.00	75	Charlotte Taylor	11/10/2022	**General Description (Bulk Analysis)**	brown soil/stones
					Charlotte Taylor	11/10/2022	**Asbestos Fibres**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos ACM**	NAD
					Charlotte Taylor	11/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS04	0.40-0.60	87	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	grey soil and stones
					Andrew Alker	11/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	11/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	11/10/2022	**Asbestos Type**	NAD
22/16164	1	AII-WS05	0.20-0.50	99	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	red soil and stones
					Andrew Alker	11/10/2022	**Asbestos Fibres**	NAD
					Andrew Alker	11/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	11/10/2022	**Asbestos Type**	NAD

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
22/16164	1	C-WS01A	0.20-0.40	102	Andrew Alker	11/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	11/10/2022	**Asbestos Fibres**	Fibre Bundles
					Andrew Alker	11/10/2022	**Asbestos ACM**	Asbestos Cement
					Andrew Alker	11/10/2022	**Asbestos Type**	Chrysotile
22/16164	1	C-WS01A	0.50-0.70	105	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	Fibre Bundles
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	Chrysotile
22/16164	1	C-WS01A	1.80-2.00	114	Simon Postlewhite	12/10/2022	**General Description (Bulk Analysis)**	Brown soil/stones
					Simon Postlewhite	12/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	12/10/2022	**Asbestos Type**	NAD
22/16164	1	C-WS02A	0.80-1.00	126	Andrew Alker	12/10/2022	**General Description (Bulk Analysis)**	brown soil and stone
					Andrew Alker	12/10/2022	**Asbestos Fibres**	Fibre Bundles
					Andrew Alker	12/10/2022	**Asbestos ACM**	NAD
					Andrew Alker	12/10/2022	**Asbestos Type**	Chrysotile
22/16164	1	C-WS02A	1.20-1.40	129	Simon Postlewhite	17/10/2022	**General Description (Bulk Analysis)**	Brown oil/stones
					Simon Postlewhite	17/10/2022	**Asbestos Fibres**	NAD
					Simon Postlewhite	17/10/2022	**Asbestos ACM**	NAD
					Simon Postlewhite	17/10/2022	**Asbestos Type**	NAD
22/16164	1	C-WS02A	2.60-2.80	135	Catherine Coles	12/10/2022	**General Description (Bulk Analysis)**	green/brown clay, stone
					Catherine Coles	12/10/2022	**Asbestos Fibres**	NAD
					Catherine Coles	12/10/2022	**Asbestos ACM**	NAD
					Catherine Coles	12/10/2022	**Asbestos Type**	NAD

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/16164						

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

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes

EMT Job No: 22/16164

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code			AD	Yes

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Attention :	Olivia Maxwell
Date :	12th October, 2022
Your reference :	A10967
Our reference :	Test Report 22/16013 Batch 1
Location :	Vastern Road, Reading
Date samples received :	1st October, 2022
Status :	Final Report
Issue :	1

Twenty two samples were received for analysis on 1st October, 2022 of which eight were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:

Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell
EMT Job No: 22/16013

Report : Solid

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

EMT Sample No.	3-4	5-6	11-12	15-16	23-24	27-28	29-30	37-38			LOD/LOR	Units	Method No.
Sample ID	BI-TP01	BI-TP01	BI-TP02	BI-TP03	BII-WS01	BII-WS01	BII-WS01	BII-WS02					
Depth	0.40-0.70	0.70-0.80	0.70-0.80	0.40-0.70	1.40-1.50	2.10-2.30	3.40-3.60	1.40-1.60					
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J					
Sample Date	28/09/2022	28/09/2022	28/09/2022	28/09/2022	29/09/2022	29/09/2022	29/09/2022	29/09/2022					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1					
Date of Receipt	01/10/2022	01/10/2022	01/10/2022	01/10/2022	01/10/2022	01/10/2022	01/10/2022	01/10/2022					
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL)#	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL)#	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL)#	<0.2	<0.2	1.0	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL)#	5	8	27	<4	<4	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL)#	54	69	147	85	<7	<7	<7	<7			<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL)#	145	209	610	915	<7	60	<7	<7			<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-35 (EH+HS_CU_1D_AL)	204	286	785	1000	<19	60	<19	<19			<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Aromatics													
>C5-EC7 (HS_1D_AR)#	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR)#	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR)#	<0.1	<0.1 SV	<0.1	<0.1 SV	<0.1 SV	<0.1	<0.1	<0.1			<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR)#	10.9	4.6	26.1	<0.2	<0.2	<0.2	<0.2	<0.2			<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR)#	39	41	215	<4	<4	<4	<4	<4			<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR)#	419	564	1912	30	<7	85	<7	<7			<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR)#	1081	1552	4170	717	<7	268	<7	<7			<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-35 (EH+HS_CU_1D_AR)#	1550	2162	6323	747	<19	353	<19	<19			<19	mg/kg	TM5/TM36/PM8/PM12/PM16
Total aliphatics and aromatics(C5-35) (EH+HS_CU_1D_Total)	1754	2448	7108	1747	<38	413	<38	<38			<38	mg/kg	TM5/TM36/PM8/PM12/PM16
MTBE#	<5	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
Benzene#	<5	12 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
Toluene#	<5	8 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
Ethylbenzene#	<5	<5 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
m/p-Xylene#	7	11 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
o-Xylene#	<5	6 SV	<5	<5 SV	<5 SV	<5	<5	<5			<5	ug/kg	TM36/PM12
Natural Moisture Content	15.1	13.2	16.0	10.8	28.3	47.0	41.1	35.6			<0.1	%	PM4/PM0
Total Organic Carbon#	9.18	-	-	-	-	-	-	-			<0.02	%	TM21/PM24

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road, Reading
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/16013						

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

Please include all sections of this report if it is reproduced

SOILS and ASH

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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

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

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

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

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.
Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/16013

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details	Yes		AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes

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Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP

Attention :	Olivia Maxwell
Date :	27th October, 2022
Your reference :	A10967
Our reference :	Test Report 22/17162 Batch 1
Location :	Vastern Road
Date samples received :	20th October, 2022
Status :	Final Report
Issue :	1

Five samples were received for analysis on 20th October, 2022 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

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Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell
EMT Job No: 22/17162

Report : Liquid

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

EMT Sample No.	1-4	5-7	8-13	14-17	18-20						LOD/LOR	Units	Method No.
Sample ID	C-WS01-A	Bii-WS01	C-WS01-A	C-WS02-A	Bii-WS01								
Depth	2.60	2.65	2.35	2.70	2.70								
COC No / misc													
Containers	V P G	V G	V HN N P G	V P G	V G								
Sample Date	14/10/2022	14/10/2022	19/10/2022	19/10/2022	19/10/2022								
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid								
Batch Number	1	1	1	1	1								
Date of Receipt	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022								
Dissolved Arsenic	-	-	2.6	-	-						<2.5	ug/l	TM30/PM14
Dissolved Barium	-	-	79	-	-						<3	ug/l	TM30/PM14
Dissolved Beryllium	-	-	<0.5	-	-						<0.5	ug/l	TM30/PM14
Dissolved Boron	-	-	240	-	-						<12	ug/l	TM30/PM14
Dissolved Cadmium	-	-	<0.5	-	-						<0.5	ug/l	TM30/PM14
Total Dissolved Chromium	-	-	<1.5	-	-						<1.5	ug/l	TM30/PM14
Dissolved Copper	-	-	<7	-	-						<7	ug/l	TM30/PM14
Dissolved Lead	-	-	<5	-	-						<5	ug/l	TM30/PM14
Dissolved Mercury	-	-	<1	-	-						<1	ug/l	TM30/PM14
Dissolved Nickel	-	-	<2	-	-						<2	ug/l	TM30/PM14
Dissolved Selenium	-	-	14	-	-						<3	ug/l	TM30/PM14
Dissolved Vanadium	-	-	3.4	-	-						<1.5	ug/l	TM30/PM14
Dissolved Zinc	-	-	4	-	-						<3	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	-	-	239	-	-						<1	mg/l	TM30/PM14
PAH MS													
Naphthalene	-	-	<0.1	-	-						<0.1	ug/l	TM4/PM30
Acenaphthylene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Acenaphthene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Fluorene	-	-	0.007	-	-						<0.005	ug/l	TM4/PM30
Phenanthrene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Anthracene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Fluoranthene	-	-	0.015	-	-						<0.005	ug/l	TM4/PM30
Pyrene	-	-	0.014	-	-						<0.005	ug/l	TM4/PM30
Benzo(a)anthracene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Chrysene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene	-	-	<0.008	-	-						<0.008	ug/l	TM4/PM30
Benzo(a)pyrene	-	-	<0.005	-	-						<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene	-	-	0.017	-	-						<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene	-	-	0.008	-	-						<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene	-	-	0.010	-	-						<0.005	ug/l	TM4/PM30
PAH 16 Total	-	-	<0.173	-	-						<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	-	-	<0.008	-	-						<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	-	-	<0.008	-	-						<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	-	-	92	-	-						<0	%	TM4/PM30
GRO (>C4-C6)	-	-	<10	-	-						<10	ug/l	TM36/PM12
GRO (>C6-C8)	-	-	<10	-	-						<10	ug/l	TM36/PM12
GRO (>C4-C8)	-	-	<10	-	-						<10	ug/l	TM36/PM12
MTBE	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12
Benzene	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12
Toluene	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12
Ethylbenzene	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12
m/p-Xylene	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell
EMT Job No: 22/17162

Report : Liquid

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

EMT Sample No.	1-4	5-7	8-13	14-17	18-20						LOD/LOR	Units	Method No.
Sample ID	C-WS01-A	Bii-WS01	C-WS01-A	C-WS02-A	Bii-WS01								
Depth	2.60	2.65	2.35	2.70	2.70								
COC No / misc													
Containers	V P G	V G	V HN N P G	V P G	V G								
Sample Date	14/10/2022	14/10/2022	19/10/2022	19/10/2022	19/10/2022								
Sample Type	Liquid	Liquid	Liquid	Liquid	Liquid								
Batch Number	1	1	1	1	1								
Date of Receipt	20/10/2022	20/10/2022	20/10/2022	20/10/2022	20/10/2022								
o-Xylene	<5	<5	-	<5	<5						<5	ug/l	TM36/PM12
EPH >C8-C10	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C10-C12	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C12-C16	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C16-C21	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C21-C35	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C35-C44	-	-	<10	-	-						<10	ug/l	TM5/PM30
EPH >C8-C44	-	-	<10	-	-						<10	ug/l	TM5/PM30
TPH CWG													
Aliphatics													
>C5-C6	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>C6-C8	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>C8-C10	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>C10-C12	<5	<5	-	<5	<5						<5	ug/l	TM5/PM16/PM30
>C12-C16	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
>C16-C21	<10	<10	-	130	<10						<10	ug/l	TM5/PM16/PM30
>C21-C35	<10	<10	-	660	<10						<10	ug/l	TM5/PM16/PM30
>C35-C44	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-44	<10	<10	-	790	<10						<10	ug/l	TM5/TM36/PM12/PM16/PM30
Aromatics													
>C5-EC7	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>EC7-EC8	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>EC8-EC10	<10	<10	-	<10	<10						<10	ug/l	TM36/PM12
>EC10-EC12	<5	<5	-	<5	<5						<5	ug/l	TM5/PM16/PM30
>EC12-EC16	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC16-EC21	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC21-EC35	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
>EC35-EC44	<10	<10	-	<10	<10						<10	ug/l	TM5/PM16/PM30
Total aromatics C5-44	<10	<10	-	<10	<10						<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total aliphatics and aromatics(C5-44)	<10	<10	-	790	<10						<10	ug/l	TM5/TM36/PM12/PM16/PM30
Total Phenols HPLC	-	-	<0.15	-	-						<0.15	mg/l	TM26/PM0
Sulphate as SO4	-	-	61.0	-	-						<0.5	mg/l	TM38/PM0
Total Cyanide	-	-	<0.01	-	-						<0.01	mg/l	TM89/PM0
Hexavalent Chromium	-	-	<0.006	-	-						<0.006	mg/l	TM38/PM0
Total Dissolved Chromium III	-	-	<6	-	-						<6	ug/l	TM0/PM0
pH	-	-	7.63	-	-						<0.01	pH units	TM73/PM0

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/17162						

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

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

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

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

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 37°C ±5°C.

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

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

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

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

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

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overesitimate when other sulphides such as Barite (Barium Sulphate) are present.

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

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

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

DILUTIONS

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

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

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

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/17162

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013l	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.				

EMT Job No: 22/17162

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				

Element Materials Technology
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Zone 3
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Deeside
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W: www.element.com

Omnia
3-6 The Quarterdeck
Port Solent
Portsmouth
PO6 4TP

Attention :	Olivia Maxwell
Date :	11th November, 2022
Your reference :	A10967
Our reference :	Test Report 22/17961 Batch 1
Location :	Vastern Road
Date samples received :	1st November, 2022
Status :	Final Report
Issue :	1

Three samples were received for analysis on 1st November, 2022 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Bruce Leslie
Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology Environmental UK Limited
Registered in England and Wales
Registered Office: 3rd Floor Davidson Building, 5 Southampton Street, London WC2E 7HA
Company Registration No: 11371415

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell
EMT Job No: 22/17961

Report : Liquid

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

EMT Sample No.	1-6	7-12	13-18								LOD/LOR	Units	Method No.
Sample ID	C-WS01-A	C-WS02-A	Bii-WS01										
Depth	2.50	2.50	2.70										
COC No / misc													
Containers	V HN N P G	V HN N P G	V HN N P G										
Sample Date	28/10/2022	28/10/2022	28/10/2022										
Sample Type	Liquid	Liquid	Liquid										
Batch Number	1	1	1										
Date of Receipt	01/11/2022	01/11/2022	01/11/2022										
Dissolved Arsenic	3.1	3.9	3.9								<2.5	ug/l	TM30/PM14
Dissolved Barium	73	88	128								<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Dissolved Boron	201	406	455								<12	ug/l	TM30/PM14
Dissolved Cadmium	<0.5	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Total Dissolved Chromium	<1.5	<1.5	<1.5								<1.5	ug/l	TM30/PM14
Dissolved Copper	<7	<7	<7								<7	ug/l	TM30/PM14
Dissolved Lead	<5	<5	<5								<5	ug/l	TM30/PM14
Dissolved Mercury	<1	<1	<1								<1	ug/l	TM30/PM14
Dissolved Nickel	<2	7	3								<2	ug/l	TM30/PM14
Dissolved Selenium	<3	27	<3								<3	ug/l	TM30/PM14
Dissolved Vanadium	<1.5	2.1	<1.5								<1.5	ug/l	TM30/PM14
Dissolved Zinc	4	36	23								<3	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	277	378	510								<1	mg/l	TM30/PM14
PAH MS													
Naphthalene	<0.1	<0.1	<0.1								<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.005	<0.005	0.005								<0.005	ug/l	TM4/PM30
Acenaphthene	<0.005	<0.005	0.068								<0.005	ug/l	TM4/PM30
Fluorene	<0.005	<0.005	0.036								<0.005	ug/l	TM4/PM30
Phenanthrene	<0.005	0.014	0.082								<0.005	ug/l	TM4/PM30
Anthracene	<0.005	0.005	0.051								<0.005	ug/l	TM4/PM30
Fluoranthene	0.006	0.062	0.253								<0.005	ug/l	TM4/PM30
Pyrene	0.007	0.068	0.172								<0.005	ug/l	TM4/PM30
Benzo(a)anthracene	0.005	0.042	0.089								<0.005	ug/l	TM4/PM30
Chrysene	0.007	0.057	0.116								<0.005	ug/l	TM4/PM30
Benzo(bk)fluoranthene	<0.008	0.082	0.165								<0.008	ug/l	TM4/PM30
Benzo(a)pyrene	<0.005	0.032	0.082								<0.005	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.005	0.031	0.047								<0.005	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.005	0.009	0.009								<0.005	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.005	0.024	0.039								<0.005	ug/l	TM4/PM30
PAH 16 Total	<0.173	0.426	1.214								<0.173	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.008	0.059	0.119								<0.008	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.008	0.023	0.046								<0.008	ug/l	TM4/PM30
PAH Surrogate % Recovery	83	86	86								<0	%	TM4/PM30
GRO (>C4-C6)	<10	<10	<10								<10	ug/l	TM36/PM12
GRO (>C6-C8)	<10	<10	<10								<10	ug/l	TM36/PM12
GRO (>C4-C8)	<10	<10	<10								<10	ug/l	TM36/PM12
EPH >C8-C10	<10	<10	<10								<10	ug/l	TM5/PM30
EPH >C10-C12	<10	<10	<10								<10	ug/l	TM5/PM30
EPH >C12-C16	<10	<10	<10								<10	ug/l	TM5/PM30
EPH >C16-C21	<10	<10	<10								<10	ug/l	TM5/PM30

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell
EMT Job No: 22/17961

Report : Liquid

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Date of Receipt	01/11/2022	01/11/2022	01/11/2022									

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											LOD/LOR	Units	Method No.
EPH >C21-C35	<10	<10	<10								<10	ug/l	TM5/PM30
EPH >C35-C44	<10	<10	<10								<10	ug/l	TM5/PM30
EPH >C8-C44	<10	<10	<10								<10	ug/l	TM5/PM30
Total Phenols HPLC	<0.15	<0.15	<0.15								<0.15	mg/l	TM26/PM0
Sulphate as SO4	38.8	89.1	70.8								<0.5	mg/l	TM38/PM0
Total Cyanide	<0.01	<0.01	<0.01								<0.01	mg/l	TM89/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006								<0.006	mg/l	TM38/PM0
Total Dissolved Chromium III	<6	<6	<6								<6	ug/l	TM0/PM0
pH	7.95	7.88	7.53								<0.01	pH units	TM73/PM0

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

Client Name: Omnia
Reference: A10967
Location: Vastern Road
Contact: Olivia Maxwell

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analysis	Reason
No deviating sample report results for job 22/17961						

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ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

HS	Headspace Analysis.
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent.
CU	Clean-up - e.g. by florisil, silica gel.
1D	GC - Single coil gas chromatography.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 22/17961

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/SANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM14	Preparation of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for Dissolved metals, and remain unfiltered for Total metals then acidified				
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) – All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.				
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.				
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				

