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QTS Environmental Report No: 17-68067

Site Reference: Bradstone Road, Manchester

Project / Job Ref: A2333

Order No: A2333

Sample Receipt Date: 07/12/2017

Sample Scheduled Date: 07/12/2017

Report Issue Number: 1

Reporting Date: 13/12/2017

Authorised by:

Russell Jarvis
Associate Director of Client Services

QTSE is the trading name of DETS Ltd, company registration number 03705645

Authorised by:

Dave Ashworth
Deputy Quality Manager



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Soil Analysis Certificate						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17	05/12/17	05/12/17
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road, Manchester	TP / BH No	WS101	WS102	WS104	WS104	TP101
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: A2333	Depth (m)	0.15 - 0.30	0.20 - 0.40	0.30 - 0.60	1.00 - 1.30	0.20 - 0.50
Reporting Date: 13/12/2017	QTS Sample No	305607	305608	305609	305610	305611

Determinand	Unit	RL	Accreditation					
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Detected	Not Detected	Detected
Asbestos Matrix ^(S)	Material Type	N/a	NONE			Loose fibres in soil		Loose fibres in soil
Asbestos Type ^(S)	PLM Result	N/a	ISO17025			Chrysotile		Chrysotile
pH	pH Units	N/a	MCERTS	8.6	10.8	9.2	8.3	8.4
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Complex Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Total Sulphate as SO ₄	mg/kg	< 200	NONE	889	2287	1084	427	690
Total Sulphate as SO ₄	%	< 0.02	NONE	0.09	0.23	0.11	0.04	0.07
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	46	84	98	67	85
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.05	0.08	0.10	0.07	0.09
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter	%	< 0.1	MCERTS	0.9	1.1	2.4	0.5	2.6
Arsenic (As)	mg/kg	< 2	MCERTS	4	8	24	7	20
Barium (Ba)	mg/kg	< 5	NONE	262	308	323	156	250
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	0.7	1.4	1	1.2
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.5	0.3	0.2	< 0.2	< 0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	9	20	19	25	21
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	15	40	44	22	50
Lead (Pb)	mg/kg	< 3	MCERTS	688	153	65	15	91
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	6	13	22	28	26
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Vanadium (V)	mg/kg	< 2	NONE	12	24	39	27	35
Zinc (Zn)	mg/kg	< 3	MCERTS	42	109	68	58	99
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
EPH (C10 - C40)	mg/kg	< 6	MCERTS	1150	1480	521	< 6	294

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Subcontracted analysis (S)



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Soil Analysis Certificate						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bradstone Road, Manchester	TP / BH No	TP102	TP103	TP104		
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: A2333	Depth (m)	0.30 - 0.50	0.60 - 0.90	0.30 - 0.60		
Reporting Date: 13/12/2017	QTSE Sample No	305612	305613	305614		

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Detected	Detected	
Asbestos Matrix ^(S)	Material Type	N/a	NONE		Loose fibres in soil	Loose fibres in soil	
Asbestos Type ^(S)	PLM Result	N/a	ISO17025		Chrysotile	Chrysotile	
pH	pH Units	N/a	MCERTS	8.7	10.4	8.7	
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	
Complex Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	
Free Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2	
Total Sulphate as SO ₄	mg/kg	< 200	NONE	718	2997	2413	
Total Sulphate as SO ₄	%	< 0.02	NONE	0.07	0.30	0.24	
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	MCERTS	21	288	428	
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	MCERTS	0.02	0.29	0.43	
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	
Organic Matter	%	< 0.1	MCERTS	0.8	1.2	1.2	
Arsenic (As)	mg/kg	< 2	MCERTS	3	20	18	
Barium (Ba)	mg/kg	< 5	NONE	453	508	625	
Beryllium (Be)	mg/kg	< 0.5	NONE	< 0.5	1.5	1.1	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	1.3	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.7	< 0.2	0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	6	21	19	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	15	58	50	
Lead (Pb)	mg/kg	< 3	MCERTS	22	144	177	
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	8	25	19	
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	
Vanadium (V)	mg/kg	< 2	NONE	9	37	35	
Zinc (Zn)	mg/kg	< 3	MCERTS	57	91	241	
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	
EPH (C10 - C40)	mg/kg	< 6	MCERTS	1720	975	358	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17	05/12/17	05/12/17
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road, Manchester	TP / BH No	WS101	WS102	WS104	WS104	TP101
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: A2333	Depth (m)	0.15 - 0.30	0.20 - 0.40	0.30 - 0.60	1.00 - 1.30	0.20 - 0.50
Reporting Date: 13/12/2017	QTSE Sample No	305607	305608	305609	305610	305611