APPENDIX VII - ORIGIN OF GAC VALUES

Origin of GAC Values - FW EQS

Date Reviewed: 09/03/2018

Determinands	Units	UK Drinking Water Standards	WHO Drinking Water Standards	Freshwater EQS	Hardness Bandings	Orgins of Risk Assessment (UK DWS)	Orgins of Risk Assessment (WHO DWS)	Orgins of Risk Assessment (Freshwater EQS)
Arsenic	µg/l	10	10	50	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Good' standard for rivers and freshwater lakes (Annual Mean) - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Boron	µg/l	1000	2400	2000	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Council Directive on the protection of groundwater against pollution caused by certain dangerous substances (Groundwater Directive)
Cadmium	µg/l	5	3	Hardness Sensitive	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
Chromium (Total)	µg/l	50	50	n/a	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
Copper	µg/l	2000	2000	Hardness Sensitive	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
Lead	µg/l	10	10	7.2	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Mercury	µg/l	1	6	0.05	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011) - Inorganic Mercury	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Nickel	µg/l	20	70	20	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Selenium	µg/l	10	40	n/a	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
Zinc	µg/l	3000[A]	3000[C]	Hardness Sensitive	-	WHO Guidelines for Drinking-water Quality Fourth Edition (2011) - (4) No health based value, but Zn at concentrations of >3mg/l may not prove acceptable to consumers - High in tap water due to galvanised pipes	WHO Guidelines for Drinking-water Quality Fourth Edition (2011) - (4) No health based value, but Zn at concentrations of >3mg/l may not prove acceptable to consumers - High in tap water due to galvanised pipes	
General Inorganics								
Cyanide	µg/l	50	500[A]	1	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011) - (5) Health based value of 0.50mg/l is well below the threshold normally considered to present a health concern	Good' standard for rivers and freshwater lakes (Annual Mean) - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
General Organics								
Polycyclic Aromatic Hydrocarbons (PAH)								
Naphthalene	µg/l	2.4	n/a	2.4	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Anthracene	µg/l	0.1	n/a	0.1	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Fluoranthene	µg/l	0.1	n/a	0.1	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Benzo(b)Fluoranthene	µg/l	0.03	n/a	0.03	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene
Benzo(k)Fluoranthene	µg/l	0.03	n/a	0.03	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene
Benzo(b/k)Fluoranthene (sum)	µg/l	0.03	n/a	0.03		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Benzo(b)Fluoranthene & Benzo(k)Fluoranthene
Benzo(a)Pryene	µg/l	0.01	0.7	0.05	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Indeno(123-cd)Pyrene	µg/l	0.002	n/a	0.002	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene
Benzo(ghi)Perylene	µg/l	0.002	n/a	0.002	-	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene
Benzo(ghi)Perylene & Indeno(123-cd)Pyre	µg/l	0.002	n/a	0.002		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene		Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive) - Sum of Indeno(123-cd)pyrene & Benzo(g,h,i)Perylene
Polycyclic Aromatic Hydrocarbons (PAH)	µg/l	0.1	n/a	n/a		Water Supply (Water Quality) Regulations 2016 Total PAH is derived from the sum of Benzo(b)fluoranthene, Benzo(k)fluoranthene, Indeno(123-cd)pyrene and Benzo(ghi)perylene as per UKDWS screening criteria	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
BTEX								
Benzene	µg/l	1	10	10	-	Water Supply (Water Quality) Regulations 2016	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Annual Average EQS for Inland Surface Waters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Toluene	µg/l	700	700	50	-	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Good' standard for rivers and freshwater lakes (Annual Mean) - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
Ethylbenzene	µg/l	300	300	n/a	-	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	
Xylenes	µg/l	500	500	30	-	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Guidelines for Drinking-water Quality Fourth Edition (2011)	Annual Average EQS for Inland Surface Freshwaters - Directive Establishing a framework for Community action in the field of water policy (Water Framework Directive)
MTBE	µg/l	15[A]	15[A]	15[A]		WHO - Methyl *tertiary*- Butyl Ether (MTBE) in Drinking Water (2005) - WHO/SDE/WSH/05.08/122	WHO - Methyl *tertiary*- Butyl Ether (MTBE) in Drinking Water (2005) - WHO/SDE/WSH/05.08/122 - (6) No health based value as a guidline value would exceed the 15ug/l concentration at which MTBE would be detected by odour.	WHO - Methyl *tertiary*- Butyl Ether (MTBE) in Drinking Water (2005) - WHO/SDE/WSH/05.08/122 - No health based value as a guidline value would exceed the 15ug/l concentration at which MTBE would be detected by odour.
Total Petroleum Hydrocarbons (TPH) (Banded)								
Aliphatic C5-C6	ug/l	15000	15000	15000		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking
Aliphatic C6-C8	µg/l	10	10	10		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aliphatic C8-C10	µg/l	300	300	300		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C10-12	µg/l	100	100	100		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C12-16	µg/l	100	100	100		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C16-21	µg/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C21-35	µg/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C35-44	µg/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	Lowest of Aliphatic & Aromatic Values set out in WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Total Petroleum Hydrocarbons (TPH) (Speciated)								
Aliphatic								
Aliphatic C5-C6	µg/l	15000	15000	15000		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - This value is significantly greater than solubility in water	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - This value is significantly greater than solubility in water
Aliphatic C6-C8	µg/l	15000	15000	15000		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - This value is significantly greater than solubility in water	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - This value is significantly greater than solubility in water
Aliphatic C8-C10	µg/l	300	300	300		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aliphatic C10-C12	µg/l	300	300	300		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aliphatic C12-C16	µg/l	30	300	30		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aliphatic C16-C35	µg/l	90	300	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aliphatic C35-C44	µg/l	90	300	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Value for C16-C35	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Value for C16-C35
Aromatic								
Aromatic C5-C6	µg/l	-	-	-		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C6-C8	µg/l	10	10	10		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Based on Benzene	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Based on Benzene
Aromatic C8-C10	µg/l	300	300	300		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Based on Ethylbenzene - But odour threshold is significantly lower	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Based on Ethylbenzene - But odour threshold is significantly lower
Aromatic C10-C12	µg/l	100	100	100		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C12-C16	ug/l	100	100	100		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C16-C21	ug/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C21-C35	µg/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123
Aromatic C35-C44	µg/l	90	90	90		WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Value for C21-C35	WHO Petroleum Products in Drinking Water (2005) - WHO/SDE/WSH/05.05/123 - Value for C21-C35
Hardness Sensitive Metals								
Cadmium	µg/l	n/a	n/a	<0.08	<40	n/a	n/a	
	µg/l	n/a	n/a	0.08	40-50	n/a	n/a	
	µg/l	n/a	n/a	0.09	50-100	n/a	n/a	
	µg/l	n/a	n/a	0.15	100-200	n/a	n/a	
	µg/l	n/a	n/a	0.25	>200	n/a	n/a	
Copper	µg/l	n/a	n/a	1	0-50	n/a	n/a	
	ug/l	n/a	n/a	6	50-100	n/a	n/a	
	µg/l	n/a	n/a	10	100-250	n/a	n/a	
	µg/l	n/a	n/a	28	>250	n/a	n/a	
Zinc	ug/l	n/a	n/a	8	0-50	n/a	n/a	
	µg/l	n/a	n/a	50	50-100	n/a	n/a	
	ug/l	n/a	n/a	75	100-250	n/a	n/a	
	µg/l	n/a	n/a	125	>250	n/a	n/a	
Fluoride	µg/l	n/a	n/a	1000	<50	1000	n/a	
	ug/l	1500	1500	5000	>50	5000	Water Supply (Water Quality) Regulations 2016	
Nitrate	µg/l	50000	50000	n/a		n/a	Water Supply (Water Quality) Regulations 2016	
Nitrite	µg/l	500	3000	n/a		n/a	Water Supply (Water Quality) Regulations 2016	
Ammonium	µg/l	500	1500	n/a		n/a	Water Supply (Water Quality) Regulations 2016	
Chloride	µg/l	250000	n/a	250000		250000	Water Supply (Water Quality) Regulations 2016	
pH	pH Units	6.5 - 9.5					Water Supply (Water Quality) Regulations 2016	
Sulphate	µg/l	250000	500000[B]	400000		400000	Water Supply (Water Quality) Regulations 2016	

Determinant	Unit	GAC	Exposure Pathway	Origin of Risk Assessment Value
Metals				
Arsenic	mg/kg	40	1	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Arsenic
Beryllium	mg/kg	1.7	1	LQM CIEH Suitable for Use Levels (S4UL) 2015
Boron	mg/kg	11,000	1	
Cadmium	mg/kg	85	1	
Chromium (III)	mg/kg	910	1	
Chromium (VI)	mg/kg	6	1	
Copper	mg/kg	7,100	1	
Lead	mg/kg	310	1	Category 4 Screening Level (C4SL) utilising exposure parameters from CLEA SR3 report.
Mercury	mg/kg	56	4	LQM CIEH Suitable for Use Levels (S4UL) 2015- Inorganic Mercury
Nickel	mg/kg	180	1	LQM CIEH Suitable for Use Levels (S4UL) 2015
Selenium	mg/kg	430	1	
Vanadium	mg/kg	1,200	1	
Zinc	mg/kg	40,000	1	
General Inorganics				
Total Cyanide*	mg/kg	50	1	Dutch Intervention Values 2010
Asbestos	%	0.001%	6	OEC Derived Value based on ICRCL
General Organics				
Phenol	mg/kg	750	4,1	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
PAHs				
Naphthalene	mg/kg	2.3	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Acenaphthylene	mg/kg	2,900	1	
Acenaphthene	mg/kg	3,000	1	
Fluorene	mg/kg	2,800	1	
Phenanthrene	mg/kg	1,300	1	
Anthracene	mg/kg	31,000	1	
Fluoranthene	mg/kg	1,500	1	
Pyrene	mg/kg	3,700	1	
Benzo(a)Anthracene(	mg/kg	11	1	
Chrysene	mg/kg	30	1	
Benzo(b)Fluoranthene	mg/kg	3.9	1	
Benzo(k)Fluoranthene	mg/kg	110	1	
Benzo(a)Pyrene	mg/kg	3.2	1	
Indeno(123-cd)Pyrene	mg/kg	45	1	
Dibenzo(a,h)Anthracene	mg/kg	0.31	1	

Determinant	Unit	GAC	Exposure Pathway	Origin of Risk Assessment Value
Benzo(ghi)Perylene	mg/kg	360	1	
BTEX & MTBE				
Benzene	mg/kg	0.38	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Toluene	mg/kg	880	4	
Ethylbenzene	mg/kg	83	4	
Xylenes	mg/kg	79	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 1% SOM p-Xylene
MTBE	mg/kg	73	4	CL:AIRE SGV 2010 1% SOM
TPH-CWG				
Aliphatic				LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aliphatic EC 5-6	mg/kg	42	4	
Aliphatic EC >6-8	mg/kg	100	4	
Aliphatic EC >8-10	mg/kg	27	4	
Aliphatic EC >10-12	mg/kg	130(vap)	4	
Aliphatic EC > 12-16	mg/kg	1,100(sol)	4	
Aliphatic EC > 16-35	mg/kg	65,000(sol)	1	
Aliphatic EC >35-44	mg/kg	65,000(sol)	1	
Aromatic				LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aromatic EC 5-7	mg/kg	370	4	
Aromatic EC>7-8	mg/kg	860	4	
Aromatic EC> 8-10	mg/kg	47	4	
Aromatic EC> 10-12	mg/kg	250	2	
Aromatic EC> 12-16	mg/kg	1,800	2	
Aromatic EC> 16-21	mg/kg	1,900	2	
Aromatic EC> 21-35	mg/kg	1,900	1	
Aromatic EC> 35-44	mg/kg	1,900	1	
Banded TPH				
TPH EC 5-6**	mg/kg	42	4	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM, utilising the most conservative of the Ali/Aro chain lengths.
TPH EC >6-8**	mg/kg	100	4	
TPH EC >8-10**	mg/kg	27	4	
TPH EC> 10-12**	mg/kg	130	4	
TPH EC> 12-16**	mg/kg	1,100	4	
TPH EC> 16-21**	mg/kg	1,900	2	
TPH EC> 21-35**	mg/kg	1,900	1	
TPH EC> 35-44**	mg/kg	1,900	1	

Notes
Main Exposure Pathways: 1 = Ingestion of Soil & Indoor Dust, 2 = Consumption of Homegrown Produce & Attached Soil, 3 = Dermal contact (Indoor & Outdoor); 4 = Inhalation of Vapour (Indoor & Outdoor), 5 = Inhalation of Dust (Indoor & Outdoor), 6 = Inhalation of Fibres.

Abbreviations: GAC = General Assessment Criteria

* Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

** The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(sol) – GAC presented exceeds the solubility saturation limit.
(vap) – GAC presented exceeds the vapour saturation limit

APPENDIX VIII – DQRA P20 SHEETS

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions).

Details to be completed for each assessment

Site Name:	**Vastern Road, Reading**			
Site Address:	**55 Vastern Road, Reading, Berkshire, RG1 8BU**			
Completed by:	**Dr. Adrian King**			
Date:	**24-Apr-18**		**Version:**	**1**
Contaminant	**TPH Aro C21-C16**			
Target Concentration (C_T)	**0.09**	**mg/l**	**Origin of C_T:**	**WHO Petroleum Products in Drinking Water**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

Remedial Targets Worksheet , Release 3.2

Level 1 - Soil

Select the method of calculating the soil water Partition Co-efficient by using the pull down menu below

Calculate for non-polar organic chemicals

Contaminant		**TPH Aro C21-C16**	
Target concentration	C_T	**0.09**	**mg/l**

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**
Standard entry				
Water filled soil porosity	θ_W	1.00E-01	fraction	estimate based on Domenico & Schwarz, 1990
Air filled soil porosity	θa	2.00E-01	fraction	estimate based on Domenico & Schwarz, 1990
Bulk density of soil zone material	ρ	1.70E+00	g/cm^3	Estimate based on mean value for Glacial Sediments
Henry's Law constant	H	1.34E-02	dimensionless	*Howard, P, H., Boethling, R, S., Jarvis, W, F., Meylai*
Entry if specify partition coefficient (option)				
Soil water partition coefficient	Kd		l/kg	
Entry for non-polar organic chemicals (option)				
Fraction of organic carbon (in soil)	foc	1.82E-02	fraction	Average FOC Value for MG from site Measurements
Organic carbon partition coefficient	Koc	1.58E+04	l/kg	*Total Petroleum Hydrocarbon Criteria Working Group*
Entry for ionic organic chemicals (option)				
Sorption coefficient for neutral species	$K_{oc,n}$		l/kg	
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg	
pH value	pH		pH units	
Acid dissociation constant	pKa			
Fraction of organic carbon (in soil)	foc		fraction	
Soil water partition coefficient used in Level Assessment	**Kd**	**2.88E+02**	**l/kg**	*Calculated value*

Series, Volume 3: Selection of Representative TPH Fractions based on Fate and Transport Conside

This sheet calculates the Level 1 remedial target for soils(mg/kg) based on a selected target concentration and theoretical calculation of soil water partitioning. Three options are included for determining the partition coefficient.

The measured soil concentration as mg/kg should be compared with the Level 1 remedial target to determine the need for further action.

Level 1 Remedial Target

Level 1 Remedial Target	**2.60E+01**	**mg/kg**	**(for comparison with soil analyses)**
	or		
	0.09	**mg/l**	**(for comparison with leachate test results)**

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	24-Apr-18
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 2 - Soil

Contaminant		**TPH Aro C21-C16**	from Level 1	This sheet calculates the Level 2 remedial target for soils (mg/kg) or for pore water (mg/l).
Target concentration	**C_T**	**0.09** **mg/l**	from Level 1	

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 2 remedial target to determine the need for further action. Equations presented in 'Hydrogeological risk assessment for land contamiantion' (Environment Agency 2006)

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**	
Standard entry					
Infiltration	Inf	1.74E-03	m/d	eading University (635.4mm/yr) https://www.metoffice	
Area of contaminant source	A	2.08E+03	m^2	Site measurements	Not used in calculation
Entry for groundwater flow below site					
Length of contaminant source in direction of groundwater flow	L	5.50E+01	m	Site measurements	
Saturated aquifer thickness	da	6.58E+00	m	turated Thickness from Site Measurements of Ground	
Hydraulic Conductivity of aquifer in which dilution occurs	K	5.00E+00	m/d	ge value for K for Silty Sand based upon Freeze & Ch	
Hydraulic gradient of water table	i	2.68E-03	fraction	Assume 90% of Saturated Aquifer Thickness	
Width of contaminant source perpendicular to groundwater flow	w	4.30E+01	m	Site measurements	Not used in calculation
Background concentration of contaminant in groundwater beneath site	Cu	0.00E+00	mg/l	Assume Zero Concentration	
Define mixing zone depth by specifying or calculating depth (using pull down list)		Calculate			
Enter mixing zone thickness	Mz		m		
Calculated mixing zone thickness	Mz	6.58E+00	m		

Calculated Parameters

Dilution Factor	**DF**	**1.92E+00**		
Level 2 Remedial Target		**1.73E-01**	**mg/l**	**For comparison with measured pore water concentration. This assumes Level 1 Remedial Target is based on Target Concentra**
		or		
		4.99E+01	**mg/kg**	**For comparison with measured soil concentration. This assumes Level 1 Remedial Target calculated from soil-water**

Additional option

Calculation of impact on receptor

Concentration of contaminant in contaminated discharge (entering receptor)	Cc	0.00E+00	mg/l	
Calculated concentration within receptor (dilution only)		0.00E+00	mg/l	0

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	24-Apr-18
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 3 - Soil

See Note

Input Parameters	Variable	Value	Unit	Source
Contaminant		TPH Aro C21-C16		from Level 1
Target Concentration	C_T	0.09	mg/l	from Level 1
Dilution Factor	DF	1.92E+00		from Level 2

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

Ogata Banks — Equations in HRA publication

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

Approach for simulating degradation of pollutants: Apply degradation rate to dissolved pollutants only

	Variable	Value	Unit	Source of parameter value
Enter source concentration		Soil concentration as mg/kg		
Enter soil concentration		3.90E+03	mg/kg	
Half life for degradation of contaminant in water	$t_{1/2}$	1.39E+04	days	*Total Petroleum Hydrocarbon Criteria Working*
Calculated decay rate	λ	5.00E-05	$days^{-1}$	calculated
Width of plume in aquifer at source	Sz	4.30E+01	m	from Level 2
Plume thickness in aquifer at source	Sy	6.58E+00	m	from Level 2
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	*Estimate based on mid range value for gravelly sand from Wiedemeir et al, 1995*
Effective porosity of aquifer	n	2.70E-01	fraction	*estimate based on mid range value for Gravell*
Hydraulic gradient	i	5.59E-03	fraction	from Level 2 (adjusted)
Hydraulic conductivity of saturated aquifer	K	5.00E+00	m/d	from Level 2
Distance to compliance point	x	9.00E+01	m	*Distance to Centre of River Thames from Eastern Limit of the identified Source Area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	9.99E+99	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.000	m	*see options*
Transverse dispersivity	az	0.900	m	*see options*
Vertical dispersivity	ay	0.090	m	*see options*

Parameter values should be checked against Level 1 and 2

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.03E-01	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	5.77E-07	d^{-1}
Hydraulic gradient used in aquifer flow down-gradient	i	5.59E-03	fraction
Rate of contaminant flow due to retardation	u	1.20E-03	m/d
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	7.81E-01	fraction
Attenuation factor (C_O/C_{ED})	**AF**	**1.28E+00**	**fraction**
Calculated soil leachate concentration	Co	1.35E+01	mg/l

Enter method of defining partition co-efficient (using pull down list)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
Acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

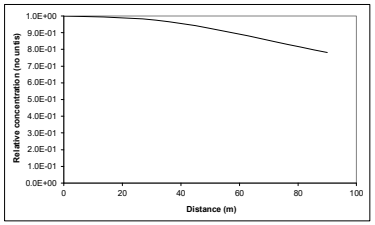
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	m

Note values of dispersivity must be > 0

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

Note
This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O_2, NO_3, SO_4 etc than an alternative solution should be used



Note: 'Relative concentration' is the ratio of calculated concentation at a given position compared to the source concentration. The calculations assume plume disperses from the top of the aquifer. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

This sheet calculates the Level 3 remedial target for soils(mg/kg) or for pore water (mg/l), based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.By setting a long travel time (e.g. 9E99) it will give the steady state solution, which should always be used when calculating remedial targets.

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.9E+99.

Calculated (relative) concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Relative concentration (No units)	Concentration mg/l
0	1.0E+00	7.04E+00
4.5	9.98E-01	7.02E+00
9.0	9.96E-01	7.01E+00
13.5	9.93E-01	6.99E+00
18.0	9.91E-01	6.97E+00
22.5	9.87E-01	6.95E+00
27.0	9.82E-01	6.91E+00
31.5	9.75E-01	6.86E+00
36.0	9.66E-01	6.80E+00
40.5	9.55E-01	6.72E+00
45.0	9.42E-01	6.63E+00
49.5	9.28E-01	6.53E+00
54.0	9.13E-01	6.42E+00
58.5	8.97E-01	6.31E+00
63.0	8.81E-01	6.20E+00
67.5	8.64E-01	6.08E+00
72.0	8.48E-01	5.96E+00
76.5	8.31E-01	5.85E+00
81.0	8.14E-01	5.73E+00
85.5	7.98E-01	5.61E+00
90.0	7.81E-01	5.50E+00

Remedial Targets

Level 3 Remedial Target		**2.21E-01**	**mg/l**	For comparison with measured pore water concentration.
Ogata Banks		**or**		This assumes Level 1 Remedial Target is based on Target Concentration.
		6.38E+01	**mg/kg**	For comparison with measured soil concentration. This
Distance to compliance point		**90**	**m**	assumes Level 1 Remedial Target calculated from soil-water partitioning equation.
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	**7.81E-01**	**fraction**	Ogata Banks

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

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	########
Version:	1

Remedial Targets Worksheet , Release 3.2

Calculation of contaminant concentration in groundwater from a soil source

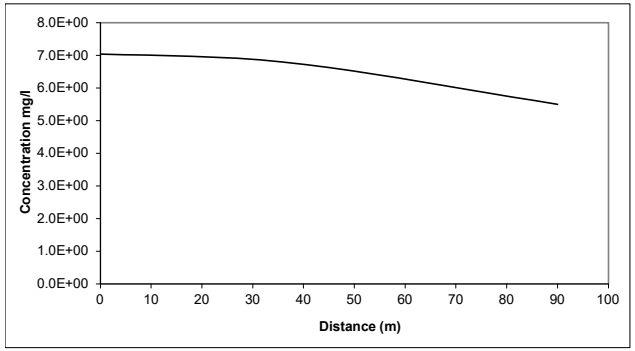
Only input required is Soil Contaminant Concentration

	Input Parameters			
	Soil contaminant concentration	C_0	3.90E+03	mg/kg
Level 1 Parameters				
	Water filled soil porosity	θ_w	1.00E-01	fraction
	Air filled soil porosity	θa	2.00E-01	fraction
	Bulk density	ρ	1.70E+00	g/cm^3
	Henry's Law constant	H	1.34E-02	dimensionless
	Soil water partition coefficient used in Level Assessment	Kd	2.88E+02	l/kg
	Factor (partitioning between soil and water)		2.89E+02	dimensionless
Level 2 Parameters	**Dilution Factor**	DF	1.92E+00	
Level 3 Parameters	**Attenuation factor (C_O/C_{ED})**	AF	1.28E+00	

Predicted concentrations at compliance point

Level 1	C	1.35E+01	mg/l	No dilution or attenuation
Level 2	C	7.04E+00	mg/l	Dilution taken into account
Level 3	C	5.50E+00	mg/l	Dilution and attenuation taken into account

Predicted concentrations between source and compliance point - Level 3



Distance m	Concentration mg/l
0.00	7.04E+00
4.50	7.02E+00
9.00	7.01E+00
13.50	6.99E+00
18.00	6.97E+00
22.50	6.95E+00
27.00	6.91E+00
31.50	6.86E+00
36.00	6.80E+00
40.50	6.72E+00
45.00	6.63E+00
49.50	6.53E+00
54.00	6.42E+00
58.50	6.31E+00
63.00	6.20E+00
67.50	6.08E+00
72.00	5.96E+00
76.50	5.85E+00
81.00	5.73E+00
85.50	5.61E+00
90.00	5.50E+00

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		TPH Aro C21-C16		from Level 1
Target Concentration	C_T	9.00E-02	mg/l	from Level 1

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

Ogata Banks — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

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

Approach for simulating degradation of pollutants: Apply degradation rate to dissolved pollutants only

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	2.70E+00	mg/l	*Maximum Recorded Groundwater Concentration*
Half life for degradation of contaminant in water	$t_{1/2}$	1.39E+04	days	*Howard, P. H., Boethling, R. S., Jarvis, W*
Calculated decay rate	λ	5.00E-05	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	4.30E+01	m	*Site measurements*
Plume thickness at source	Sy	6.45E+00	m	*From Level 3 Soil*
Saturated aquifer thickness	da	6.58E+00	m	*Average Saturated Thickness from Site M*
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	*Estimate based on mid range value for gravelly sanc*
Effective porosity of aquifer	n	2.70E-01	fraction	*estimate based on mid range value for Gravelly Sand from Wiedemeir et al 1995*
Hydraulic gradient	i	2.68E-03	fraction	*Site measurement of 0.12m drop over 44.82m horizontal distance*
Hydraulic conductivity of aquifer	K	5.00E+00	m/d	*Upper-range value for K for Silty Sand ba*
Distance to compliance point	x	9.00E+01	m	*Distance to Centre of River Thames from*
Distance (lateral) to compliance point perpendicular to flow direction	z	0.00E+00	m	
Distance (depth) to compliance point perpendicular to flow direction	y	0.00E+00	m	
Time since pollutant entered groundwater	t	9.99E+99	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	4.60E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.00E+00	m	*see options*
Transverse dispersivity	az	9.00E-01	m	*see options*
Vertical dispersivity	ay	9.00E-02	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.96E-02	m/d
Retardation factor	Rf	2.72E+02	fraction
Decay rate used	λ	1.84E-07	d^{-1}
Rate of contaminant flow due to retardation	u	1.83E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	2.00E+00	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.35E+00**	

Remedial Targets

Remedial Target	**1.22E-01**	**mg/l**	For comparison with measured groundwater concentration.
Ogata Banks			
Distance to compliance point	**90**	**m**	
Concentration of contaminant at compliance point	C_{ED}/C_0 **2.00E+00**	**mg/l**	Ogata Banks
after	**1.0E+100**	**days**	

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

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

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	1.58E+04	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc.n}$		l/kg
Sorption coefficient for ionised species	$K_{oc.i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	4.60E+01	l/kg

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

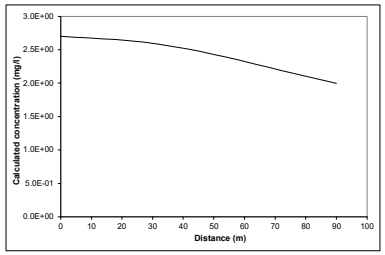
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	

Note values of dispersivity must be > 0

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

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



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

Note

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

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

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

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

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

Site being assessed:	Vastern Road, Reading
Completed by:	Dr. Adrian King
Date:	#######
Version:	1

Calculated concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Concentration
	mg/l
0	2.7E+00
4.5	2.69E+00
9.0	2.68E+00
13.5	2.66E+00
18.0	2.65E+00
22.5	2.63E+00
27.0	2.61E+00
31.5	2.59E+00
36.0	2.56E+00
40.5	2.52E+00
45.0	2.48E+00
49.5	2.43E+00
54.0	2.39E+00
58.5	2.34E+00
63.0	2.29E+00
67.5	2.24E+00
72.0	2.19E+00
76.5	2.14E+00
81.0	2.09E+00
85.5	2.05E+00
90.0	2.00E+00

Hydrogeological risk assessment for land contamination

Remedial Targets Worksheet , Release 3.2

First released: 2006. Version 3.2: January 2013

This worksheet has been produced in combination with the document 'Remedial Targets Methodology: Hydrogeological risk assessment for land contamination (Environment Agency 2006).

Users of this worksheet should always refer to the User Manual to the Remedial Targets Methodology and to relevant guidance on UK legislation and policy, in order to understand how this procedure should be applied in an appropriate context.

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The calculation of equations in this worksheet has been independently checked by Entec (UK) Ltd on behalf of the Environment Agency.

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IMPORTANT: To enable MS Excel worksheet, click Tools, Add -Ins, Analysis Tool Pak and Analysis Tool Pak-VBA (to calculate error functions).

Details to be completed for each assessment

Site Name:	**Vastern Road, Reading**			
Site Address:	**55 Vastern Road, Reading, Berkshire, RG1 8BU**			
Completed by:	**Olivia Maxwell**			
Date:	**15-Nov-22**		**Version:**	**1**
Contaminant	**TPH Banded C21-35**			
Target Concentration (C_T)	**0.09**	**mg/l**	**Origin of C_T:**	**WHO Petroleum Products in Drinking Water**

This worksheet can be used to determine remedial targets for soils (Worksheets Level 1 Soil, Level 2 and Level 3 Soil) or to determine remedial targets for groundwater (Level 3 Groundwater). For Level 3, parameter values must be entered separately dependent on whether the assessment is for soil or groundwater. For soil, remedial targets are calculated as either mg/kg (for comparision with soil measurements) or mg/l (for comparison with leaching tests or pore water concentrations).
Site details entered on this page are automatically copied to Level 1, 2 and 3 Worksheets.
Worksheet options are identified by brown background and employ a pull-down menus. Data entry are identified as blue background.
Data origin / justification should be noted in cells coloured yellow and fully documented in subsequent reports.
Data carried forward from an earlier worksheet are identified by a light green background
It is recommended that a copy of the original worksheet is saved (all data fields in the original copy are blank).

The spreadsheet also includes a porosity calculation worksheet, a soil impact calculation worksheet and a worksheet that performs some simple hydrogeological calculations.

Remedial Targets Worksheet , Release 3.2

Level 1 - Soil

Select the method of calculating the soil water Partition Co-efficient by using the pull down menu below

Calculate for non-polar organic chemicals

Contaminant		**TPH Banded C21-35**	
Target concentration	C_T	**0.09**	**mg/l**

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**
Standard entry				
Water filled soil porosity	θ_W	1.00E-01	fraction	estimate based on Domenico & Schwarz, 1990
Air filled soil porosity	θa	2.00E-01	fraction	estimate based on Domenico & Schwarz, 1990
Bulk density of soil zone material	ρ	1.70E+00	g/cm^3	Estimate based on mean value for Glacial Sediments
Henry's Law constant	H	5.58E-02	dimensionless	*Howard, P, H., Boethling, R, S., Jarvis, W, F., Meylai*
Entry if specify partition coefficient (option)				
Soil water partition coefficient	Kd		l/kg	
Entry for non-polar organic chemicals (option)				
Fraction of organic carbon (in soil)	foc	1.82E-02	fraction	Average FOC Value for MG from site Measurements
Organic carbon partition coefficient	Koc	1.31E+05	l/kg	*Total Petroleum Hydrocarbon Criteria Working Group*
Entry for ionic organic chemicals (option)				
Sorption coefficient for neutral species	$K_{oc,n}$		l/kg	
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg	
pH value	pH		pH units	
Acid dissociation constant	pKa			
Fraction of organic carbon (in soil)	foc		fraction	
Soil water partition coefficient used in Level Assessment	**Kd**	**2.38E+03**	**l/kg**	*Calculated value*

Series, Volume 3: Selection of Representative TPH Fractions based on Fate and Transport Conside

This sheet calculates the Level 1 remedial target for soils(mg/kg) based on a selected target concentration and theoretical calculation of soil water partitioning. Three options are included for determining the partition coefficient.

The measured soil concentration as mg/kg should be compared with the Level 1 remedial target to determine the need for further action.

Level 1 Remedial Target

Level 1 Remedial Target	**2.15E+02**	**mg/kg**	**(for comparison with soil analyses)**
	or		
	0.09	**mg/l**	**(for comparison with leachate test results)**

Site being assessed:	Vastern Road, Reading
Completed by:	Olivia Maxwell
Date:	15-Nov-22
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 2 - Soil

Contaminant		**TPH Banded C21-35**	from Level 1	This sheet calculates the Level 2 remedial target for soils (mg/kg) or for pore water (mg/l).
Target concentration	**C_T**	**0.09** **mg/l**	from Level 1	

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 2 remedial target to determine the need for further action. Equations presented in 'Hydrogeological risk assessment for land contamiantion' (Environment Agency 2006)

Input Parameters	**Variable**	**Value**	**Unit**	**Source of parameter value**	
Standard entry					
Infiltration	Inf	1.74E-03	m/d	eading University (635.4mm/yr) https://www.metoffice	
Area of contaminant source	A	2.08E+03	m^2	Site measurements	Not used in calculation
Entry for groundwater flow below site					
Length of contaminant source in direction of groundwater flow	L	4.00E+01	m	ured from QGIS - Estimated impact area from WS01 to	
Saturated aquifer thickness	da	6.58E+00	m	turated Thickness from Site Measurements of Ground	
Hydraulic Conductivity of aquifer in which dilution occurs	K	5.00E+00	m/d	ge value for K for Silty Sand based upon Freeze & Ch	
Hydraulic gradient of water table	i	5.92E+00	fraction	Assume 90% of Saturated Aquifer Thickness	
Width of contaminant source perpendicular to groundwater flow	w	1.50E+01	m	Estimated from QGIS	Not used in calculation
Background concentration of contaminant in groundwater beneath site	Cu	0.00E+00	mg/l	Assume Zero Concentration	
Define mixing zone depth by specifying or calculating depth (using pull down list)		Calculate			
Enter mixing zone thickness	Mz		m		
Calculated mixing zone thickness	Mz	4.24E+00	m		

Calculated Parameters

Dilution Factor	**DF**	**1.80E+03**		
Level 2 Remedial Target		**1.62E+02**	**mg/l**	**For comparison with measured pore water concentration. This assumes Level 1 Remedial Target is based on Target Concentra**
		or		
		3.87E+05	**mg/kg**	**For comparison with measured soil concentration. This assumes Level 1 Remedial Target calculated from soil-water**

Additional option

Calculation of impact on receptor

Concentration of contaminant in contaminated discharge (entering receptor)	Cc	0.00E+00	mg/l	
Calculated concentration within receptor (dilution only)		0.00E+00	mg/l	0

Site being assessed:	Vastern Road, Reading
Completed by:	Olivia Maxwell
Date:	15-Nov-22
Version:	1

Remedial Targets Worksheet , Release 3.2

Level 3 - Soil

See Note

Input Parameters	Variable	Value	Unit	Source
Contaminant		TPH Banded C21-35		from Level 1
Target Concentration	C_T	0.09	mg/l	from Level 1
Dilution Factor	DF	1.80E+03		from Level 2

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

Ogata Banks — Equations in HRA publication

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

Approach for simulating degradation of pollutants: **Apply degradation rate to dissolved pollutants only**

	Variable	Value	Unit	Source of parameter value
Enter source concentration		Soil concentration as mg/kg		
Enter soil concentration		3.60E+03	mg/kg	
Half life for degradation of contaminant in water	$t_{1/2}$	6.94E+03	days	*Total Petroleum Hydrocarbon Criteria Working*
Calculated decay rate	λ	9.99E-05	$days^{-1}$	calculated
Width of plume in aquifer at source	Sz	1.50E+01	m	from Level 2
Plume thickness in aquifer at source	Sy	4.24E+00	m	from Level 2
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	*Estimate based on mid range value for gravelly sand from Wiedemeir et al, 1995*
Effective porosity of aquifer	n	2.70E-01	fraction	*estimate based on mid range value for Gravell*
Hydraulic gradient	i	5.93E+00	fraction	from Level 2 (adjusted)
Hydraulic conductivity of saturated aquifer	K	5.00E+00	m/d	from Level 2
Distance to compliance point	x	9.00E+01	m	*Distance to Centre of River Thames from Eastern Limit of the identified Source Area*
Distance (lateral) to compliance point perpendicular to flow direction	z		m	
Distance (depth) to compliance point perpendicular to flow direction	y		m	
Time since pollutant entered groundwater	t	1.00E+99	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.000	m	*see options*
Transverse dispersivity	az	0.900	m	*see options*
Vertical dispersivity	ay	0.090	m	*see options*

Parameter values should be checked against Level 1 and 2

Calculated Parameters	Variable		
Groundwater flow velocity	v	1.10E+02	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	1.15E-06	d^{-1}
Hydraulic gradient used in aquifer flow down-gradient	i	5.93E+00	fraction
Rate of contaminant flow due to retardation	u	1.27E+00	m/d
Ratio of Compliance Point to Source Concentration	C_{ED}/C_0	3.14E-01	fraction
Attenuation factor (C_0/C_{ED})	**AF**	**3.18E+00**	**fraction**
Calculated soil leachate concentration	Co	1.51E+00	mg/l

Enter method of defining partition co-efficient (using pull down list)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient — Kd — l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
Acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

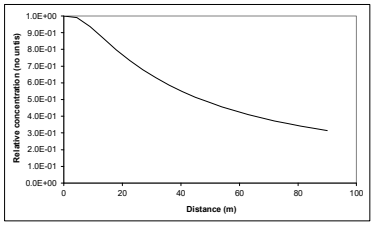
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	m

Note values of dispersivity must be > 0

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

Note
This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best desribed by an electron limited degradation such as oxidation by O_2, NO_3, SO_4 etc than an alternative solution should be used



Note: 'Relative concentration' is the ratio of calculated concentation at a given position compared to the source concentration. The calculations assume plume disperses from the top of the aquifer. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

This sheet calculates the Level 3 remedial target for soils(mg/kg) or for pore water (mg/l), based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.By setting a long travel time (e.g. 9E99) it will give the steady state solution, which should always be used when calculating remedial targets.

The measured soil concentration as mg/kg or pore water concentration should be compared with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.9E+99.

Calculated (relative) concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Relative concentration (No units)	Concentration mg/l
0	1.0E+00	8.37E-04
4.5	9.92E-01	8.30E-04
9.0	9.37E-01	7.85E-04
13.5	8.66E-01	7.25E-04
18.0	7.97E-01	6.68E-04
22.5	7.34E-01	6.15E-04
27.0	6.79E-01	5.68E-04
31.5	6.29E-01	5.27E-04
36.0	5.86E-01	4.91E-04
40.5	5.48E-01	4.59E-04
45.0	5.14E-01	4.30E-04
49.5	4.84E-01	4.05E-04
54.0	4.57E-01	3.83E-04
58.5	4.32E-01	3.62E-04
63.0	4.11E-01	3.44E-04
67.5	3.91E-01	3.27E-04
72.0	3.73E-01	3.12E-04
76.5	3.56E-01	2.98E-04
81.0	3.41E-01	2.86E-04
85.5	3.27E-01	2.74E-04
90.0	3.14E-01	2.63E-04

Remedial Targets

Level 3 Remedial Target	**5.16E+02**	**mg/l**	For comparison with measured pore water concentration.
Ogata Banks	**or**		This assumes Level 1 Remedial Target is based on Target Concentration.
	1.23E+06	**mg/kg**	For comparison with measured soil concentration. This
Distance to compliance point	**90**	**m**	assumes Level 1 Remedial Target calculated from soil-water partitioning equation.
Ratio of Compliance Point to Source Concentration	**3.14E-01**	**fraction**	Ogata Banks

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

Site being assessed:	Vastern Road, Reading
Completed by:	Olivia Maxwell
Date:	########
Version:	1

Remedial Targets Worksheet , Release 3.2

Calculation of contaminant concentration in groundwater from a soil source

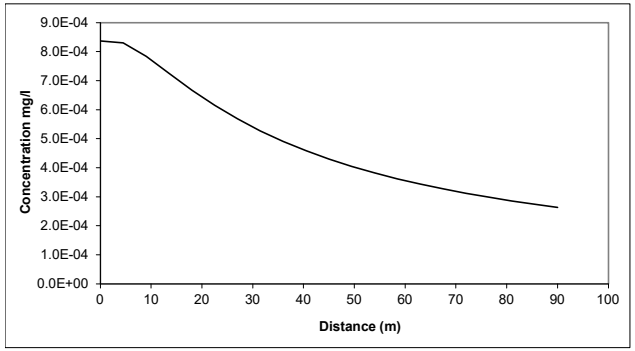
Only input required is Soil Contaminant Concentration

	Input Parameters			
	Soil contaminant concentration	C_0	3.60E+03	mg/kg
Level 1 Parameters				
	Water filled soil porosity	θ_w	1.00E-01	fraction
	Air filled soil porosity	θa	2.00E-01	fraction
	Bulk density	ρ	1.70E+00	g/cm^3
	Henry's Law constant	H	5.58E-02	dimensionless
	Soil water partition coefficient used in Level Assessment	Kd	2.38E+03	l/kg
	Factor (partitioning between soil and water)		2.38E+03	dimensionless
Level 2 Parameters	**Dilution Factor**	DF	1.80E+03	
Level 3 Parameters	**Attenuation factor (C_O/C_{ED})**	AF	3.18E+00	

Predicted concentrations at compliance point

Level 1	C	1.51E+00	mg/l	No dilution or attenuation
Level 2	C	8.37E-04	mg/l	Dilution taken into account
Level 3	C	2.63E-04	mg/l	Dilution and attenuation taken into account

Predicted concentrations between source and compliance point - Level 3



Distance m	Concentration mg/l
0.00	8.37E-04
4.50	8.30E-04
9.00	7.85E-04
13.50	7.25E-04
18.00	6.68E-04
22.50	6.15E-04
27.00	5.68E-04
31.50	5.27E-04
36.00	4.91E-04
40.50	4.59E-04
45.00	4.30E-04
49.50	4.05E-04
54.00	3.83E-04
58.50	3.62E-04
63.00	3.44E-04
67.50	3.27E-04
72.00	3.12E-04
76.50	2.98E-04
81.00	2.86E-04
85.50	2.74E-04
90.00	2.63E-04

R&D Publication 20 Remedial Targets Worksheet, Release 3.2

Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

	Variable	Value	Unit	Source
Contaminant		TPH Banded C21-35		from Level 1
Target Concentration	C_T	9.00E-02	mg/l	from Level 1

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

Ogata Banks — Equations in HRA publication

Approach for simulating vertical dispersion: Simulate vertical dispersion in 1 direction

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

Approach for simulating degradation of pollutants: Apply degradation rate to dissolved pollutants only

				Source of parameter value
Initial contaminant concentration in groundwater at plume core	C_0	7.30E-01	mg/l	*Maximum Recorded Groundwater Concentration*
Half life for degradation of contaminant in water	$t_{1/2}$	6.94E+03	days	*Howard, P. H., Boethling, R. S., Jarvis, W*
Calculated decay rate	λ	1.00E-04	$days^{-1}$	
Width of plume in aquifer at source (perpendicular to flow)	Sz	4.30E+01	m	*Site measurements*
Plume thickness at source	Sy	4.24E+00	m	*From Level 3 Soil*
Saturated aquifer thickness	da	6.58E+00	m	*Average Saturated Thickness from Site M*
Bulk density of aquifer materials	ρ	1.59E+00	g/cm^3	*Estimate based on mid range value for gravelly sanc*
Effective porosity of aquifer	n	2.70E-01	fraction	*estimate based on mid range value for Gravelly Sand from Wiedemeir et al 1995*
Hydraulic gradient	i	2.68E-03	fraction	*Site measurement of 0.12m drop over 44.82m horizontal distance*
Hydraulic conductivity of aquifer	K	5.00E+00	m/d	*Upper-range value for K for Silty Sand ba*
Distance to compliance point	x	9.00E+01	m	*Distance to Centre of River Thames from*
Distance (lateral) to compliance point perpendicular to flow direction	z	0.00E+00	m	
Distance (depth) to compliance point perpendicular to flow direction	y	0.00E+00	m	
Time since pollutant entered groundwater	t	1.00E+100	days	*time variant options only*
Parameters values determined from options				
Partition coefficient	Kd	1.45E+01	l/kg	*see options*
Longitudinal dispersivity	ax	9.00E+00	m	*see options*
Transverse dispersivity	az	9.00E-01	m	*see options*
Vertical dispersivity	ay	9.00E-02	m	*see options*

Calculated Parameters

	Variable		
Groundwater flow velocity	v	4.96E-02	m/d
Retardation factor	Rf	8.66E+01	fraction
Decay rate used	λ	1.15E-06	d^{-1}
Rate of contaminant flow due to retardation	u	5.73E-04	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C_{ED}	3.93E-01	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	**AF**	**1.86E+00**	

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

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	2.90E-03	fraction
Organic carbon partition coefficient	Koc	5.01E+03	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	$K_{oc,n}$		l/kg
Sorption coefficient for ionised species	$K_{oc,i}$		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.45E+01	l/kg

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

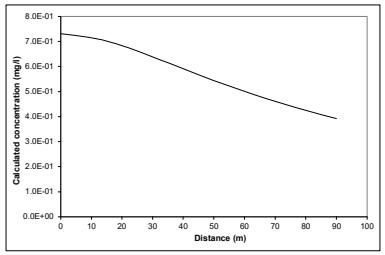
Dispersivities 10%, 1%, 0.1% of pathway length

		Enter value	Calc value Xu & Eckstein		
Longitudinal dispersivity	**ax**	0.00E+00	9.00E+00	4.18E+00	m
Transverse dispersivity	**az**	0.00E+00	9.00E-01	4.18E-01	m
Vertical dispersivity	**ay**	0.00E+00	9.00E-02	4.18E-02	

Note values of dispersivity must be > 0

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

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



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

Note

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

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

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action.

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

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

Calculated concentrations for distance-concentration graph

Ogata Banks
From calculation sheet

Distance	Concentration
	mg/l
0	7.3E-01
4.5	7.24E-01
9.0	7.16E-01
13.5	7.06E-01
18.0	6.91E-01
22.5	6.73E-01
27.0	6.53E-01
31.5	6.32E-01
36.0	6.10E-01
40.5	5.88E-01
45.0	5.67E-01
49.5	5.46E-01
54.0	5.26E-01
58.5	5.06E-01
63.0	4.88E-01
67.5	4.70E-01
72.0	4.53E-01
76.5	4.37E-01
81.0	4.21E-01
85.5	4.07E-01
90.0	3.93E-01

Site being assessed:	Vastern Road, Reading
Completed by:	Olivia Maxwell
Date:	########
Version:	1

Remedial Targets

Remedial Target	**1.67E-01**	**mg/l**	For comparison with measured groundwater concentration.
Ogata Banks			
Distance to compliance point	**90**	**m**	
Concentration of contaminant at compliance point	C_{ED}/C_0 **3.93E-01**	**mg/l**	Ogata Banks
after	**1.0E+100**	**days**	

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

APPENDIX IX – OMNIA REMEDIATION METHOD STATEMENT (2023)

Remediation Method Statement

55 Vastern Road, Reading, Berkshire, RG1 8BU

Prepared for:
Berkeley Homes (Oxford & Chiltern) Ltd
Mill Lane
Taplow
Maidenhead
SL6 0AG

April 2023

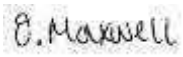
Omnia ref: A10967/2.4

ISO Accredited Certification (UKAS)

QUALITY ASSURANCE

Project Number: A10967

December 2022

Geo-Environmental	**Remediation Method Statement – April 2018**					
	Prepared by:	A. King	**Date:**	April 2018	**Signature:**	
	Checked by:	T. Mitchell	**Date:**	April 2018	**Signature:**	
	Authorised by:	L. McDonald	**Date:**	April 2018	**Signature:**	
	Remediation Method Statement – December 2022					
	Prepared by:	O. Maxwell	**Date:**	27/11/22	**Signature:**	
	Checked and Authorised by:	A. King	**Date:**	30/11/22	**Signature:**	
January 2023 updates		RMS issued as Final following comments from the client				
April 2023 updates		Revision to validation sampling frequency and revision to groundwater remedial measures wording				

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1.0 INTRODUCTION

1.1 Background

Omnia were instructed to undertake a Remediation Method Statement (RMS) further to a series of investigations at the site comprising 55 Vastern Road, Reading, Berkshire, RG1 8BU (Figure 1.0). This document was originally prepared as part of Due Diligence works ahead of purchase and redevelopment of the site. Since initial issue of this document (April 2018), further supplementary investigation work has been undertaken, and therefore updates to this document were required.

The Environmental Assessment and DQRA prepared by Omnia Environmental Consulting is presented within the report entitled 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU', reference A10967/1.0 Draft, dated April 2018.

The previous report identified the presence of concentrations within near surface soils, and groundwater that had the potential to present a significant risk to identified receptors. The sources of impact have been attributed to the past site use, but also significantly to a cooling oil leak in July 2017.

A supplementary Phase II has been prepared by Omnia and is presented within the report entitled 'Supplementary Phase II Geo-Environmental Site Assessment, 55 Vastern Road' reference A10967/3.2, dated April 2023. This investigation targeted areas of the site not previously investigated, in addition to providing further assessment to previously identified hotspot areas.

Since initial issue of this document (Ref: A10967/2.1 dated April 2018) the site boundary has changed such that the SSE compound, previously located within the centre and east of the site, now falls outside of the client's ownership boundary, and therefore the client is no longer responsible for any remediation required within this area.

1.2 Proposed Development

It is understood that the proposed development consists of the *'Demolition of existing structures and erection of a series of buildings ranging in height from 1 to 11 storeys, including residential dwellings (C3 use class) and retail floorspace (A3 use class), together with a new north-south pedestrian link, connecting Christchurch Bridge to Vastern Road'*

The outline proposed site layout is presented as Figure 2.0 (Appendix III).

This RMS is based on the outline proposed development layout presented in Figure 2.0. Should the development layout change then this document should be revised, and the risk mitigation measures reviewed as necessary.

1.3 Report Objectives

The purpose of this RMS is to identify and evaluate feasible remedial technologies and to set out the validation criteria for successful implementation of a site remediation programme in order to ensure the safe, cost effective and regulatory compliant re-development of the site.

This document has been updated following the findings of the Supplementary ground investigation (A10967/3.2).

1.4 Scope of Works

With regards to the proposed development of the site, the main aims of the remedial works are as follows:

- To provide a remediated site that is suitable for its proposed end use i.e. residential development;
- To provide a landform/ground surface which can accommodate the design;
- To ensure that construction/groundworkers are not put at an unacceptable short-term risk during the remediation and/or redevelopment of the site; and,
- To satisfy the requirements of the regulatory authorities (Reading Borough Council and the Environment Agency).

1.5 Previous Works

The following ground investigation works have been undertaken for the subject site:

- Omnia Report A10967/3.2 – 'Phase II Supplementary Geo-Environmental Site Assessment, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2023.
- Omnia Ground Gas Monitoring Assessment ref: A11220/221115/L1 dated 15th November 2022.
- OEC Report A10967/1.0 Draft – 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2018.
- Peter Brett Associates (PBA) Technical Note Tn002/Rev0 – Preliminary Summary of Ground Investigation – SSE Site, Vastern Road, Reading dated 20th March 2018.
- CC Ground Investigations (CCGI) Report C5925/01 – Draft Factual Report – SSE Site, Vastern Road, Reading dated 12th March 2018.
- Email communication between SSE and their consultant Adler & Allan regarding the findings of the preliminary investigation to identify the location of the leakage – Dated October 2017.

The above reports have been utilised by OEC in the preparation of this document and should be read in conjunction with this report.

1.6 Summary of Parties Involved

Table 1.1: Involved Parties

Name of Party	Function / Interest
Berkeley Homes (Oxford & Chiltern) Ltd	Client
Omnia	Geo-Environmental Consultant
Reading Borough Council (RBC)	Human Health Regulator / Local Planning Authority
The Environment Agency	Controlled Waters Regulator

1.7 Limitations of the Study

The limitations of this report are presented in Appendix I.

2.0 SITE SETTINGS

2.1 Site Details

Site Address	55 Vastern Road, Reading, Berkshire, RG1 8BU
National Grid Reference	471538,174119

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented as Figure 1.0 in Appendix III.

2.2 Site Description

The area of investigation is located within Reading town centre, approximately 1km north of Reading train station on a roughly rectangular shaped parcel of land approximately 0.76 hectares in size. The site is located north of Vastern Road with the long axis aligned northeast to southwest. The site was accessed via a security gate located on Lynmouth Road.

At the time of the site investigation, the site was vacant and comprised a single two-storey building occupying the southern area. Electricity power distribution infrastructure was located within the central section of the site and along the eastern boundary, however this area was demarcated with Heras fencing and falls outside of the red line boundary for the site. Within the central, western and northern section of the site the area was utilised for parking associated with the vacant SSE building.

The site was observed to be generally flat, with a previous topographic survey indicating an elevation of approximately 38.50m AOD.

Reference should be made to the detailed site description provided within Omnia Report A10967/3.2 dated April 2023.

2.3 Geology & Ground Conditions

Ground conditions encountered during the preceding ground investigations are summarised below:

Review of all available exploratory hole logs for the site indicates that the geological succession beneath the site consists of Made Ground up to 3.50m thick overlying cohesive strata of the Langley Silt Member, overlying granular strata of the Kempton Park Gravel Formation which immediately overlies bedrock of the Upper Chalk at depth.

Made Ground (MG) was found to be predominantly granular in nature and generally ranged from 1.10m to 1.90m in thickness with thicker Made Ground ranging from 1.95 – 3.50m encountered in the central part of the site around the main transformer compound.

Immediately underlying MG were a sequence of cohesive deposits comprising clayey and sandy SILT attributed to the Langley Silt Member (LSM). The top of the LSM was encountered at depths ranging from 0.60 – 3.50m bgl (37.57 – 35.26mAOD). The unit ranged from 0.60 – 3.40m in thickness with an average thickness of 1.68m. The base of the LSM was encountered at depths ranging from 2.30 – 4.10m bgl (36.08 – 34.11m AOD).

Immediately underlying the LSM were sands and gravels attributed to the Kempton Park Gravel Formation (KPG), which ranged from loose to dense grey variably silty and sandy GRAVEL. The KPG ranged from 5.00 – 9.20m in thickness with an average thickness of 6.58m. The base of the KPG was encountered at depths ranging from 8.10 to 12.50m bgl (30.21 – 26.21mAOD).

Chalk bedrock was encountered immediately beneath the KPG at depths ranging from 8.10 – 12.50m bgl (30.21 - 26.21mAOD) and was proven to a maximum depth of 35.00m bgl at locations BH1002C (3.40m AOD), BH1003E (3.71m AOD) and BH1004 (3.31mAOD) although the base of the Upper Chalk was not proven within any of the intrusive locations. A review of the geological logs indicated that the Chalk was recovered as a variably sandy and silty angular to subangular GRAVEL (Grade Dc) suggesting an absence of "Putty Chalk" (Grade Dm) from beneath the site.

2.4 Summary of Contaminant Distribution

2.4.1 Tier I Risk Assessment Results

Previous phases of site investigation have concluded that elevated concentrations are present within the near surface which have the potential to pose a significant risk to human health and/or controlled waters.
Only those exceedances considered to pose a significant risk to human health and/or controlled waters have been included below.

Table 2.1 Tier 1 Exceedance Summary

Receptor	Source	Tier 1 Exceedances	
		Determinant	Location(s)
Residential Area			
Human Health	Near Surface Made Ground	Arsenic	TP1003 WS1002 WS1003
		Beryllium	Ai-WS01 Ai-WS04 Aii-WS01 Aii-WS02 Aii-WS03 Aii-WS04 C-WS01A C-WS02A
		Lead	BH1001 BH1003C BH1004 TP1001 TP1005 WS103 WS1002 WS1003 WS1004 Ai-WS01 Ai-WS02 Ai-WS03 Ai-WS04 Aii-WS01

Receptor	Source	Tier 1 Exceedances	
		Determinant	Location(s)
			Aii-WS03
		Nickel	WS1003
		Asbestos	BH1001 BH1002A BH1002C BH1003C BH1003 BH1004 TP1001 TP1002 TP1003 TP1005 TP1007 WS101 WS105 WS1001 WS1002 WS1003 WS1004 WS1006 WS1009 Aii-WS03 C-WS01A C-WS02A
		Naphthalene	TP1007 WS1008 Aii-WS02
		Benzo(a)Anthracene	WS1002 TP1007 Aii-WS02
		Chrysene	WS1003 Aii-WS02
		Benzo(b)Fluoranthene	BH1002C BH1001 TP1003 TP1005 WS1013 TP1007 WS1002 WS103 Aii-WS02 Aii-WS03 Aii-WS05
		Benzo(a)Pyrene	BH1001 BH1002C B1004 WS103 WS1002 WS1013 TP1001 TP1003 TP1005 TP1007 TP1007 Aii-WS02 Aii-WS03

Receptor	Source	Tier 1 Exceedances	
		Determinant	**Location(s)**
			Aii-WS05
		Dibenzo(a,h)Anthracene	BH1004 BH1002C WS1002 WS1007 WS103 WS1002 WS103 TP1003 TP1005 TP1005 TP1007 Aii-WS01 Aii-WS02 Aii-WS03 Aii-WS05
		TPH Aliphatic (C_{12}-C_{16})	WS104
		TPH Aromatic (C_{12}-C_{16})	WS1002
		TPH Aromatic (C_{16}-C_{21})	WS1002
		TPH Aromatic (C_{21}-C_{35})	WS1002
		Banded TPH (C_{16}-C_{21})	Aii-WS02
		Banded TPH (C_{21}-C_{35})	Aii-WS01 Aii-WS02
Site Wide			
Controlled Waters	Soils containing elevated concentrations of TPH	TPH Aromatic C_{12} – C_{16}	WS1002
		TPH Aromatic C_{16} – C_{21}	WS1002
		TPH Aromatic C_{16} – C_{21}	WS1002

2.4.2 Exposure Pathways

Based on the proposed end use, elevated concentrations of Metals, PAHs and TPH C_{16}-C_{21}have the potential to pose a significant risk to human health through the ingestion of soil and indoor dust, Asbestos poses a risk to human health through the inhalation of fibres. These exposure pathways are considered to have the potential to present a significant risk to human health within areas of proposed soft landscaping for future site users, and for construction workers during development works.

In addition to the risks posed by PAHs and TPH set out above, Naphthalene and TPH C_{12} – C_{16} (Aliphatic) also have the potential to present a significant risk to future site users through a vapour risk within building footprints.

Elevated concentrations of TPH are also considered to present a risk to Controlled Waters through vertical and lateral migration.

2.5 Identified Development Constraints

Based on a review of Table 2.1 the following development constraints have been identified:

Soil

- Elevated concentrations within near surface soils across the proposed residential portion of the site.

Controlled Waters:

- Elevated TPH concentrations within near surface soils in the vicinity of WS1002 considered to be associated with the location of historical tanks;

Based upon the information obtained, Table 2.2 demonstrates that each of the potential pollutant linkages based upon the contaminant-pathway-receptor model will need to be addressed by the proposed remedial works across the site.

Table 2.2 Pollutant Linkage Assessment

Source	Receptor	Potential Risk	Current Residual Risk	Mitigation
Elevated concentrations of Metals, PAH and TPH C12-C40 within near surface soils and Made Ground.	Human Health within proposed residential area	*Ingestion of Soils and Dust*	NO	**Construction Phase** During excavation, construction workers are likely to be within direct contact with elevated concentrations of metals, PAH and TPH C_{16}-C_{40} within impacted soils across the site. However, it is considered that the risks to construction workers will be mitigated through the management of their exposure through the use of suitable PPE and hygienic working practices as required under HSE/CDM regulations.
			YES	**Post-Development** Elevated concentrations of metals, PAH and TPH C_{16}-C_{40} are considered to have the potential to pose a significant risk to human health within proposed areas of soft landscaping where an exposure pathway is considered likely to remain post-development. It is therefore recommended that remedial works will be required within all areas of proposed soft landscaping to sever the exposure pathway and render the pollution linkage inactive.

Source	Receptor	Potential Risk	Current Residual Risk	Mitigation
Elevated concentrations of Asbestos within near surface soils and Made Ground		*Inhalation of Fibres*	YES	**Construction Phase** Asbestos fibre concentrations within near surface soils across the site are considered to have the potential to present a significant risk to construction workers during the development phase. It is also considered that there is a risk of asbestos fibres from near surface soils becoming airborne due to ground disturbance during construction and groundworks activities which have the potential to impact off-site receptors. Therefore, the presence of asbestos across the site should be highlighted to the Principal Contractor who should prepare a task-based risk assessment and asbestos management plan in line with the Control of Asbestos Regulations (2012). This should be undertaken for tasks due to be undertaken in the affected areas prior to the construction and groundworks phase to ensure the provision of suitable PPE for construction workers and to ensure that adequate mitigation measures, which may include damping down and perimeter fibre monitoring, are in place to mitigate against and monitor for airborne fibre release.

Source	Receptor	Potential Risk	Current Residual Risk	Mitigation
			YES	**Post-Development** Elevated concentrations of asbestos have been identified in near surface soils and Made Ground across the site that are considered to have the potential to present a significant risk to human health within proposed areas of soft landscaping post-development if left in situ. Therefore, to mitigate this risk it is recommended that remedial works are undertaken within areas of proposed soft landscaping where a pollution linkage is considered likely to remain active post-development.
Elevated concentrations of TPH Aliphatic C_{12}-C_{16} within near surface soils and Made Ground		*Inhalation of Vapours*	YES	Vapours associated with TPH C_{12} – C_{16} (Ali) are considered to have the potential to pose a risk to human health through the inhalation of indoor vapours within proposed building footprints. Therefore, to mitigate the risk it is recommended that remedial works comprising the implementation of hydrocarbon vapour protection measures are undertaken within all proposed building footprints.
Elevated concentrations of CH_4 within ground gas beneath the site		*Fire and explosion*	YES	Ground gas monitoring encountered elevated methane (CH_4) concentrations of up to 3.0% v/v, which have the potential to present an explosive risk through the migration and accumulation of CH_4 in confined spaces. Therefore, to mitigate the risk it is recommended that remedial works comprising the implementation of ground gas protection measures is undertaken within all proposed building footprints.

Source	Receptor	Potential Risk	Current Residual Risk	Mitigation
Elevated concentrations of CH_4 within ground gas beneath the site	Buildings	*Fire and explosion*	YES	Ground gas monitoring encountered elevated concentrations of methane (CH_4) up to 3.0% v/v during monitoring. As such the site is considered to have the potential to pose a significant risk to buildings through the migration and accumulation of CH_4 within confined spaces.
Elevated concentrations of PAH and TPH within the near surface.		*Chemical attack on building materials and services*	YES	Elevated concentrations identified within the near surface have the potential to present a risk to underground utilities infrastructure. An assessment of concrete classification should be undertaken for the site to determine an appropriate concrete class, to date no assessment has been provided.
Elevated concentrations of TPH within groundwater beneath the site.	Natural Environment	*Contamination of water resources*	NO	The DQRA has determined that groundwater concentrations identified on site, relating to the off-site SSE transformer compound are below the Remedial Target Values and therefore are not considered to have the potential to pose a significant risk to controlled waters. It is also recommended that a Piling Risk Assessment (PRA) is undertaken to select an appropriate piling methodology for the site.
Elevated concentrations of TPH within soils at 1.70m bgl at WS1002	Natural Environment	*Contamination of water resources*	YES	Given the proximity to the River Thames (8m) it is considered that elevated concentrations of TPH identified within the soils on-site (WS1002) has the potential to present a risk to the Controlled Waters (River Thames).

3.0 REMEDIATION STRATEGY

3.1 General

The main aims of the remediation strategy are as follows:

- To provide a final ground surface suitable for the proposed use of the site i.e. residential dwellings;
- To comply with the requirements of the Local Authority (i.e. Reading Borough Council) and the Environmental Health Department to ensure future users of the site are not put at risk from any chemical contamination arising from its former use(s) or nature of materials present;
- To comply with the requirements of the Environment Agency (EA) to ensure that the controlled waters receptor (River Thames) is not put at risk from the site or the nature of materials present, and;
- To ensure that the site does not pose a significant risk to future site users or controlled waters.

3.2 Remedial Measures

Based on the findings of the site investigation and the development constraints listed above, the following remediation strategy has been devised for the site. The proposed scope of the works is summarised below and detailed in the following subsections. Full details of the methodology are set out in Section 4.0.

In summary, this comprises:

Human Health Risk:

1) Implementation of a discovery strategy for previously unidentified contamination;
2) Implementation of an Asbestos Watching Brief;
3) Implementation of a clean cover system within all areas of proposed soft landscaping
    a) Excavation of materials under proposed areas of soft landscaping to remove impacted near surface soils;
    b) Placement of a hi-visibility geotextile marker layer;
    c) Installation of a 450mm thick clean cover system, incorporating a 150mm thick engineered no-dig layer within areas of proposed soft landscaping; and,
4) Installation of a ground gas and hydrocarbon vapour protection membrane within proposed building footprints.

Controlled Waters Risk:

5) Excavation and removal of localised high TPH concentrations in the vicinity of WS1002

Upon completion of each remedial activity a validation report should be prepared, which would serve to confirm that works were undertaken in accordance with the relevant legislation and this document, as set out in detail in Section 5.0.

4.0 REMEDIAL WORKS

4.1 Summary

It is recommended that near surface soils within all areas of proposed soft landscaping are excavated and removed off site prior to the implementation of a clean cover system. Gas protection measures and hydrocarbon vapour resistant membranes are required within future residential buildings alongside localised hotspot removal and removal of free-phase product within the modelled source area identified by the DQRA.

4.2 Discovery Strategy - Previously Unidentified Contaminants (Point 1)

A discovery strategy should be implemented as part of the development process for any previously un-encountered contamination.

Should any additional significant visual or olfactory evidence of unexpected contamination be identified during the development then works should be halted in the affected area and contact made with a suitably qualified and experienced Environmental Consultant to determine an appropriate course of action, which may include additional investigation, and as necessary, variation to the agreed RMS.

Contact should be made with the regulator to confirm the proposed scope of works and any variation to the RMS.

The following list is not exhaustive, but should be used as guidance with regards to what should be considered indicative of soil contamination that may require remedial works:

- Free-phase contamination (liquid oils or fuels);
- Loose fibrous materials or cement bound materials (PACM);
- Visually significant staining of soils;
- Evidence of invasive plants such as Japanese Knotweed, Himalayan Balsam, Marestail or Giant Hogweed; and,
- Olfactory evidence of hydrocarbon contamination.

4.3 Implementation of an Asbestos Watching Brief (Point 2)

The presence of asbestos within near surface soils is considered to have the potential to present a significant risk to construction workers during the construction phase.

Therefore, it is recommended that an Asbestos watching brief is implemented during the enabling works and construction works phases when the existing soil stockpile is understood to be moved and that an asbestos management strategy is produced by the Principal Contractor.

If suspect materials such as loose fibrous materials, cement bound materials or degraded insulation board are encountered, then works in the vicinity should be halted and contact made with a suitably qualified and experienced Environmental Consultant.

Works should be conducted in line with the Control of Asbestos Regulations (2012), with risk assessment completed in relation to site activities.

Mitigation measures including asbestos fibre boundary monitoring and dampening down of excavations during dry weather should be considered by the Principal Contractor in order to manage risks.

4.4 Installation of an Engineered Clean Cover System in All Areas of Proposed Soft Landscaping (Points 3a, 3b & 3c)

A clean cover system should be installed within all areas of proposed soft landscaping as set out in the following sections. At this stage a formal proposed planting plan has yet to be submitted for approval. However, with reference to Figure 2.0, Omnia have assumed that planting will comprise a mixture of grass and trees. As such, it is recommended that minimum cover system thickness of 450mm for grass, and a minimum thickness of 900mm for trees.

Due to the potential for the underlying Made Ground to contain elevated concentrations of asbestos which exceed Hazardous Waste threshold of 0.1%, the clean cover system should incorporate a 150mm thick engineered no-dig layer to sever the pollution linkage and render the exposure pathway inactive.

4.4.1 Excavation of Impacted Soils from Areas of Proposed Soft Landscaping (Point 3a)

Soils within all areas of proposed soft landscaping should be excavated to a minimum depth of 450mm below finished ground levels (bfgl) with all excavated soils removed for off-site disposal at a suitably licenced waste disposal site via a registered waste carrier.

It is recommended that excavations are locally deepened to a minimum of 900mm bfgl to form 'Tree Pits' in the location of proposed tree planting in accordance with guidance set out in BS3882:2015.

Following the excavation of impacted soils, material will need to be removed and disposed of off-site to a suitably licensed waste disposal or soil treatment facility.

Given that concentrations of asbestos have been encountered on site up to concentrations of 1.3%, mitigation measures including asbestos fibre boundary monitoring and dampening down of excavations during dry weather should be considered by the Principal Contractor in order to manage risks.

If impacted soils are required to be stockpiled prior to disposal, soils should be sheeted to minimise dust generation and placed on an impermeable membrane to prevent impacting soils beneath stockpile locations.

Areas requiring the implementation of a clean cover system are shown on Figure 5.0.

4.4.1 Installation of a Hi-Visibility Geotextile & Engineered No-Dig Layer (Point 3b)

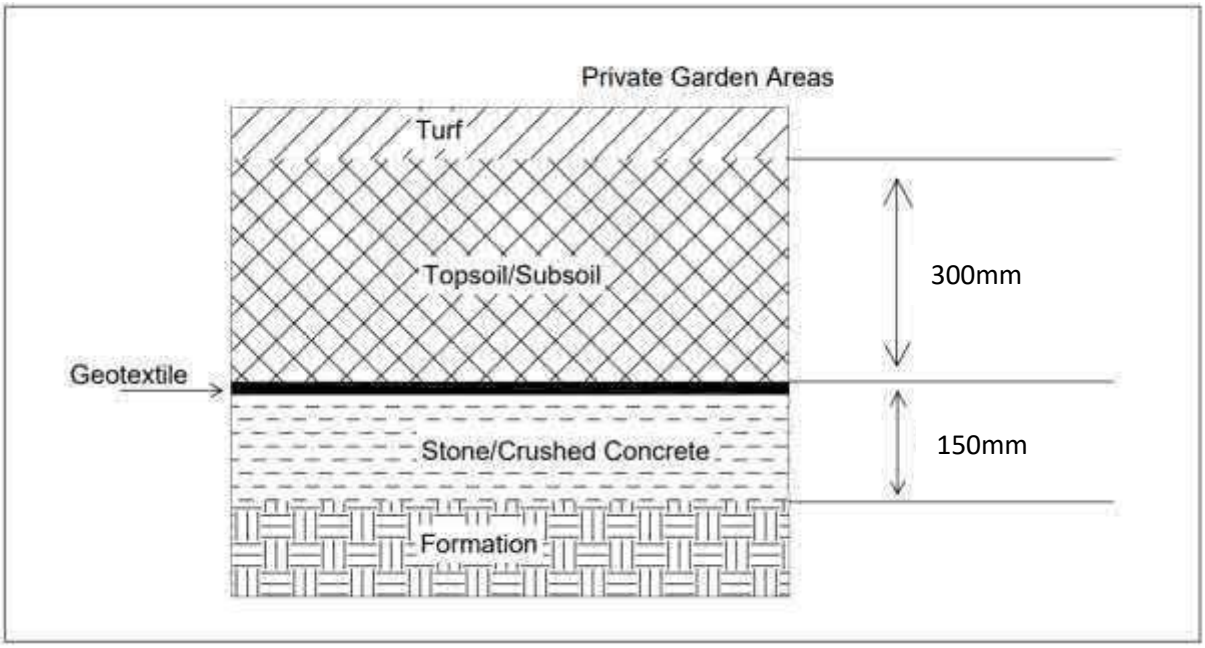
Upon excavation of proposed soft landscaping areas to a minimum depth of 450mm bFGL, a 150mm layer of clean crushed stone or gravel should be emplaced to act as a no-dig layer. Soils emplaced to

form the no-dig layer should be clean and comply with the chemical suitability criteria set out in Table 5.2.

A high-visibility geotextile (Terram Hi-Vis, or equivalent) should be emplaced to act as a marker layer and to prevent the intermixing of clean imported soils with underlying soils containing potentially elevated concentrations. The geotextile membrane should be placed above the clean crushed stone.

A cross-section of the clean cover system proposed is shown in Figure 4-1 below.

Figure 0-1 - Engineered Clean Cover System - Private Garden Areas



4.4.2 Placement of Clean Soils in Areas of Proposed Soft Landscaping (Point 3d).

As stated in Section 4.4.1 the thickness of the cover system should be increased to a minimum of 900mm to form 'Tree Pits' where tree planting is proposed in accordance with guidance set out in BS3882:2015. Consideration should be given to tree stabilisation where trees are planted above a geotextile, through discussion with an Arboriculturalist.

A mixture of true subsoil and topsoil will need to be imported. Given that subsoil settles less than topsoil, it should not be used at the surface whilst the thickness of topsoil should not normally exceed 300mm.

All soils utilised for the installation of the clean cover system should conform with the chemical suitability criteria set out in Table 5.2. Imported soils should be obtained from clean source with a BS3882 supply certificate in the case of topsoil.

4.5 Installation of Ground Gas Protection Membranes and Vapour Membranes (Point 4)

The ground gas assessment presented in Omnia Gas Assessment A11220/221115/L1 classified the site as Characteristic Situation 3 (CS-3) for the proposed Block A, and CS-2 for the remainder of the site in accordance with guidance set out in BS8485:2015 +A1:2019. The report concluded that gas protection

measures would be required for a CS-3 and a CS-2 classification, should be selected as appropriate for a protection score level of **4.0** and **3.5** respectively and comprise elements as presented within BS8485:2015+A1:2019, Section 7, Tables 5, 6 & 7.

Ground gas protection measures should be installed in accordance with a standalone Ground Gas Specification document, which should include a design produced by a suitably qualified and experienced engineer, and subsequently installed by a suitably qualified and experienced installation contractor.

Due to elevated concentrations of TPH C_{12}-C_{16}, which are considered to have the potential to present a vapour inhalation risk, beneath the site, the specification for Ground Gas protection membranes should be such that the membrane is dual purpose and also provides sufficient protection against hydrocarbon vapours.

The location of areas requiring the installation of ground gas protection measures are shown on Figure 6.0 (Appendix III).

4.6 Excavation and Removal of Hotspot Concentrations in the Vicinity of WS1002 (Point 5)

Localised hotspot removal is required in the area of WS1002, to an approximate depth of 2.0m bgl. Soils should be excavated under a watching brief with samples screened on site with a PID to confirm the lateral and vertical extent of impact. The approximate extent of excavations is set out on Figure 4.0, although this should be confirmed through site observations in conjunction with a PID. Excavation works should continue until chemically compliant samples are obtained, and the excavation can be validated in line with the chemical criteria set out in Section 5.3.

All excavated soils should be removed for off-site disposal at a suitably licenced waste disposal site via a registered waste carrier.

4.7 Underground Utilities Pipework

Given the brownfield nature of the site it is recommended that contact is made with the relevant potable water supply company to enable the selection of suitable water supply pipework for the development.

5.0 Validation

In order to determine that all remedial works have been completed in accordance with the RMS, validation works will need to be undertaken to confirm that the exposure pathway has been severed and the pollution linkages rendered inactive.

5.1 Validation of Clean Cover System Within Areas of Proposed Soft Landscaping

In order to confirm that the remedial works set out in Section 4.0 have been fully implemented and the pollution linkages have been successfully broken, validation works are required as follows:

5.1.1 Validation of Capping Thickness

In order to determine that sufficient soil capping has been placed validation of the excavation depth should be undertaken post placement of soil capping.

Photographic evidence should be obtained confirming the excavation depth within areas of proposed soft landscaping have reached a minimum depth of 450mm bfgl.

Photographic evidence should then be obtained confirming the thickness of the placed engineered layer.

5.1.2 Validation of Geotextile Membrane Placement and Clean Cover System

Once capping has been placed, hand excavated pits should be advanced to a depth of 300mm bfgl in areas of soft landscaping to validate the placement of a geotextile membrane and the correct implementation of the clean cover system.

Samples should be taken from the excavated material and analysed for key contaminants of concern for confirmation of chemical suitability.

Upon receipt of successful laboratory results a validation report should be produced to demonstrate that:

- Imported chemically suitable clean soil has been used in the placement of the clean cover system;
- The correct cover system thickness has been installed;
- Summary table cross referencing the quantity of soil imported (tonnes or /volume), area being capped (m^2), capping system thickness; and,
- To confirm the installation of the geotextile membrane.

5.2 Validation of Hotspot Concentrations in the Vicinity of WS1002

Upon on completion of soil removal the excavation should be validated through the collection of samples from the base and sides of the excavation. Upon return of compliant laboratory results the locations should be backfilled with soils compliant with the criteria set out in Section 5.4.

Upon receipt of successful laboratory results a validation report should be produced to demonstrate that imported chemically suitable clean soil has been used in the backfill of the excavation.

5.3 Validation Sample Frequency – Imported Soils

The sampling frequency for materials to be managed under the Remediation Strategy is presented within Table 5.1 below. Samples should be analysed and compared to the guidance levels listed in Table 5.2.

Imported soils should be obtained from a known clean source, and in the case of topsoil should be supplied with BS3882 supply certificates.

Table 5.1 – Validation Sample Frequency

Purpose	Area	Testing Frequency	Chemical Analysis
Proposed Areas of Soft Landscaping (<600mm bfgl)			
Sampling of imported soils for the clean cover system	Proposed Areas of Residential development	1x sample per 150m^3 Imported Soil (minimum of 3x samples per source)	Full CLEA Metals; Cyanide; PAH (USEPA 16); TPH CWG; BTEX; and, Asbestos Identification.

5.4 Validation Criteria - Soils

The validation criteria set out within Table 5.2 should be adopted as screening criteria for all soils emplaced as part of the clean cover system within proposed areas of soft landscaping, in order to be protective of the identified receptors.

Table 5.2 – Chemical Suitability Criteria for Imported Soil

Determinant	Units	Screening Value	Origin of Risk Assessment Value
Metals			
Arsenic	mg/kg	37	LQM CIEH Suitable for Use Levels (S4UL) 2015 - Inorganic Arsenic
Beryllium	mg/kg	1.7	LQM CIEH Suitable for Use Levels (S4UL) 2015
Cadmium	mg/kg	11	
Chromium (III)	mg/kg	910	
Chromium (VI)	mg/kg	6	
Copper	mg/kg	2,400	
Lead	mg/kg	200	Category 4 Screening Level (C4SL) utilising exposure parameters from CLEA SR3 report
Mercury	mg/kg	40	LQM CIEH Suitable for Use Levels (S4UL) 2015 - Inorganic Mercury
Nickel	mg/kg	180	LQM CIEH Suitable for Use Levels (S4UL) 2015
Selenium	mg/kg	250	
Zinc	mg/kg	3,700	
General Inorganics			
Asbestos	mg/kg	0.001% Chrysotile	OEC Adopted Screening Value
Total Cyanide[(1)]	mg/kg	50	Dutch Intervention Values (2010) – Complex Cyanide

Determinant	Units	Screening Value	Origin of Risk Assessment Value
Metals			
PAHs			
Naphthalene	mg/kg	2.3	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Acenapthylene	mg/kg	170	
Acenapthene	mg/kg	210	
Fluorene	mg/kg	170	
Phenanthrene	mg/kg	95	
Anthracene(2)	mg/kg	Footnote 2	
Fluoranthene	mg/kg	280	
Pyrene	mg/kg	620	
Benzo(a)Anthracene	mg/kg	7.2	
Chrysene	mg/kg	15	
Benzo(b)Fluoranthene	mg/kg	2.6	
Benzo(k)Fluoranthene	mg/kg	77	
Benzo(a)Pyrene	mg/kg	2.2	
Indeno(123-cd)Pyrene	mg/kg	27	
Dibenzo(a,h)Anthracene	mg/kg	0.24	
Benzo(ghi)Perylene	mg/kg	320	
Total PAH(2)	Mg/kg	<1,000	To prevent the import of hazardous PAH containing material
TPH (Banded)			
TPH EC 5-6(3)	mg/kg	42	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM utilising the most conservative of the Aliphatic/Aromatic screening values for each chain length.
TPH EC >6-8(3)	mg/kg	100	
TPH EC >8-10(3)	mg/kg	27	
TPH EC> 10-12(3)	mg/kg	74	
TPH EC> 12-16(3)	mg/kg	140	
TPH EC> 16-21(3)	mg/kg	260	
TPH EC> 21-35(3, 4)	mg/kg	Footnote 4	
TPH EC> 35-44(3, 4)	mg/kg	Footnote 4	
TPH EC> 35-44(3, 4)	mg/kg	Footnote 4	
Total TPH (EC>5-44)(4)	mg/kg	<1,000	To prevent the import of hazardous TPH containing material
BTEX & MTBE			
Benzene	mg/kg	0.087	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Toluene	mg/kg	130	
Ethylbenzene	mg/kg	47	
Xylenes	mg/kg	56	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM (p-Xylene)
MTBE	mg/kg	49	EIC/AGS/CL:AIRE GAC for MTBE with 1% SOM

(1) Total cyanide Tier 1 GAC is taken from the Dutch Intervention Value (2010) for complex cyanide.

(2) The S4UL screening value for individual compounds exceeds 1,000mg/kg and therefore the Total PAH limit of <1,000mg/kg must be adhered to in order to prevent hazardous PAH containing material from being imported to site

(3) The Tier 1 GAC for the banded hydrocarbon fraction is derived from the CIEH/S4UL assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. OEC has utilised the lowest of the aliphatic and aromatic chain lengths in order to adopt a conservative approach, which is considered satisfactory for the protection of human health.

(4) The S4UL screening value for individual compounds exceeds 1,000mg/kg and therefore the Total TPH (EC>5-44) limit of <1,000mg/kg must be adhered to in order to prevent hazardous PAH containing material from being imported to site

(sol) – GAC presented exceeds the solubility saturation limit.

(vap) - GAC presented exceeds the vapour saturation limit.

5.5 Verification of Gas and Vapour Protection Membrane Installation

Following the installation of gas protection measures within building footprints validation should be undertaken in accordance with the validation criteria set out in CIRIA C735. Photographic records of

the installation should be compiled on site for use in the validation report to be prepared by the Environmental Consultant and should be detailed further within a standalone Ground Gas Specification Document as set out in Section 4.5.

6.0 RECORD KEEPING & VERIFICATION

6.1 Record Keeping

During the course of remediation and site enabling works, the Principal Contractor should undertake the following record keeping protocols:

- Detailed daily site diary including record of material movements; and,
- Photographs of excavation works, including final depths and sample locations.

Record keeping on site, in particular movements and analysis of specific material types should be retained by the Principal Contractor. This record should remain on site during the course of the works.

6.2 Verification

The records listed should then be incorporated into a Validation Report on completion of the remediation works.

The Validation Report will include the following:

- Copies of BS3882 Supply Certificates for all imported topsoil;
- Tables cross-referencing the types and amounts of soil imported with the area being capped and cover system thickness;
- Details of any areas where near surface Made Ground has been stripped;
- Copies of any WAC testing certificates undertaken for waste classification and disposal purposes;
- Copy of Consignment Notes relating to the movement of wastes to licensed waste management facilities, where available;
- Record of recovered LNAPL, pumping duration and average pumping rate;
- Detailed drawings showing all sampling locations and areas where remedial works have been undertaken;
- Detailed information relating to the verification of remedial works or recommendations for further work;
- Summary table cross referencing the quantity of soil imported (tonnes or /volume), area being capped (m^2), capping system thickness; and,
- Photographs of remedial works and validation sampling locations.

6.3 Supervision and Verification of Works

All validation works as set out within this RMS are to be carried out by a suitably qualified and experienced Environmental Consultant. The level of attendance should be agreed with the Client.
Due to the presence of an engineered cover system, it is recommended validation is undertaken at each stage of the clean cover implementation to avoid breaching the integrity of the installed system.

APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between OE Ltd and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. OE cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by OE is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by OE in this connection without their explicit written agreement there to by OE.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II

GLOSSARY

AST	ABOVE GROUND STORAGE TANK
BGS	BRITISH GEOLOGICAL SURVEY
BSI	BRITISH STANDARDS INSTITUTE
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
CIEH	CHARTERED INSTITUTE OF ENVIRONMENTAL HEALTH
CIRIA	CONSTRUCTION INDUSTRY RESEARCH ASSOCIATION
CLEA	CONTAMINATED LAND EXPOSURE ASSESSMENT
CSM	CONCEPTUAL SITE MODEL
DNAPL	DENSE NON-AQUEOUS PHASE LIQUID (CHLORINATED SOLVENTS, PCB)
DWS	DRINKING WATER STANDARD
EA	ENVIRONMENT AGENCY
EQS	ENVIRONMENTAL QUALITY STANDARD
GAC	GENERAL ASSESSMENT CRITERIA
GL	GROUND LEVEL
GSV	GAS SCREENING VALUE
HCV	HEALTH CRITERIA VALUE
ICSM	INITIAL CONCEPTUAL SITE MODEL
LNAPL	LIGHT NON-AQUEOUS PHASE LIQUID (PETROL, DIESEL, KEROSENE)
ND	NOT DETECTED
LMRL	LOWER METHOD REPORTING LIMIT
NR	NOT RECORDED
PAH	POLY AROMATIC HYDROCARBON
PCB	POLY-CHLORINATED BIPHENYL
PID	PHOTO IONISATION DETECTOR
QA	QUALITY ASSURANCE
SGV	SOIL GUIDELINE VALUE
SPH	SEPARATE PHASE HYDROCARBON
SP.TPH (CWG)	TOTAL PETROLEUM HYDROCARBON (CRITERIA WORKING GROUP)
SPT	STANDARD PENETRATION TEST
SVOC	SEMI VOLATILE ORGANIC COMPOUND
UST	UNDERGROUND STORAGE TANK
VCCS	VIBRO CONCRETE COLUMNS
VOC	VOLATILE ORGANIC COMPOUND
WTE	WATER TABLE ELEVATION

UNITS

M	METRES
KM	KILOMETRES
%	PERCENT
%V/V	PERCENT VOLUME IN AIR
MB	MILLI BARS (ATMOSPHERIC PRESSURE)
L/HR	LITRES PER HOUR
µG/L	MICROGRAMS PER LITRE (PARTS PER BILLION)
PPB	PARTS PER BILLION
MG/KG	MILLIGRAMS PER KILOGRAM (PARTS PER MILLION)
PPM	PARTS PER MILLION
MG/M^3	MILLIGRAM PER METRE CUBED
M BGL	METRES BELOW GROUND LEVEL

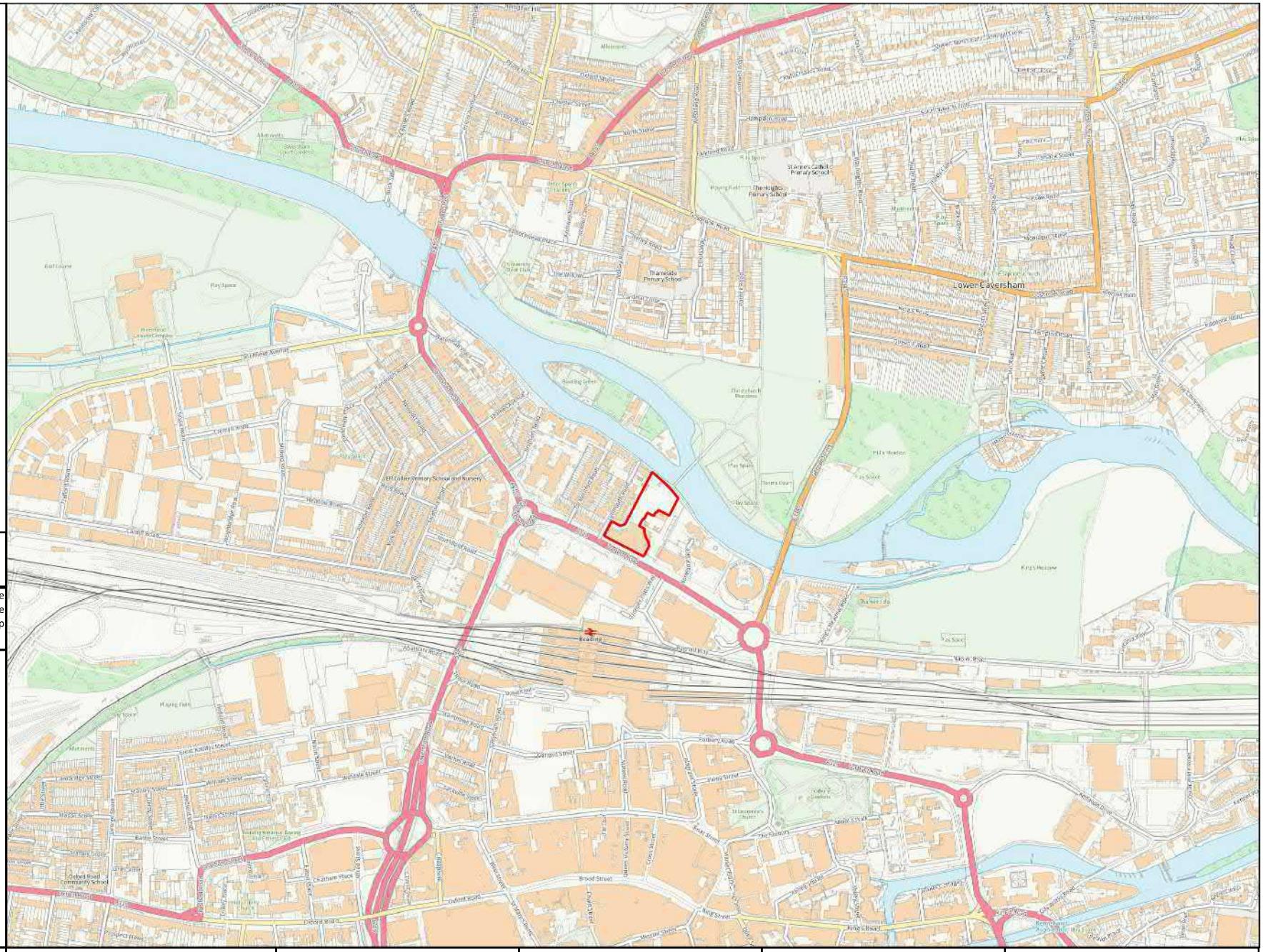
M BCL	METRE BELOW COVER LEVEL
MAOD	METRES ABOVE ORDNANCE DATUM (SEA LEVEL)
KN/M^2	KILO NEWTONS PER METRE SQUARED
µM	MICRO METRE

APPENDIX III

DRAWINGS

Key

Site Boundary



100 0 100 200 300 m

Scale	Paper Size
1:10,000	A4

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OMNIA

Job Title:	Client:	Project Number:	Date:	Drawing Title:
Vastern Road	Berkeley Homes (Oxford and Chiltern Ltd)	A10967	13/11/22	Figure 1.0 Site Location
		Drawn By: O. Maxwell	Authorised By: A. King	

Key

Site Boundary



10 0 10 20 30 m

Scale	Paper Size
1:1,000	A4

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OMNIA

Project Number: A10967	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Drawn By: O. Maxwell	Drawing Title: Figure 2.0 Proposed Development
Job Title: Vastern Road	Date: 13/11/2022	Authorised By: A. King	

Key

- Site Boundary
- PBA 2018 Locations
- OEC 2018 Locations

Sept 22 Intrusive Locations

- A(i)WS
- A(ii)WS
- B(i)TP
- B(ii)WS
- CWS

10 0 10 20 30 40 m

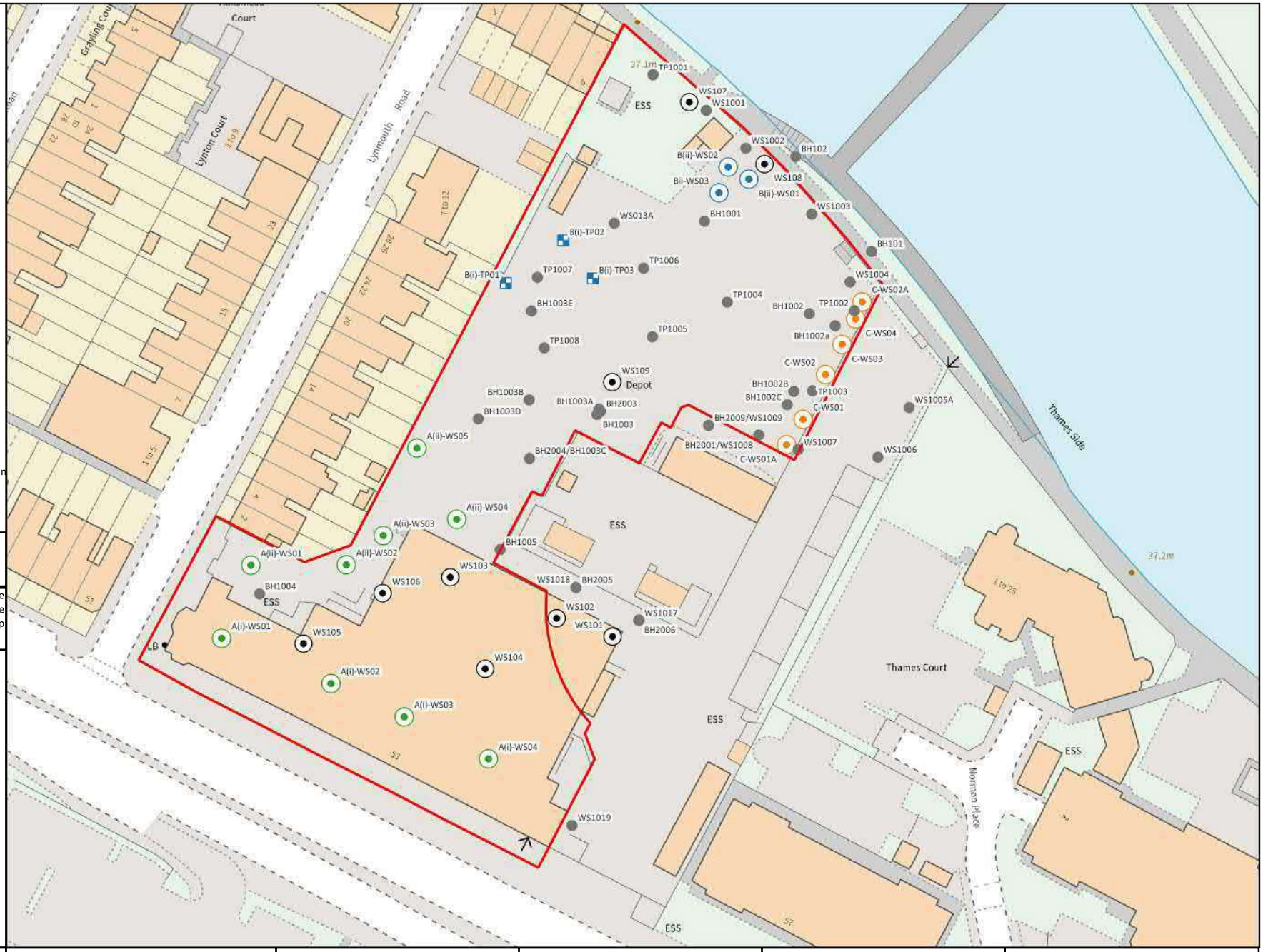
Scale	Paper Size
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OMNIA	Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 13/11/2022
			Drawn By: O. Maxwell	Authorised By: A. King

Drawing Title: Figure 3.0 Intrusive Location Plan

Key

- Site Boundary
- PBA 2018 Locations
- OEC 2018 Locations

Sept 22 Intrusive Locations

- A(i)WS
- A(ii)WS
- B(i)TP
- B(ii)WS
- CWS
- WS1002 Hotspot

10 0 10 20 30 40 m

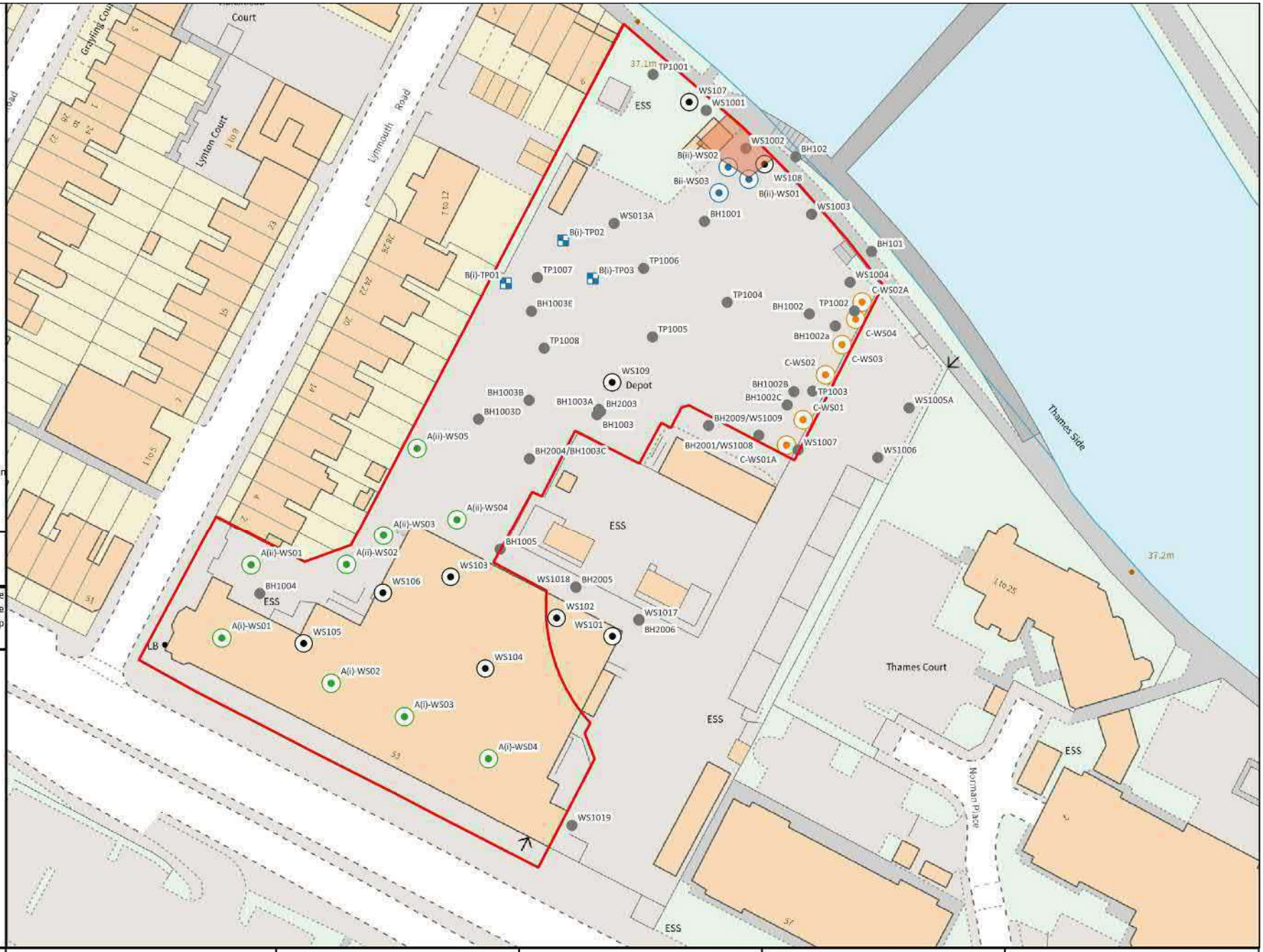
Scale	Paper Size
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OMNIA	Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 13/11/2022
			Drawn By: O. Maxwell	Authorised By: A. King

Drawing Title: Figure 4.0 Proposed Extent of Localised Hotspt Removal at WS1002

Key

Site Boundary

Areas requiring implentation of clean capping and geotextile membrane as per requirements of RMS A10967/2.4

10 0 10 20 30 40 m

Scale	Paper Size
1:1,000	A4

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OMNIA

Job Title:	Client:	Project Number:	Date:	Drawing Title:
Vastern Road	Berkeley Homes (Oxford and Chiltern) Ltd	A10967	12/04/2023	Figure 5.0 Areas requiring implentation of clean capping
		Drawn By: O. Maxwell	Authorised By: A. King	

Key

Site Boundary

Gas Classification

CS-2

CS-3

10 0 10 20 30 40 m

Scale	Paper Size
1:1,000	A4

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OMNIA

Job Title: Vastern Road	Client: Berkeley Homes (Oxford and Chiltern) Ltd	Project Number: A10967	Date: 08/12/2022	Drawing Title: Figure 6.0 Gas Classification
		Drawn By: O. Maxwell	Authorised By: A. King	

APPENDIX X – OMNIA PILING RISK ASSESSMENT (2024)

Piling Risk Assessment

55 Vastern Road
Reading
Berkshire
RG1 8BU

Prepared for:
Berkley Homes (Oxford & Chiltern) Ltd
Mill Lane,
Taplow,
Maidenhead
SL6 0AG

May 2024

Omnia ref: A10967-8/1.0

ISO Accredited Certification (UKAS)

QUALITY ASSURANCE

Project Number: A10967-8

May 2024

Geotechnical

Geotechnical Ref:

Prepared by:	L. Moore	**Date:**	21/05/24	**Signature:**	
Checked by:	W. Bennett	**Date:**	23/05/24	**Signature:**	
Authorised by:	A. King	**Date:**	08/08/24	**Signature:**	

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1 INTRODUCTION

1.1 Background

Omnia have been commissioned by Berkley Homes (Oxford & Chiltern) Ltd to undertake a Piling Risk Assessment (PRA) at the Site comprising 55 Vastern Road, Reading, Berkshire, RG1 8BU (Figure 1.0).

Omnia and third parties have previously undertaken multiple phases of ground investigation works across the Site assessing the geotechnical and environmental conditions of the Site prior to redevelopment as set out within the following reports.

The piling risk assessment includes review of the findings of previous Site investigations listed below and the recommendations set out within the Remediation Method Statement (Ref: A10967/2.4).

- Email communication between SSE and their consultant Adler & Allan regarding the findings of the preliminary investigation to identify the location of the leakage – Dated October 2017.
- CC Ground Investigations (CCGI) Report C5925/01 – Draft Factual Report – SSE Site, Vastern Road, Reading dated 12th March 2018; and,
- Peter Brett Associates (PBA) Technical Note Tn002/Rev0 – Preliminary Summary of Ground Investigation – SSE Site, Vastern Road, Reading dated 20th March 2018;
- OEC Report A10967/1.0– 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2018;
- Omnia Ground Gas Monitoring Assessment ref: A11220/221115/L1 dated 15th November 2022;
- Omnia Report A10967/3.2 – 'Phase II Supplementary Geo-Environmental Site Assessment, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2023;
- Omnia Report A10967/2.4- 'Remediation Method Statement, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2023;

1.2 Proposed Development

It is understood that the proposed development consists of the 'Demolition of existing structures and erection of a series of buildings ranging in height from 1 to 11 storeys, including residential dwellings (C3 use class) and retail floorspace (A3 use class), together with a new north-south pedestrian link, connecting Christchurch Bridge to Vastern Road'.

A planning application has been submitted to Reading Borough Council (Ref: 237673) with conditional permission granted.

Condition 9 of the planning application states:

Condition 9.

No development shall commence on site [excluding demolition and any preparatory works necessary to inform de-watering and foundation details] until such time as a scheme to:

a) secure de-watering of the site

b) specify the form of foundations

has been submitted to, and approved in writing by, the Local Planning Authority.

Given the proposed foundation solution penetrates the overlying strata and into the Chalk below groundwater level, in order to discharge Condition 9b, the EA require the risks that this foundation solution poses to the underlying Principal Aquifer are assessed (EA ref: WA/2023/130859/02-L01).

The following document comprises a standalone risk assessment for the proposed piled foundation solution to assess the potential impact on the underlying Principal Aquifer (Seaford & Newhaven Chalk Formation) in accordance with guidance by the Environmental Agency ('Piling and Penetrative Ground Improvement methods on Land Affected by Contamination: Guidance on Pollution Prevention NC/99/73 (2001)').

It is understood that piles are proposed to be installed through the use of a Continuous Flight Auger (CFA).

The Site location plan and proposed Site development plan is presented as Figure 1.0 and Figure 2.0 in Appendix III.

1.3 Objectives

The purpose of this piling risk assessment is to assess the proposed piling methodology together with the soil analysis data with regards to the potential environmental impact that different piling methods may have at the Site. Identification of potential hazards from source-pathway-receptor linkages will ensure that a suitable method of piling is selected for the Site which will minimise any environmental impact.

1.4 Sources of Information

Background information was sought from the following sources:

- Environment Agency Statement (ref WA/2023/130859/02-L01) regarding the discharge of condition 9 relating to the proposed development, dated April 2024;
- Berkeley. Site Piling Proposal (ref 330511061-S-SK-005) dated January 2024;
- Collard Method Statement for the Remediation of Former SSE Site, Vastern Road, Reading;
- Stantec Technical Note 330511004- Dewatering planning condition No.9 – (Ref: APP/E0345/W/21/3276463)- Vastern Road (Old Power Station Site), Reading;
- Omnia Report A10967/2.4- 'Remediation Method Statement, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2023;
- Omnia Report A10967/3.2 – 'Phase II Supplementary Geo-Environmental Site Assessment, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2023;
- Omnia Ground Gas Monitoring Assessment ref: A11220/221115/L1 dated 15th November 2022;
- OEC Report A10967/1.0 Draft – 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU' dated April 2018;
- CC Ground Investigations (CCGI) Report C5925/01 – Draft Factual Report – SSE Site, Vastern

Road, Reading dated 12th March 2018;

- BGS Technical Report WD/97/34 – The Physical Properties of Major Aquifers in England and Wales (1997);
- Environment Agency, 'Piling into Contaminated Sites', ISBN: 1 85705 803 8 (EA, 2001);
- Environment Agency, 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention NC/99/73 (EA, 2001); and,
- Environment Agency, 'Piling in Layered Ground: Risks to Groundwater and Archaeology', Science Report SC020074/SR (EA, 2006).
- AGS 'Assessment and Mitigation of Turbidity Risks from Piling', dated 29th June 2023.

1.5 Limitations

The limitations of this report are presented in Appendix I.

1.6 Confidentiality

Omnia has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Omnia; a charge may be levied against such approval.

2 SITE SETTING

2.1 Site Details

Table 2-1 Site Details

Site Address	55 Vastern Road, Reading, Berkshire, RG1 8BU
National Grid Reference	471538, 174119
Area	0.76 ha.

At the time of Omnia's most recent Site investigation the Site comprised a vacant plot of land with the exception of a single two-storey building occupying the south of the Site. Electricity power distribution infrastructure was located within the central section of the Site along the eastern boundary; however, this area was demarcated with Heras fencing and falls outside the red line Site boundary.

A full Site description is set out within Omnia report ref: A10967/3.2.

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A Site location plan is presented as Figure 1.0 (Appendix III).

2.1.1 Geology

British Geological Survey (BGS) map for the site (Sheet 268, Reading, Solid and Drift Edition at a scale of 1: 50,000, 2000) indicates that the superficial geology of the Site consists of Alluvium within the northernmost part only. The remainder of the Site is underlain by superficial deposits of the Langley Silt Member & Kempton Park Gravel Member.

Bedrock Deposits on Site are recorded as the Seaford & Newhaven Chalk Formation.

Table 2-2 – Published Geological Sequence

Geological Unit	Classification	Description	Aquifer Classification
Superficial	Alluvium (Northernmost area only)	Clay, Silt, Sand, Gravel	Secondary (A) Aquifer
	Langley Silt Member	Clay and Silt	Unproductive Strata
	Kempton Park Gravel Member	Sand and Gravels	Secondary (A) Aquifer
Bedrock	Seaford Chalk Formation & Newhaven Chalk Formation	Chalk	Principal Aquifer

2.1.2 Hydrogeology

Data obtained from previous Omnia reports; 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU' (ref A10967/1.0) dated April 2018, and 'Phase II Supplementary Geo-Environmental Site Assessment, 55 Vastern Road, Reading, Berkshire, RG1 8BU' (ref A10967/3.2) dated April 2023 has been used in the following section.

The Omnia Phase I-II report indicated that the Site was underlain by superficial deposits of Alluvium (Secondary A Aquifer), Langley Silt Member (Unproductive Strata) and Kempton Park Gravel Member (Secondary A Aquifer).

Bedrock mapping indicates that the superficial deposits overlay the Seaford and Newhaven Chalk Formation which are classified as a Principal Aquifer. Although not located within a Source Protection Zone, a SPZ 3- Total catchment was identified approximately 28m southeast of the Site. An active groundwater abstraction is located 371m to the northeast of the Site for 'laundry use', and a potable water abstraction has been identified 573m to the west of the Site.

Groundwater vulnerability data indicates the site is underlain by soils classified as a Principal Aquifer with a medium to high vulnerability. This was attributed to the underlying Seaford and Newhaven Chalk Fomation.

During the groundwater monitoring programme following the initial Site investigation, groundwater was encountered between 0.97m and 2.50m bgl within the Made Ground deposits on Site. This was assumed to be perched groundwater and not representative of the groundwater regime of the Site due to the absence of elevated concentrations from deeper groundwater samples. Further groundwater was encountered between 1.91m and 2.61m bgl within the Kempton Park Gravels.

Based on local topography and the location of surface watercourses it is considered that shallow groundwater, if present, will follow local topography and flow in a north-easterly direction towards the River Thames. A review of Environment Agency report (Ref: 6441R8), indicates that groundwater within the surrounding gravels is directly influenced by flow levels within the River Thames. With groundwater flowing towards the river when the river level is low and then away from the River Thames during periods of higher river water levels.

2.1.3 Hydrology

Data obtained from the Omnia 'Phase I-II Geo-Environmental Site Assessment and DQRA, 55 Vastern Road, Reading, Berkshire, RG1 8BU' (ref A10967/1.0) dated April 2018 indicated that the closest surface watercourse to the Site is the River Thames located approximately 4m to the north of the Site.

The Omnia Phase I Report indicated that the Site is partially classified as both a Zone 2 and Zone 3 floodplain with a Risk of Flooding from Rivers and Seas (RoFRaS) Flood Rating as High. The Zone 3 rating is attributed to the northern boundary of the Site in proximity to the River Thames.

2.2 Soil and Groundwater Contamination

Information on soil and groundwater concentrations encountered beneath the Site during the previous phases of investigation are presented within the reports listed in Section 1.4 and is summarised in the following sections.

2.2.1 Summary of Contaminant Distribution

2.2.1.1 Soils

As set out within the initial Site investigation (Ref: A10967/1.0) and the supplementary ground investigation (Ref: A10967/3.2) the Tier 1 Risk assessment identified the following exceedances against the screening criteria for a residential end use without homegrown produce:

- Heavy Metals
  - Arsenic;
  - Beryllium;
  - Lead;
  - Nickel;
  - Selenium
- PAHs
  - Naphthalene;
  - Benzo(a)Anthracene;
  - Chrysene
  - Benzo(b)Fluoranthene;
  - Benzo(a)Pyrene;
  - Dibenzo(a,h)Anthracene
- TPHs
  - TPH Aliphatic (C12-C16);
  - TPH Aromatic (C12-C16);
  - TPH Aromatic (C16-C21);
  - TPH Aromatic (C21-C35);
  - Banded TPH (C16-C21);
  - Banded TPH (C21-C35).
- Asbestos
  - Chrysotile.
  - Crocidolite
  - Amosite

Ground investigations to date demonstrate recorded exceedances of heavy metals, asbestos, PAHs and TPHs above the human health assessment criteria within the Made Ground deposits and near surface soils on Site.

2.2.1.2 Asbestos Risk to Piling Contractors

The previous reports indicate that ACM has been encountered on-Site in the form of Asbestos fibres of Chrysotile, Amosite and Crocidolite in concentrations up to and exceeding the hazardous waste threshold of 0.1% were identified within the Made Ground across the Site.

However, it is understood that Hazardous Asbestos impacted soils are scheduled for excavation, removal and off-site disposal as part of the enabling works phase prior to the installation of the piling mat.

Details are set out within the “Collard Method Statement for the Remediation of Former SSE Site, Vastern Road, Reading” (Appendix IV).

Therefore, given that hazardous soils containing Asbestos are scheduled for excavation, removal and off-site disposal prior to the installation of the piling mat, we do not consider that asbestos impacted pile arisings will be generated and as such Asbestos impacted soils are not considered to have the potential to present a significant risk to piling contractors.

2.2.1.3 Controlled Waters

The site is considered to present a **moderate** risk to controlled waters for the following reasons:

- Exceedances above the Tier 1 were identified for Beryllium and PAHs which have a low mobility;
- Exceedances above Tier 1 were identified for TPHs within the groundwater on-Site. Though recorded concentrations are below the Remediation Target Values, there remains a risk associated with the vertical movement of contaminants.
- Underlying Principal Aquifer within the Seaford and Newhaven Chalk Formation;
- The River Thames located 4m to the north of the Site;
- Prescence of the cohesive Langley Silt Member across the site, creating an impermeable cap above the chalk;
- No groundwater abstraction licenses within 250m of the site; and,
- Perched groundwater impacted by elevated concentrations of contaminants was restricted to the Made Ground deposits on Site.

2.2.1.4 Ground Gas

Based upon the previous ground gas monitoring programme consisting of five (5no.) visits, the Site was classified as Characteristic Situation 3 (CS-3) for the proposed block A and the remainder of the Site has been classified as CS-2. This indicates the requirement for appropriate ground gas protection measures as set out within the Omnia Remediation Method Statement (ref: A10967/2.4).

2.2.2 Geotechnical Considerations

Due to the proposed loadings of the development along with the presence of shallow Made Ground and potential compressible superficial deposits, a piled foundation design was recommended by Stantec (report ref. 330510784/3500/R001/Rev0). Pile design has not yet been finalised however a Site piling proposal prepared by Berkeley (ref. 330511061-S-SK-005) recommends the following:

Table 2.3– Summary of preliminary pile lengths.

Type of building	Diameter of Pile (mm)	Assumed Pile Lengths (m)
Multi-storey residential	450	c.18.00

The proposed piled foundation solution will terminate within Chalk bedrock and will therefore breach the aquitard of the Langley Silt Member, which acts as a protective Aquitard above the underlying Kempton Park Gravels Member and bedrock of the Seaford and Newhaven Chalk Formation and prevents the downward migration of elevated concentrations into the Chalk. The following sections therefore assess the risks posed to underlying groundwater within the Kempton Park Gravel Member and Chalk Bedrock by the proposed piling methodology.

3 SELECTION OF PILING METHODS

It is understood that the preferred piling methodology for buildings is to utilise a non-displacement (bored) piling technique comprising Continuous Flight Auger (CFA) piles for proposed multi-storey residential development at the Site.

CFA Piles involve rotary boring techniques which bring soil arisings to the surface rather than utilising percussion to drive piles downwards. This methodology therefore brings impacted soils to surface and does not result in impacted material being introduced into clean deeper strata. CFA piling also this offers a low noise and vibration method of foundation design that is suitable for sensitive Sites where existing residential properties are in close proximity to the subject Site. The CFA piles can also be formed in water bearing strata and are suitable for geology with a low strength, such as low strength chalk. However, the high risk of voids within the chalk may lead to high loss of concrete during the backfilling process.

Experience on previous projects indicates that the Environment Agency consider CFA piles to minimise the risks posed to underlying aquifers from contaminated material identified near surface, and as such the adoption of CFA piles is considered to be an appropriate choice for this Site.

At it this stage it is assumed that a Continuous Flight Auger approach will be adopted as per the Stantec Technical Note (ref 330511004).

4 CONCEPTUAL SITE MODEL

4.1 Hazard Identification

The Piling Risk Assessment has been undertaken in accordance with guidance set out by the Environment Agency, 'Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention NC/99/73 (A, 2001)'.

A Conceptual Site Model has been developed to identify potential sources, migration pathways and receptors within the Site.

4.1.1 Assessment to Contamination Risk

Review of the previous report undertaken by Omnia (A10967/1.0) indicates concentration of heavy metals and PAHs above their tier 1 assessment criteria within the near surface across the Site. The supplementary investigation undertaken by Omnia (A10967/3.2) identified elevated Naphthalene and TPH (C12-C16) concentrations in the area of the proposed residential developments.

The revised conceptual Site model in relation to the proposed piling activity has been summarised in Table 4-1 below.

Table 4-1 Risk Associated with Contaminant Distribution

Source	Potential Contaminant	Potential Migration Pathway	Potential Receptors
Contaminated groundwater	TPH	Leaching of contaminants and downward migration along length of pile	Controlled Waters within Chalk Groundwater Body
Elevated contaminant concentrations in near surface soils and Made Ground.	Heavy Metals, TPH and PAHs	Contact with impacted arisings	Human Health
		Contact with impacted soils	Concrete Piles

A risk assessment relating to the contaminants above is presented in Section 5.0.

4.1.2 Assessment of Piling Methodology Risk

Consideration has also been given to the potential piling methodology in relation to any risk this may present to the underlying Principal chalk aquifer. This is detailed within Table 4-2 below for CFA piling.

Table 4-2 Risk Associated with CFA Piling Methodology

Activity	Consequence	Discussion
Advancement of CFA piles into the underlying Seaford and Newhaven Chalk Formation (Principal Aquifer)	Bored concrete pile could create a preferential pathway for the migration of contamination.	Based on the supplied Pile Proposal (ref 330511061-S-SK-005), the anticipated length of the piles will be 18.00m bgl. Groundwater was struck during the Site investigation at depths between 0.5 and 1.7m bgl within the Made ground and 2.10-2.90m bgl within the Langley Silt Member during the previous investigations.

Activity	Consequence	Discussion
		Groundwater was struck within the Kempton Park Gravel between 2.5m and 8.0m bgl during the Site investigation conducted by CC Ground Investigations. Localised perched groundwater was also identified. TPH fractions identified have the potential to be mobile, although in its current pre-piling state the presence of the underlying Langley Silt Member forms an aquitard preventing the vertical migration of contaminants. Given that the proposed CFA piles will breach the Langley Silt Member (Aquitard), it is recommended that consideration is given to the use of casing through Made Ground and into the Langley Silt Member to ensure that no downward migration of shallow impacted perched water from within the Made Ground can occur. Guidance should be sought from the piling contractor on how the potential downwards migration of perched water will be mitigated once the Langley Silt Member has been breached. If casing is adopted through Made Ground then it is considered that CFA pile design represents the best available technique to limit potential migration of water around the annulus of the pile upon completion as the concrete pile will not degrade over time and will create a permanent seal to prevent vertical migration of contaminants.
	Exposure to contaminated pile arisings at the surface.	CFA piling produces soil arisings as the auger drills downwards bringing the soil to the surface, where it can quickly dry out or become a potential exposure risk to contractors. Given the presence of Heavy Metals, TPHs and PAHs on Site, consideration must be given to mitigating the potential exposure of contractors to impacted arisings through the use of a Asbestos Risk Assessment and provision of suitable PPE/RPE and mitigation methods. Consideration must also be given to preventing the potential cross contamination of clean imported and site-won soils either through the accidental mixing of stockpiles or from dust. Arisings of near surface soils from piling should be considered to be impacted by Heavy Metals, TPHs and PAHs and should be segregated and stockpiled upon an impermeable membrane in order to prevent the potential downwards migration of soil bound contaminants or should transferred to the on-site treatment area for bioremediation.
	Increased turbidity in groundwater within the underlying Principal Aquifer generated by CFA piling	At groundwater abstraction points turbidity is used as a marker for risks to drinking water from pathogens such as Cryptosporidium and E. coli. Turbidity testing does not differentiate between these pathogens and suspended mineral fines generated by rotary

Activity	Consequence	Discussion
		methods of piling, thus an increase in turbidity will force an operator to shut down an abstraction point leading to negative fiscal and supply issues associated with treating any fouled water. Operators of a Site in which piling has resulted in the shutdown of an abstraction point may be held liable for any financial damages incurred. CFA is a rotary form of piling and thus there is a risk of increasing the turbidity of groundwater through the release of rock fines generated by coring of the rock or from uncured cement during the casting of piles. Given the distance to an SPZ-3 and groundwater abstraction points (including potable water), it is considered likely that any turbidity generated will likely settle prior to reaching an abstraction point. Thus, the turbidity risk posed by CFA piling is considered to be limited. It is understood that the EA require groundwater monitoring to be undertaken and it is therefore recommended that discussion with the EA regarding the frequency of monitoring and schedule of testing takes place prior to the commencement of piling.
	Contaminated soils could be dragged down into deeper uncontaminated water bearing soils within the Seaford and Newhaven Chalk Formation.	There is a very low likelihood of impacted soils being dragged down during piling activities as the use of CFA piles results in soil arisings being brought to the ground surface during works.
Injection of high-pressure concrete	Injecting concrete under high pressure in a confined space may cause dispersion into voids/pore spaces in the surrounding soils and therefore migrate into the groundwater.	Real-time monitoring of the volumes of concrete and pumping pressure should be undertaken with comparison with the expected volumes/pressures required for the pile. If these were to deviate piling should be halted. This risk is mitigated through the correct procedures being followed by piling contractors on-Site. Furthermore, it should be noted that the underlying Seaford and Newhaven Chalk Formation is predominantly structureless in nature with chalk being recovered as gravels though this may be due to the percussive nature of drilling. No Dm ‘putty’ chalk was identified as being present during previous Site investigations. Chalk was only encountered as Dc graded chalk to a maximum depth of 35.00m bgl, which is below the maximum anticipated pile termination depth.

Activity	Consequence	Discussion
	Injecting concrete into potential voids of unrecorded Karstic Features	Real-time monitoring of the volumes of concrete and pumping pressure should be undertaken with comparison with the expected volumes/pressures required for the pile. If these were to deviate piling should be halted. The Phase I-II report indicated a low probability of dissolution features on the Site.
General use of deep concrete piles	Degradation of concrete in the pile from known contamination in the soils and groundwater.	An appropriate mix of corrosion resistant concrete as set out by the structural engineer, should be used based on the ground conditions encountered during Site investigation.

The information provided in Table 4-2 demonstrates that the risks associated with the CFA piling methodology have been suitably considered, with control measures in place to reduce the risk potential to a minimum.

5 DISCUSSION

Following a review of the data obtained for the site and the conceptual model presented above it is considered that the exceeding contaminants identified on Site remain entrenched within the Made Ground and near surface soils and remain immobile with the exception of TPHs encountered. Though as per the Remediation Method Statement (ref A10967/2.4) the recorded values are below the Remedial Target Values, thus are not considered to pose a significant risk to controlled waters.

Consideration must therefore be given for the use of casing or other mitigation methods in order to prevent the downwards migration of perched water through the pile annulus into the underlying Kempton Park Gravel Member and Seaford Chalk & Newhaven Chalk Formations and the potential lateral migration towards the River Thames.

As groundwater was encountered within both the Made Ground deposits and Langley Silt Member the pollution pathway is considered to be **Moderate Risk** to the identified receptors (Principal Aquifer and controlled waters). The remaining source/pathway/receptors have been assessed for CFA within Table 5-1 below.

Table 5-1 Discussion of CFA against potential impacts

Receptor	Pile Assessment
Contact with Contaminated Arisings – Human Health	During the installation of the piles, soil is extruded up the flights of the auger and out of the hole resulting in potential contact with arisings of both surface and deep soils. The soil arisings should be segregated from existing stockpiles on-Site in a suitable location, placed on an impermeable membrane to ensure that downward migration cannot occur. The stockpile should subsequently be either removed from Site to an appropriately licensed waste management facility by a licensed waste carrier or moved to the on-site treatment area for bioremediation in accordance with the Collard Method Statement.
Concrete Pile in Contact with Contaminated Soils	The concrete used in the CFA or driven piling method should be specified in accordance with BRE Special Digest 1 (2005) and BS8110 to ensure that concrete degradation by any soil contamination will not occur. Given that degradation of the pile should not occur, an increase in permeability of the pile and therefore the creation of a potential preferential pathway is considered unlikely, and the pathway is considered to be inactive.
Driving of Contaminants and groundwater Down into an Aquifer During Piling	The pollution linkage associated with the driving of contaminants down into the underlying clean Chalk Aquifer during the CFA piling process is not considered to be active. During the CFA piling process the hole is rotary drilled to the specified depth with removed soils brought to ground level along the flights of the auger. Therefore, any impacted soils encountered are removed and brought to

	the surface rather than being driven into the underlying Aquifer.
Migration of contaminated perched water into underlying Kempton Park Gravel Member	There is a risk associated with the creation of a preferential pathway once the Langley Silt Member has been breached. This risk can be mitigated through the use of casing in order to limit the downwards migration of perched groundwater around the piling annulus. The piling contractor should be consulted on suitable mitigation methods in order to prevent the risk associated with the downwards migration of impacted perched water.
Generating Turbidity within the underlying Aquifer.	Though the CFA method of piling has an associated risk of generating turbidity within groundwater. The risk is considered to be low given the distance of any SPZ and groundwater abstraction points, any suspended fines are likely to settle and filter out prior to reaching any potential abstraction point.

6 CONCLUSIONS AND RECCOMMENDATIONS

The piling risk assessment has assessed the use of CFA for the proposed building foundation at the Site. It is concluded that the use of CFA will not result in the creation of preferential pollution pathways to the underlying Principal Aquifer of the Newhaven and Seaford Chalk Formation.

The piling risk assessment has assessed the use of the CFA piling methodology on the Site.

It is considered that the risks associated with the downward migration of impacted perched water can be mitigated through the use of casing through Made Ground and it is considered that CFA piles are suitable for use on site and once cased will present allow risk of downwards migration of contamination with impacted soils being brought to surface. Though advice should be sought from the piling contractor on suitable methods to mitigate any vertical movement of perched groundwater.

The risks posed by turbidity of the groundwater and are determined to be low given the relative distance from the Site to any potential abstraction point.

It is recommended that piling works are undertaken by a suitably qualified and experienced piling contractor, with all Site works carried out under an appropriate quality assurance and quality control regime, as specified by the contractor.

Further to this as per the Environment Agency statement (ref WA/2023/130859/02-L01) recommends the analysis of Chalk groundwater prior to commencement of Piling and ongoing monitoring during and following piling to monitor for the presence of contamination/turbidity and to assist with the discharge of planning Condition 9b.

It is recommended that contact is made with the Environment Agency to agree the specific groundwater monitoring regime and laboratory testing suite that are required to discharge Condition 9b.

APPENDIX I - LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between Omnia and the Client as indicated in Section 1.2.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the Site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the Site walkover reasonable effort has been made to obtain an overview of the Site conditions. However, during the Site walkover no attempt has been made to enter areas of the Site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the Site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II – GLOSSARY

AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (Chlorinated Solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (Petrol, Diesel, Kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo-Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCS	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

M	Metres
KM	Kilometres
%	Percent
%V/V	Percent Volume in Air
MB	Milli Bars (Atmospheric Pressure)
L/HR	Litres Per Hour
µG/L	Micrograms Per Litre (Parts Per Billion)
PPB	Parts Per Billion
MG/KG	Milligrams Per Kilogram (Parts Per Million)
PPM	Parts Per Million
MG/M^3	Milligram Per Metre Cubed
M BGL	Metres Below Ground Level
M BCL	Metres Below Cover Level

MAOD	Metres Above Ordnance Datum (Sea Level)
KN/M^2	Kilo Newtons Per Metre Squared
µM	Micrometre

APPENDIX III - DRAWINGS

Key

Site Boundary

500 0 500 m

Scale	Paper Size
1:25,000	A4

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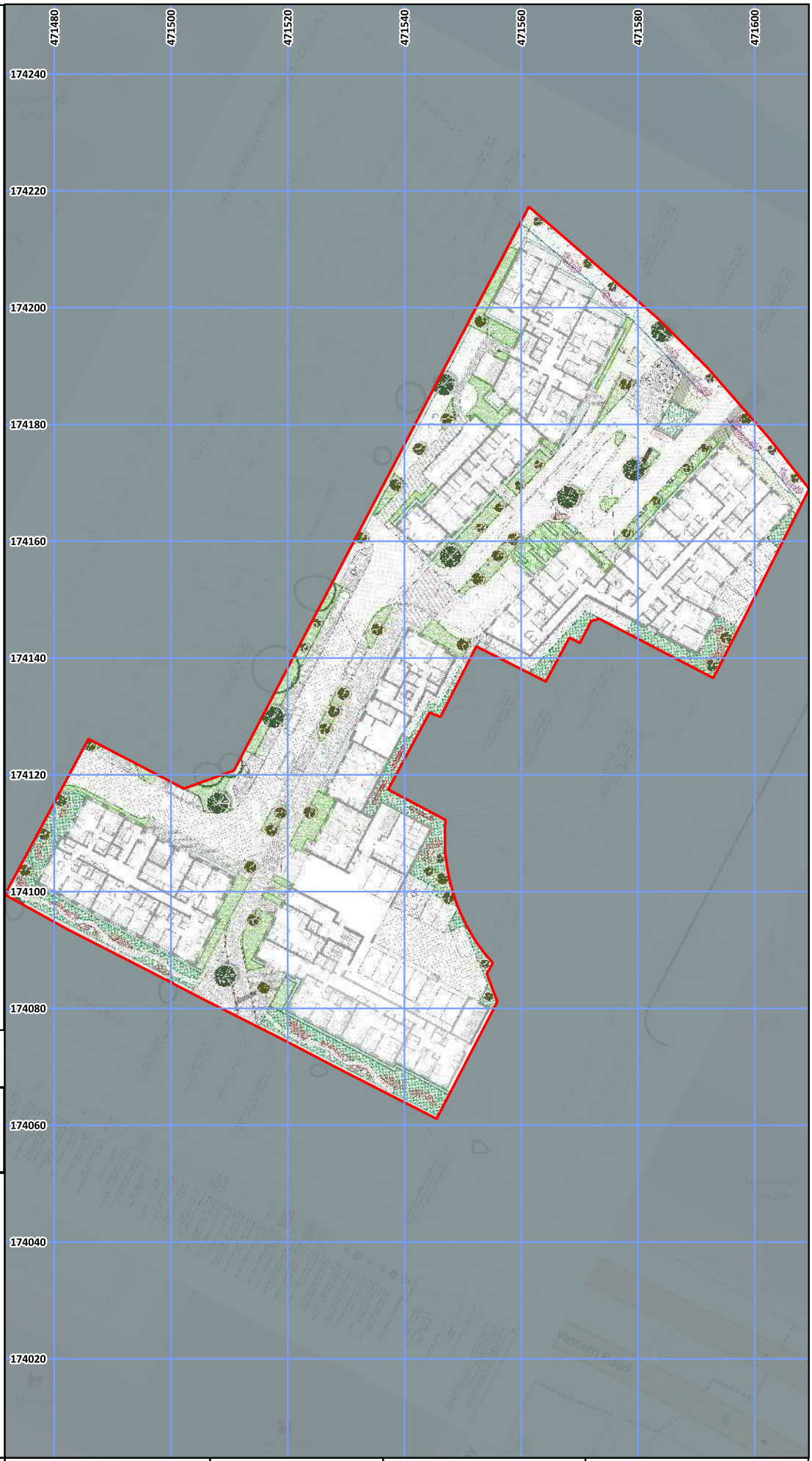
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OMNIA

Project Number: A10967-8	Client: Berkeley Homes (Oxford & Chiltern) Ltd	Drawn By: A.King	Drawing Title: Figure 1.0 Site Location Map
Job Title: 55 Vastern Road, Reading	Date: 08/08/2024	Authorised By: O. Maxwell	

Key

Site Boundary



10 0 10 20 30 m

Scale	Paper Size
1:950	A4

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OMNIA

Project Number: A10967-8	Client: Berkeley Homes (Oxford & Chiltern) Ltd	Drawn By: A.King	Drawing Title: Figure 2.0 Proposed Site Layout
Job Title: 55 Vastern Road, Reading	Date: 08/08/2024	Authorised By: O. Maxwell	

APPENDIX IV – COLLARD METHOD STATEMENT

Method statement for the Remediation of Former SSE site Vastern Road reading

The works consist of the following work operations

- Site Mobilisation including monitoring for noise, dust, vibration, odour, asbestos
- Demolition of existing office buiding fronting Vastern road and re-processing of suitable materials for re-use within the works
- Removal of redundant services
- Strip and remove site vegetation
- Excavation and removal of non compliant materials to suitably licensed facility
- Undertake treatment of suitable materials by use of Bio-remediation
- Break and remove hard surface, process for re-use on site, materials processed to 6F2 grading
- Excavate, remove and process in ground obstructions for re-use on site (6F2 Grading)
- Earthworks cut to fill exercise
- Installation of clean service corridors
- Placement of demarcation barrier (orange geo-textile)
- Treatment of perched waters (if encountered)
- Placement of pile mats using compliant materials generated from the earth works which have been validated for re-use within the works (crushed 6F2 materials)

Plant and Labour Resource

Site Supervision

2 no Traffic Marshall\Banksman

Plant operators

1 no Engineer

4 no 360 degree excavator

1 no jaw crusher (40 tonne)

1 no 3 way split screen

2 no hydraulic breaker

1 No pulveriser

2 no ADT

1 no D6 Dozer with machine control

1 No BW213 roller

1 no lance odour control system

1 no dust boz Dust suppression system

1 No water treatment plant

All staff and workforce will hold suitable qualifications in relation to their sphere of operation, NVQ, CSCS,CPCS. All staff and operatives will wear full PPE for the duration of the works.

A pre start meeting will be arranged to be attended by all parties in order to plan all works operations, this will generate a programme for the works. The site team will be briefed using site history, the remediation method statement by Omnia, the results of the additional site investigation undertaken in November 2023.

Prior to daily commencement of works a briefing will take place given by the site supervisor to all the workforce this will be in respect of the taks to be undertaken that day and will include

- Weather conditions
- Site specific tasks to be undertaken
- Dangers and risks associated with the days tasks
- Additional controls required to safely undertake work operations
- Interactions required with third parties

Sequence of operation (Earthworks)

- The site area is currently fenced, any breaches in the boundary fencing shall be made good by erecting Herras fencing. The site access is currently via gates from Lynmouth road, the gates will be kept closed when not in use and will be controlled by a gateman for the duration of the works.
- Prior to works commencing all monitoring will be in place together with dust suppression plant
- Before any hardstanding removal takes place a relief trench will be installed to all elevations this is to negate cross boundary vibration issues, in particular to the Lynmouth road elevation

The known hazardous hotspots (which include asbestos containing materials) will be set out by the engineer using the aforementioned Omnia report and subsequent November 2023 investigation. The hard surface covering these areas will be broken out and transported to onsite stockpile for processing.

The materials which are non compliant and cannot be used within the works (having been previously classified in the site investigation and subsequent November 2023 investigation) will be loaded directly to road vehicle for onward disposal to suitably licensed landfill, during the excavation works the materials will be dampened to ensure no dust elements/particles can enter the atmosphere. The dampening shall be by use of misting system, this is in addition to boundary dust controls. Staff and operatives undertaking this operation will wear enhanced PPE and approved face masks.

The excavation shall be undertaken at a reduced production rate in order to safely handle the materials during loading. A dedicated excavator will be assigned to this operation and will not be used on other operations until these works are complete. The machine will be power washed including all attachments on completion of of soil removal. The washing will take place in a bunded area adjacent to the bucket changing area in order to negate cross contamination.

The excavation will commence upon the issuing of a permit to dig from the centroid of the hotspot and progress towards the extremity, these excavations works will be supervised by Amiante staff (asbestos and contaminated consultant).

Once the the perceived extremity has been reached, validation samples to base and walls will be undertaken to show compliance. If validation failures occur then the affected area will be further excavated, retested and this process will be repeated until compliance has been achieved.

Materials which are deemed non hazardous and by treatment can be rendered resuable will be treated in the following manner.

- A designated bunded lined treatment area will be installed to take material which can be treated by Bioremediation, Prior to being treated the materials will be screened over a 3 way split screen, this will remove all materials over 40mm, these hard materials which will be brick, stone, gravels etc will be placed in stockpile for crushing. Once crushed they will be chemically and geotechnically tested to show compliance for re-use.
- The materials placed in the bio pile will be tested at T zero and covered using a suitable liner/fleece, the materials will be turned weekly and samples taken T1 etc. Additives can be used to enhance bioremediation if deemed necessary. The turning and testing process will be repeated until compliance is achieved. Once compliance has been achieved the materials will be left in stockpile until placement within the works is required.

The made ground which is neither hazardous or non hazardous still requires excavation and processing in order to be placed in accordance with the earthworks specification and this will be treated as follows.

Materials will be excavated to the interface between made ground and existing strata, loaded to dumptruck, haul and deposited in screening area. This operation will commence at the Vastern road elevation and progress towards the river elevation and will take the format of a box cut (see attached sketch). The materials once processed will be returned to fill area placed in layers and compacted in accordance with earthworks specification requirements. In order for follow on operations to understand the interface between the existing strata and the newly placed materials a geotextile will be placed at the interface, this will be site wide and will delineate all service/drainage trenches.

The hardstanding which remained in place during the offsite works and Non Haz recovery will be removed and processed to provide a 6F2 aggregate.(see attached sketch) The hard surface has been left in place in order to negate cross contamination and damage to the underlying soils.

All materials which have remained onsite post Haz removal and disposal, will have been processed and stockpiled prior to reuse this will be managed in the following manner.

- Prior to stockpiling a segregation layer will be placed, this will take the form of LLDPE liner overlain with an orange geotextile layer
- As the materials are processed from either screening or crushing these will be placed on this layer
- Each stockpile will have relevant signage, which will show point of origin, type of materials, classification
- Materials of different constituents will be stockpile separately and will be no closer than 2-3 metres at the toe of the pile

The plant used in crushing and screening operations will have in built dust suppression systems, this will further negate any dust escape to atmosphere. Once materials have been placed in stockpile they will be wetted on a daily basis as required.

The intent is to have a earthworks balance, which is ofcourse dependant on volumes recovered, processed etc. Any surplus on completion of remediation works will be of a crushed nature and as such will be returned to the market place

RISK ASSESSMENTS

13	**MOBILE PLANT OPERATIONS**	OPERATIVES OTHER WORKERS/ VISITORS	***HAZARDS*** **Initial Risk Rating** INJURY TO OPERATIVES AND OUTSIDE PERSONNEL. DAMAGE TO PLANT AND RETAINED SURROUNDING STRUCTURE. DAMAGE TO UNDERGROUND SERVICES. LESS CONTROL ON STEEP GRADIENTS. CRUSHING & OVERTURNING	**4**	**4**	**16**

			CONTROL MEASURES **Residual Risk Rating** ACCESS TO WORKING AREA TO BE RESTRICTED. ALL PLANT OPERATORS TO BE TRAINED IN OPERATION OF SPECIFIC TYPES OF PLANT. BANKSMAN TO BE IN ATTENDANCE WHEN NECESSARY. PLANT TO HAVE A MINIMUM OF 2 FEET CLEARANCE TO SURROUNDING STRUCTURES. SURVEY FOR UNDERGROUND VOIDS TO BE CARRIED OUT PRIOR TO START OF WORK. OPERATIVES TO CARRY OUT AND RECORD DAILY INSPECTIONS – NOTIFY ANY DEFECTS TO PLANT MANAGER ALL EQUIPMENT TO BE INSPECTED AND TESTED AS REQUIRED BY PUWER (AND LOLER IF APPROPRIATE) OPERATE AT A SAFE SPPED ACCORDING TO SITE CONDITIONS DRIVERS TO REMAIN ALERT TO THE PRESENCE OF OTHER VEHICLES & PEDESTRAINS. BE ALERT FOR SOFT GROUND & OTHER OBSTRUCTIONS. OPERATORS NOT TO USE MOBILE PHONES WHILE OPERATING PLANT. ENSURE VEHICLE IS PARKED SAFELY AND REMOVE KEYS WHEN NOT IN USE. ENSURE ALL UNDERGROUND SERVICES ARE IDENTIFIED. BE AWARE OF OVERHEAD RESTRICTIONS INC SERVICES ETC DO NOT SLEW BUCKET / ATTACHMENT OVER PERSONNEL OR CABINS / OTHER VEHICLES. ENSURE ATTACHMENTS ARE SUITABLE FOR EXCAVATOR. ENSURE KEYS ARE REMOVED FROM ALL PLANT WHEN NOT IN USE.	**4**	**2**	**8**

18	**RE-FUELLING OF DIESEL PLANT/ EQUIPMENT**	OPERATIVES	***HAZARDS*** **Initial Risk Rating** DIESEL SPILLAGE CONTACT WITH SKIN	**3**	**4**	**12**

			CONTROL MEASURES **Residual Risk Rating** **ADDITIONAL PPE** - GLOVES SUITABLE CONTAINERS/FUNNEL TO BE USED WHEN RE-FUELLING. ABSORBENT GRANULES / SPILL KIT TO BE AVAILABLE IN CASE OF SPILLAGE. OPERATIVES TO WEAR RUBBER/PLASTIC GLOVES AT ALL TIMES DURING RE-FUELLING AND POSITIONING OF HOSES ENSURE THAT OPERATIVES ARE A SAFE DISTANCE FRO M THE ASBESTOS REMOVAL / OTHER WORKS ON SITE. SEE ALSO COSHH ASSESSMENTS ENSURE KEYS ARE REMOVED FROM ALL PLANT WHEN NOT IN USE.	**3**	**2**	**6**

19	**INSPECTION & SERVICING OF DIESEL-POWERED PLANT AND MACHINERY**	OPERATIVES	***HAZARDS*** **Initial Risk Rating** SPILLAGE OF OIL OR DIESEL. INJURY DUE TO TRAPPING OF LIMBS. INSPECTION DOORS OR COWLING ARE CLOSED FALLING FROM HEIGHT. STEPS AND ACCESS WAYS ON MACHINERY INVARIABLY BECOME SLIPPERY DUE TO OIL SPILLAGE. MANUAL HANDLING OF OIL DRUMS AND PLANT COMPONENTS	**3**	**3**	**9**
			CONTROL MEASURES **Residual Risk Rating** **ADDITIONAL PPE** – GLOVES, GLASSESS, OVERALLS FUNNEL AND AIR PUMPS SHOULD BE USED WHEN HANDLING OILS OR FUELS. CARE TO BE TAKEN WHEN OPENING AND CLOSING DOORS AND COWLINGS MACHINE STEPS AND WALKWAYS TO BE KEPT CLEAN. BOXING RINGS TO BE FITTED TO PLANT (WHERE POSSIBLE) USE OF SAFETY HARNESS TO BE CONSIDERED WHEN WORKING AT HEIGHT OR PROVIDE ADDITONAL ACCESS METHODS (MEWP, SCAFFOLD TOWER, PODIUM, STEPS ETC) FITTERS TO BE COMPETANT / TRAINED. ENSURE KEYS ARE REMOVED FROM ALL PLANT WHEN NOT IN USE.	**3**	**2**	**6**

22	**WORK ADJACENT TO PUBLIC AREAS**	OPERATIVES OTHER WORKERS/ VISITORS	***HAZARDS*** **Initial Risk Rating** MATERIALS AND EQUIPMENT FALLING ONTO GENERAL PUBLIC OR SITE WORKERS	**3**	**4**	**12**

		PUBLIC/ TRESPASSERS	***CONTROL MEASURES*** **Residual Risk Rating** SITE TO BE FENCED OFF TO PREVENT PUBLIC ACCESS. WARNING SIGNS POSTED TO WARN PUBLIC AND AORKFORCE EXCLUSION ZONE TO BE OF SUFFICIENT SIZE TO CONTAIN THE STOCKPILES AND WORK OPERATIONS. DEBRIS NETTING TO BE USED WHERE APPROPRIATE. AIR(DUST) & VIBRATION MONITORING TO BE CARRIED OUT IF DEEMED NECESSARY BY ANALYST/SITE SUPERVISOR/CLIENT. FOLLOW ALL ON SITE RULES AND TMP**.**	**3**	**2**	**6**
	WORKING NEAR WATER	OPERATIVES PUBLIC AND VISITORS	**Hazard** **Initial Risk Rating** FALLING INTO WATER AND DROWNING WEILES DISEASE	**4**	**4**	**16**
			Control Measures **Residual risk rating** ALL STAFF SHOULD BE TRAINED IN RESCUE TECHNIQUES EG THROW LINE AND KNOW OF EMERGENCY PROCEDURES AND A FIRST AID KIT READILY AVAILABLE RESCUE EQUIPMENT SHOULD BE LOCATED WHERE IT WILL BE QUICK AND EASILY REACHED AND USED, RADIO OR MOBILE PHONE SHOULD BE CARRIED IN ORDER TO MAKE CONTACT WORKING ALONE IS NOT ALLOWED SPARE CLOTHING AND EMERGENCY BLANKET SHOULD BE AVAILABLE ESPECIALLY IN COLD WEATHER ENSURE, HANDS ARE WASHED REGULARLY, GLOVES WORN CUTS COVERED, CREAMS APPLIED (WEILS DISEASE)	**3**	**2**	**6**

23	**TRESPASS BY UNAUTHORISED PERSONNEL AND SITE HEAD COUNT OF OPERATIVES**	OPERATIVES OTHER WORKERS/ VISITORS PUBLIC/ TRESPASSER	***HAZARDS*** **Initial Risk Rating** INJURIES TO PERSONNEL. DIFFICULTIES IN ENFORCING EXCLUSION ZONES. INABILITY TO CLEAR SITE IN EMERGENCY ACCESSING UNSAFE AREAS / PARTIAL DEMOLISHED BUILDINGS. DAMAGE TO PLANT / EQUIPMENT. POTENTIAL EXPOSURE TO ASBESTOS SLIPS, TRIPS & FALLS	**3**	**4**	**12**
			CONTROL MEASURES **Residual Risk Rating** ALL OPERATIVES / VISITORS TO SIGN IN AT THE START OF EACH DAY AND SIGN OUT WHEN LEAVING SITE. WARNING NOTICES TO BE ERECTED TO ADVISE OF DANGER AREAS AND SITE GATES TO BE KEPT CLOSED AT ALL TIMES UNLESS OPEN FOR ACCESS OF PLANT REMOVE ANY UNAUTHORISED PERSONS FROM SITE SITE PERIMITER, EXCLUSION ZONES & FENCING TO BE CHECKED DAILY AND SIGNED OFF (ANY BREACHES TO BE REPORTED IMMEDIATELY, RECTIFIED AND A FULL SITE CHECK OF ALL AREAS / BUILDINGS TO BE CARRIED OUT FOR ANY TRESSPASERS. ALL PLANT & MACHINERY TO BE SECURED AT NIGHT, KEYS KEPT SAFELY IN THE SITE CABINS. EQUIPMENT TO BE STORED IN LOCK UP. EXCAVATIONS TO BE FENCED OFF OR BACKFILLED.	**3**	**2**	**6**

25	**WORK IN POOR WEATHER CONDITIONS**	OPERATIVES OTHER WORKERS/ VISITORS	***HAZARDS*** **Initial Risk Rating** DANGER TO OPERATIVES AND/OR PLANT DUE TO HIGH WINDS. OPERATIVES NOT SEEING HAZARDS DUE TO POOR VISIBILITY IN EXTREME WEATHER.	**3**	**3**	**9**

			CONTROL MEASURES **Residual Risk Rating** WORKS TO CEASE IN HIGH WINDS ON HIGH WORKS. WORKS TO CEASE IN EXTREME WEATHER E.G. SNOW & ICE. ALL EMPLOYEES TO BE ADVISED TO MAINTAIN A SAFE WORKING ENVIRONMENT.	**3**	**2**	**6**
26	**Working under or near overhead power lines**		**Hazard** **Initial Risk Rating** Possibility of striking or coming into contact with overhead cables causing injury or death to workforce **Control Measures** Comprehensive toolbox talks, Installation of goal post to both elevations of cable lines, signage to locations, Banksman to manage traffic access. Work under GS6 Guidance note	**6** **3**	**3** **2**	**18** **6**

28	**WORK IN POOR GROUND CONDITIONS**	OPERATIVES OTHER WORKERS/ VISITORS	***HAZARDS*** **Initial Risk Rating** COLLAPSE OF UNDERGROUND VOIDS. TRIPPING HAZARDS. SLIPPERY SURFACES.	**3**	**4**	**12**
			CONTROL MEASURES **Residual Risk Rating** SITE TO BE SURVEYED TO ESTABLISH THE LOCATION OF ANY UNDERGROUND VOIDS AND THESE TO BE EITHER OPENED AND TEMPORARILY FILLED OR MARKED AT GROUND LEVEL. OPERATIVES NOT TO WALK OR WORK ON UNEVEN OR SLIPPERY GROUND. SMALL HOLES IN THE GROUND CAN BE THE CAUSE OF SERIOUS LEG AND ANKLE INJURIES.	**3**	**2**	**6**

44	**TRAFFIC MANAGEMENT / VEHICLES ON SITE.**	OPERATIVES OTHER WORKERS/ VISITORS PUBLIC	***HAZARDS*** **Initial Risk Rating** INJURIES TO PEDESTRIANS. COLLISIONS BETWEEN VEHICLES. DAMAGE TO VEHICLES/PLANT. DAMAGE TO STRUCTURES. VEHICLES/PLANT REVERSING. ACCESS & EGRESS TO SITE. LOADS FALLING FROM VEHICLE.	4	4	16
			CONTROL MEASURES **Residual Risk Rating** SEGREGATE PEDESTRIANS FROM PLANT/EQUIPMENT. NO REVERSING WITHOUT TRAFFIC MARSHALL. ACCESS/EGRESS TO SITE CONTROLED BY BANKSMAN/GATEMAN (WHERE POSSIBLE) NOMINATED TRAFFIC MARSHALL AND DRIVER/PLANT OPERATIVE TO BE IN CONSTANT CONTACT/DISCUSSION. WHERE PRACTICABLE ONE-WAY SYSTEM AROUND SITE. ADEQUATE SIGNAGE IN ACCORDANCE WITH THE HEALTH AND SAFETY (SIGNS & SIGNALS) REGULATIONS. FOLLOW REQUIREMENTS OF HSE '*SAFE USE OF VEHICLES ON CONSTRUCTION SITES' (HSG 144)* ALL PERSONNEL TO WEAR HI-VISIBILITY CLOTHING. (VEST, JACKET) BEFORE REMOVING ROPES, STRAPS ETC ENSURE LOAD IS SECURE, ALSO WHEN OPENING DOORS (SKIPS ETC) TMP TO BE ON SITE AT ALL TIMES. SITE MANAGER TO AMEND / REVIEW PERIODICALLY TO TAKE INTO ACCOUNT CHANGING SITE CONDITIONS / WORKS. SITE WELFARE AREA TO BE SEGRERGATED FROM WORKS AREA AND WHERE POSSIBLE CAR PARK AREA TO BE PROVIDED. ENSURE KEYS ARE REMOVED FROM ALL PLANT WHEN NOT IN USE.	**4**	**2**	**8**

49	**LOADING PLANT/ EQUIPMENT ONTO LOW LOADER**	OPERATIVES OTHER WORKERS/ VISITORS PUBLIC	***HAZARDS*** **Initial Risk Rating** COLLISION WITH LOW LOADER BY PLANT BEING LOADED. PLANT FALLING OFF LOW LOADER. COLLISION WITH OTHER VEHICLES/PLANT. INJURY TO PEDESTRIANS.	**4**	**3**	**12**
			CONTROL MEASURES **Residual Risk Rating** LOADING/UNLOADING ONLY TO BE CARRIED OUT BY OPERATIVE HOLDING APPROPRIATE CPCS CARD FOR PLANT. LOADING/UNLOADING TO BE CARRIED OUT IN DESIGNATED LOCATION – CONED OFF AND CONTROLLED BY A BANKSMAN IF DEEMED NECESSARY AND WHERE POSSSIBLE. LOW LOADER TO BE PARKED ON LEVEL GROUND AND WHERE POSSIBLE PARKED SO THE PLANT CAN BE LOADED UPHILL. TRAILER MUST BE OF APPROPRIATE SIZE FOR PLANT BEING TRANSPORTED. LOADING AREA ON LOW LOADER TO BE CLEANED OF ICE/MUD IF NECESSARY. PLANT TO BE CLEANED (MUD REMOVED FROM TRACKS ETC) BEFORE LOADING. ENSURE PLANT IS CORRECTLY LOCATED AND SECURED ONTO THE LOW LOADER BEFORE LEAVING SITE. LOW LOADER DRIVER TO LOAD / UNLOAD ALL PLANT. PATHS, ROADS, KERBS ETC TO BE PROTECTED FROM SLEWING (TRACKED) PLANT BEFORE LOADING / UNLOADING (IF REQUIRED) ENSURE KEYS ARE REMOVED FROM ALL PLANT WHEN NOT IN USE.	**4**	**2**	**8**
50	**Working in contaminated land**	OPERATIVES, OTHER WORKERS, PUBLIC/ VISITORS LOCAL RESIDENTS	**Hazards** **Initial Risk Rating** SEVERE INJURY TO HEALTH DUE TO EXPOSURE ODOURS SKIN CONTACT TO LIQUIDS FROM HISTORIC CONTAMINANTS DURING EXCAVATION INHALATION OF AIR BORNE PARTICLES/FIBRES (ASBESTOS/INSULATION ETC)	**6**	**3**	**18**
			CONTROL MEASURES **RESIDUAL RISK RATING** WEARING OF ENHANCED PPE, DISPOSABLE SUITS, GOGGLES, P3 MASKS, GLOVES ETC CONTINUOUS DAMPING DOWN OF EXCAVATION TO NEGATE MATERIALS BECOMING AIRBORNE. REALTIME MONITORING ODOUR CONTROL SYSTEMS ONLY UNDERTAKE OPERATIONS IN FAVOURABLE WEATHER CONDITIONS	**4**	**2**	**8**

I acknowledge that I have read the attached method statement, and I am aware of its content and its applicability to my role and activities on site.

Name (Print)	Signature	Date	Company Name	Site