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	0.18	0.43	< 0.1	0.49
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	0.14
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	0.22	0.35	< 0.1	0.27
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	0.31	< 0.1	0.29
Phenanthrene	mg/kg	< 0.1	MCERTS	0.29	1.39	3.95	0.15	3.23
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.29	0.66	< 0.1	0.64
Fluoranthene	mg/kg	< 0.1	MCERTS	0.50	1.70	6.35	< 0.1	6.15
Pyrene	mg/kg	< 0.1	MCERTS	0.54	1.57	6.87	< 0.1	5.57
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.21	0.72	3.15	< 0.1	2.40
Chrysene	mg/kg	< 0.1	MCERTS	0.36	0.88	3.90	< 0.1	3.21
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.34	0.92	4.28	< 0.1	3.70
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.12	0.29	1.36	< 0.1	1.17
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.25	0.69	2.96	< 0.1	2.54
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	1.46	< 0.1	1.37
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.28	< 0.1	0.24
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.11	0.33	1.24	< 0.1	1.17
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.7	9.7	37.6	< 1.6	32.6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bradstone Road, Manchester	TP / BH No	TP102	TP103	TP104		
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: A2333	Depth (m)	0.30 - 0.50	0.60 - 0.90	0.30 - 0.60		
Reporting Date: 13/12/2017	QTSE Sample No	305612	305613	305614		

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	0.33	0.34	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	0.41	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	0.40	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	3.04	0.94	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.68	0.15	
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	3.37	1.20	
Pyrene	mg/kg	< 0.1	MCERTS	0.14	2.89	1.22	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	1.08	0.62	
Chrysene	mg/kg	< 0.1	MCERTS	0.18	1.25	0.72	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.10	1.07	0.81	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.36	0.28	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.11	0.73	0.57	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.29	0.31	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	0.25	0.28	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	16.2	7.4	

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Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17	05/12/17	05/12/17
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road, Manchester	TP / BH No	WS101	WS102	WS104	WS104	TP101
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: A2333	Depth (m)	0.15 - 0.30	0.20 - 0.40	0.30 - 0.60	1.00 - 1.30	0.20 - 0.50
Reporting Date: 13/12/2017	QTSE Sample No	305607	305608	305609	305610	305611

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	3	< 2	< 2	< 2
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	5	28	< 2	< 2	< 2
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	69	131	12	< 3	< 3
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	10	26	< 3	< 3	< 3
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	314	312	97	< 10	22
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	398	499	108	< 21	22
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	9	< 2	< 2	< 2
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	24	71	8	< 2	7
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	31	56	24	< 3	28
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	548	691	175	< 10	136
Aromatic (C5 - C35)	mg/kg	< 21	NONE	604	827	207	< 21	172
Total >C5 - C35	mg/kg	< 42	NONE	1001	1327	315	< 42	193

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Soil Analysis Certificate - TPH CWG Banded

QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bradstone Road, Manchester	TP / BH No	TP102	TP103	TP104		
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: A2333	Depth (m)	0.30 - 0.50	0.60 - 0.90	0.30 - 0.60		
Reporting Date: 13/12/2017	QTSE Sample No	305612	305613	305614		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	5	< 2		
Aliphatic >C10 - C12	mg/kg	< 2	MCERTS	2	17	< 2		
Aliphatic >C12 - C16	mg/kg	< 3	MCERTS	70	77	< 3		
Aliphatic >C16 - C21	mg/kg	< 3	MCERTS	39	26	< 3		
Aliphatic >C21 - C34	mg/kg	< 10	MCERTS	557	194	< 10		
Aliphatic (C5 - C34)	mg/kg	< 21	NONE	668	319	< 21		
Aromatic >C5 - C7	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10	mg/kg	< 2	MCERTS	< 2	3	< 2		
Aromatic >C10 - C12	mg/kg	< 2	MCERTS	< 2	15	< 2		
Aromatic >C12 - C16	mg/kg	< 2	MCERTS	17	48	< 2		
Aromatic >C16 - C21	mg/kg	< 3	MCERTS	44	54	< 3		
Aromatic >C21 - C35	mg/kg	< 10	MCERTS	902	383	< 10		
Aromatic (C5 - C35)	mg/kg	< 21	NONE	963	503	< 21		
Total >C5 - C35	mg/kg	< 42	NONE	1631	822	< 42		

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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17	05/12/17	05/12/17
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road, Manchester	TP / BH No	WS101	WS102	WS104	WS104	TP101
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: A2333	Depth (m)	0.15 - 0.30	0.20 - 0.40	0.30 - 0.60	1.00 - 1.30	0.20 - 0.50
Reporting Date: 13/12/2017	QTSE Sample No	305607	305608	305609	305610	305611

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
QTS Environmental Report No: 17-68067	Date Sampled	05/12/17	05/12/17	05/12/17		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied		
Site Reference: Bradstone Road, Manchester	TP / BH No	TP102	TP103	TP104		
Project / Job Ref: A2333	Additional Refs	None Supplied	None Supplied	None Supplied		
Order No: A2333	Depth (m)	0.30 - 0.50	0.60 - 0.90	0.30 - 0.60		
Reporting Date: 13/12/2017	QTSE Sample No	305612	305613	305614		

Determinand	Unit	RL	Accreditation					
Benzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C



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Soil Analysis Certificate - Sample Descriptions

QTS Environmental Report No: 17-68067

Earth Environmental & Geotechnical Ltd

Site Reference: Bradstone Road, Manchester

Project / Job Ref: A2333

Order No: A2333

Reporting Date: 13/12/2017

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
305607	WS101	None Supplied	0.15 - 0.30	9.4	Brown sandy gravel with brick and concrete
305608	WS102	None Supplied	0.20 - 0.40	4.7	Brown sandy gravel with stones and concrete
305609	WS104	None Supplied	0.30 - 0.60	13.9	Brown sandy gravel with brick and concrete
305610	WS104	None Supplied	1.00 - 1.30	13.4	Brown sandy clay
305611	TP101	None Supplied	0.20 - 0.50	13.4	Black sandy gravel with stones and concrete
305612	TP102	None Supplied	0.30 - 0.50	1.5	Brown sandy gravel with stones and concrete
305613	TP103	None Supplied	0.60 - 0.90	11.4	Black sandy gravel with stones and brick
305614	TP104	None Supplied	0.30 - 0.60	10.6	Brown sandy gravel with stones and concrete

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{u/s}



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Soil Analysis Certificate - Methodology & Miscellaneous Information

QTS Environmental Report No: 17-68067

Earth Environmental & Geotechnical Ltd

Site Reference: Bradstone Road, Manchester

Project / Job Ref: A2333

Order No: A2333

Reporting Date: 13/12/2017

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 dphenylcarbazine followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

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DETS Report No: 24-00563

Site Reference: Bradstone Road

Project / Job Ref: A2333

Order No: A2333/LG/02

Sample Receipt Date: 22/01/2024

Sample Scheduled Date: 22/01/2024

Report Issue Number: 1

Reporting Date: 29/01/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Soil Analysis Certificate						
DETS Report No: 24-00563	Date Sampled	15/12/24	15/12/24	15/12/24	15/12/24	15/12/24
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road	TP / BH No	SP101	SP102	SP103	SP104	WS201
Project / Job Ref: A2333	Additional Refs	691246	691247	691248	691249	691250
Order No: A2333/LG/02	Depth (m)	0.10	0.05	0.10	0.05	0.50
Reporting Date: 29/01/2024	DETS Sample No	695007	695008	695009	695010	695011

Determinand	Unit	RL	Accreditation					
Asbestos Quantification ^(S)	%	< 0.001	ISO17025	0.002	0.094	< 0.001	0.003	0.007

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Soil Analysis Certificate						
DETS Report No: 24-00563	Date Sampled	15/12/24	15/12/24	15/12/24	15/12/24	15/12/24
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Bradstone Road	TP / BH No	WS203	WS204	WS205	WS206	WS207
Project / Job Ref: A2333	Additional Refs	691252	691253	691254	691255	691256
Order No: A2333/LG/02	Depth (m)	0.45	0.10	0.60	0.30	0.75
Reporting Date: 29/01/2024	DETS Sample No	695012	695013	695014	695015	695016

Determinand	Unit	RL	Accreditation					
Asbestos Quantification ^(S)	%	< 0.001	ISO17025	0.010	< 0.001	0.255	< 0.001	< 0.001

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-00563

Earth Environmental & Geotechnical Ltd

Site Reference: Bradstone Road

Project / Job Ref: A2333

Order No: A2333/LG/02

Reporting Date: 29/01/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

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List of HWOL Acronyms and Operators
DETS Report No: 24-00563
Earth Environmental & Geotechnical Ltd
Site Reference: Bradstone Road
Project / Job Ref: A2333
Order No: A2333/LG/02
Reporting Date: 29/01/2024

Acronym	Description
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
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym