

Results - Soil

Client: Ground Engineering Limited		Chemtest Job No.:		19-42068	19-42068	19-42068	19-42068	19-42068
Quotation No.:		Chemtest Sample ID.:		944693	944694	944695	944696	944697
Order No.: C14947		Client Sample Ref.:		ES1	ES2	ES3	ES1	ES2
		Client Sample ID.:		ES1	ES2	ES3	ES1	ES2
		Sample Location:		BH1	BH1	BH1	BH2	BH2
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.20	0.50	0.90	0.10	0.20
		Date Sampled:		16-Dec-2019	16-Dec-2019	16-Dec-2019	16-Dec-2019	16-Dec-2019
		Asbestos Lab:		DURHAM		DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD				
pH	M	2010		4.0				8.9
Moisture	N	2030	%	0.020		8.9		11
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		0.50		0.48
Sulphate (Total)	M	2430	mg/kg	100		1100		1000
Cyanide (Total)	M	2300	mg/kg	0.50		< 0.50		< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		6.3		4.4
Arsenic	M	2450	mg/kg	1.0		9.2		12
Cadmium	M	2450	mg/kg	0.10		0.18		0.19
Chromium	M	2450	mg/kg	1.0		17		21
Copper	M	2450	mg/kg	0.50		18		17
Mercury	M	2450	mg/kg	0.10		0.22		0.17
Nickel	M	2450	mg/kg	0.50		14		17
Lead	M	2450	mg/kg	0.50		30		50
Selenium	M	2450	mg/kg	0.20		0.31		0.26
Zinc	M	2450	mg/kg	0.50		37		58
Acenaphthene	M	2700	mg/kg	0.10		< 0.10		< 0.10
Acenaphthylene	M	2700	mg/kg	0.10		< 0.10		< 0.10
Anthracene	M	2700	mg/kg	0.10		< 0.10		0.11
Benzo[a]anthracene	M	2700	mg/kg	0.10		< 0.10		0.70
Benzo[a]pyrene	M	2700	mg/kg	0.10		< 0.10		0.92
Benzo[b]fluoranthene	M	2700	mg/kg	0.10		< 0.10		0.89
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10		< 0.10		0.69
Benzo[k]fluoranthene	M	2700	mg/kg	0.10		< 0.10		0.38
Chrysene	M	2700	mg/kg	0.10		< 0.10		0.80
Dibenz[a,h]anthracene	M	2700	mg/kg	0.10		< 0.10		0.14
Fluoranthene	M	2700	mg/kg	0.10		< 0.10		0.99
Fluorene	M	2700	mg/kg	0.10		< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10		< 0.10		0.72
Naphthalene	M	2700	mg/kg	0.10		< 0.10		< 0.10
Phenanthrene	M	2700	mg/kg	0.10		< 0.10		0.44
Pyrene	M	2700	mg/kg	0.10		< 0.10		1.2
Total Of 16 PAH's	M	2700	mg/kg	2.0		< 2.0		8.0
ACM Type	U	2192		N/A		-	-	
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	
ACM Detection Stage	U	2192		N/A	-	-	-	
Soil Colour	N	2040		N/A	Brown			Brown

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Quotation No.:		Chemtest Sample ID.:		944693	944694	944695	944696	944697
Order No.: C14947		Client Sample Ref.:		ES1	ES2	ES3	ES1	ES2
		Client Sample ID.:		ES1	ES2	ES3	ES1	ES2
		Sample Location:		BH1	BH1	BH1	BH2	BH2
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		0.20	0.50	0.90	0.10	0.20
		Date Sampled:		16-Dec-2019	16-Dec-2019	16-Dec-2019	16-Dec-2019	16-Dec-2019
		Asbestos Lab:		DURHAM		DURHAM	DURHAM	
Determinand	Accred.	SOP	Units	LOD				
Other Material	N	2040		N/A				Stones
Soil Texture	N	2040		N/A				Sand
Beryllium	U	2450	mg/kg	1.0				< 1.0
Vanadium	U	2450	mg/kg	5.0				35
Total Organic Carbon	M	2625	%	0.20				1.2
TPH >C6-C8	N	2670	mg/kg	1.0				< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0				< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0				< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0				< 1.0
TPH >C16-C21	N	2670	mg/kg	1.0				< 1.0
TPH >C21-C35	N	2670	mg/kg	1.0				< 1.0
Total TPH >C6-C35	U	2670	mg/kg	10.0				< 10
Total TPH >C6-C40	M	2670	mg/kg	10				< 10

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Report Information

Key

- U UKAS accredited
- M MCERTS and UKAS accredited
- N Unaccredited
- S This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
- SN This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
- T This analysis has been subcontracted to an unaccredited laboratory
- I/S Insufficient Sample
- U/S Unsuitable Sample
- N/E not evaluated
- < "less than"
- > "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



Final Report

Report No.:	19-42071-1		
Initial Date of Issue:	07-Jan-2020		
Client	Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	James Davies		
Project	C14947 Hillingdon Hospital		
Quotation No.:		Date Received:	17-Dec-2019
Order No.:	C14947	Date Instructed:	17-Dec-2019
No. of Samples:	1		
Turnaround (Wkdays):	7	Results Due:	02-Jan-2020
Date Approved:	07-Jan-2020		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

Results - Soil

Client: Ground Engineering Limited		Chemtest Job No.:		19-42071
Quotation No.:		Chemtest Sample ID.:		944709
		Client Sample ID.:		ES2
		Sample Location:		BH2
		Sample Type:		SOIL
		Top Depth (m):		0.20
		Date Sampled:		16-Dec-2019
Determination	Accred.	SOP	Units	LOD
	N	2030	%	0.020
Moisture				9.4

Results - 2 Stage WAC

Project: C14947 Hillingdon Hospital

Chemtest Job No:	19-42071	Landfill Waste Acceptance Criteria			
Chemtest Sample ID:	944709	Limits			
Sample Ref:	ES2	Inert Waste Landfill		Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample Location:	BH2				
Top Depth(m):	0.20				
Bottom Depth(m):					
Sampling Date:	16-Dec-2019				
Determinand	SOP	Accred.	Units		
Total Organic Carbon	2625	U	%	1.7	6
Loss On Ignition	2610	U	%	3.6	10
Total BTEX	2760	U	mg/kg	<0.010	--
Total PCBs (7 Condensers)	2815	U	mg/kg	<0.10	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	41	--
Total (Of 17) PAH's	2800	N	mg/kg	<2.0	--
pH	2010	U		8.6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.055	>6
Eluate Analysis			2:1 mg/l	Cumulative mg/kg 10:1	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg
Arsenic	1450	U	0.0074	<0.050	0.5
Barium	1450	U	0.025	<0.50	2
Cadmium	1450	U	0.00042	<0.010	20
Chromium	1450	U	0.044	<0.010	0.04
Copper	1450	U	0.0073	0.088	0.5
Mercury	1450	U	0.0076	<0.050	10
Molybdenum	1450	U	0.0070	<0.050	2
Nickel	1450	U	<0.0010	0.015	0.01
Lead	1450	U	0.0023	<0.050	0.5
Antimony	1450	U	0.0017	<0.010	0.4
Selenium	1450	U	0.0015	<0.010	0.5
Zinc	1450	U	0.024	<0.010	0.06
Chloride	1220	U	4.4	<0.50	0.1
Fluoride	1220	U	0.81	<10	0.5
Sulphate	1220	U	28	53	50
Total Dissolved Solids	1020	N	240	6.3	15000
Phenol Index	1920	U	<0.030	120	20000
Dissolved Organic Carbon	1610	U		480	50000
				<0.30	60000
				12	100000
				<50	-
				130	800
					1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.4

Leachate Test Information	
Leachant volume 1st extract/l	0.332
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.177

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

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Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

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Final Report

Report No.:	19-42077-1		
Initial Date of Issue:	07-Jan-2020		
Client	Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	James Davies		
Project	C14947 Hillngdon Hospital		
Quotation No.:		Date Received:	17-Dec-2019
Order No.:	C14947	Date Instructed:	17-Dec-2019
No. of Samples:	2		
Turnaround (Wkdays):	7	Results Due:	02-Jan-2020
Date Approved:	07-Jan-2020		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

Client: Ground Engineering Limited		Chemtest Job No.:		19-42077
Quotation No.:		Chemtest Sample ID.:		944744
		Client Sample ID.:		ES1
		Sample Location:		WS1
		Sample Type:		SOIL
		Top Depth (m):		0.30
		Date Sampled:		16-Dec-2019
Determinand	Accred.	SOP	Units	LOD
	N	2030	%	0.020
Moisture				4.8
				9.7

Results - 2 Stage WAC

Project: C14947 Hillingdon Hospital

Chemtest Job No: 19-42077

Sample Ref: 944744

Sample ID: ES1

Sample Location: WS1

Top Depth(m): 0.30

Bottom Depth(m):

Sampling Date: 16-Dec-2019

Determination	SOP	Accred.	Units	Landfill Waste Acceptance Criteria Limits		
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	2.9	5	6
Loss On Ignition	2610	U	%	5.0	--	10
Total BTX	2760	U	mg/kg	< 0.010	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	430	500	--
Total (Of 17) PAH's	2800	N	mg/kg	11	100	--
pH	2010	U		10.5	--	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.036	To evaluate	To evaluate
Eluate Analysis				Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1450	U	mg/l	8:1 mg/l	2:1 mg/kg	Cumulative mg/kg 10:1
Barium	1450	U	mg/l	< 0.0010	< 0.050	< 0.050
Cadmium	1450	U	mg/l	0.034	< 0.50	< 0.50
Chromium	1450	U	mg/l	< 0.00010	< 0.010	< 0.010
Copper	1450	U	mg/l	0.021	< 0.050	0.076
Mercury	1450	U	mg/l	0.045	0.090	0.072
Molybdenum	1450	U	mg/l	0.022	0.0081	0.010
Nickel	1450	U	mg/l	0.019	< 0.050	0.074
Lead	1450	U	mg/l	< 0.0010	< 0.050	< 0.050
Antimony	1450	U	mg/l	0.011	< 0.010	< 0.010
Selenium	1450	U	mg/l	0.022	< 0.010	< 0.010
Zinc	1450	U	mg/l	0.0059	< 0.50	< 0.50
Chloride	1220	U	mg/l	69	140	210
Fluoride	1220	U	mg/l	0.34	< 1.0	3.2
Sulphate	1220	U	mg/l	90	180	530
Total Dissolved Solids	1020	N	mg/l	360	710	1900
Phenol Index	1920	U	mg/l	< 0.030	< 0.30	< 0.50
Dissolved Organic Carbon	1610	U	mg/l	22	< 50	170

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	4.8

Leachate Test Information	
Leachant volume 1st extract/l	0.341
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.251

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - 2 Stage WAC

Project: C14947 Hillingdon Hospital

Chemtest Job No:	19-42077	Landfill Waste Acceptance Criteria			
Chemtest Sample ID:	944745	Limits			
Sample Ref:	ES1	Inert Waste Landfill		Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample Location:	WS9				
Top Depth(m):	0.30				
Bottom Depth(m):	16-Dec-2019				
Sampling Date:					
Determinand	SOP	Accred.	Units		
Total Organic Carbon	2625	U	%	1.3	6
Loss On Ignition	2610	U	%	3.7	10
Total BTEX	2760	U	mg/kg	<0.010	--
Total PCBs (7 Congeners)	2815	U	mg/kg	<0.10	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	59	--
Total (Of 17) PAH's	2800	N	mg/kg	2.4	--
pH	2010	U		8.2	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.025	--
Eluate Analysis				Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg	
Arsenic	1450	U	mg/l	8:1	2
Barium	1450	U	mg/kg	2:1	25
Cadmium	1450	U	mg/l	mg/kg	300
Chromium	1450	U	mg/kg	mg/kg	5
Copper	1450	U	mg/l	mg/kg	70
Mercury	1450	U	mg/l	mg/kg	100
Molybdenum	1450	U	mg/l	mg/kg	2
Nickel	1450	U	mg/l	mg/kg	30
Lead	1450	U	mg/l	mg/kg	40
Antimony	1450	U	mg/l	mg/kg	50
Selenium	1450	U	mg/l	mg/kg	5
Zinc	1450	U	mg/l	mg/kg	7
Chloride	1220	U	mg/l	mg/kg	200
Fluoride	1220	U	mg/l	mg/kg	25000
Sulphate	1220	U	mg/l	mg/kg	500
Total Dissolved Solids	1020	N	mg/l	mg/kg	50000
Phenol Index	1920	U	mg/l	mg/kg	100000
Dissolved Organic Carbon	1610	U	mg/l	mg/kg	-

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	9.7

Leachate Test Information	
Leachant volume 1st extract/l	0.331
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.184

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenzo[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

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- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
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Sample Retention and Disposal

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All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

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Amended Report

Report No.:	19-42352-3		
Initial Date of Issue:	07-Jan-2020	Date of Re-Issue:	09-Jan-2020
Client	Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	James Davies		
Project	C14947 Hillingdon Hospital		
Quotation No.:		Date Received:	19-Dec-2019
Order No.:	C14947	Date Instructed:	19-Dec-2019
No. of Samples:	6		
Turnaround (Wkdays):	5	Results Due:	02-Jan-2020
Date Approved:	07-Jan-2020		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

Results - Water

Client: Ground Engineering Limited		Chemtest Job No.:		19-42352	19-42352	19-42352	19-42352	19-42352	19-42352
Quotation No.:		Chemtest Sample ID.:		945939	945940	945941	945942	945943	945944
Order No.: C14947		Client Sample Ref.:		W1	W1	W1	W1	W1	W1
		Client Sample ID.:		W1	W1	W1	W1	W1	W1
		Sample Location:		WS1	WS2	WS4	WS9	SW1	SW2
		Sample Type:		WATER	WATER	WATER	WATER	WATER	WATER
		Top Depth (m):		0.81	1.35	0.43	1.31	0.00	0.00
		Date Sampled:		17-Dec-2019	17-Dec-2019	17-Dec-2019	17-Dec-2019	17-Dec-2019	17-Dec-2019
Determinand	Accred.	SOP	Units	LOD					
pH	U	1010		N/A					
Boron (Dissolved)	U	1450	µg/l	20	8.9	8.3	8.4	8.1	8.2
Sulphate	U	1220	mg/l	1.0	280	530	760	450	750
Cyanide (Free)	U	1300	mg/l	0.050	62	220	240	370	49
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Sulphide	U	1325	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1.0	0.17	0.17	0.18	0.17	0.17
Cadmium (Dissolved)	U	1450	µg/l	0.080	5.3	1.4	10	1.9	1.6
Chromium (Dissolved)	U	1450	µg/l	1.0	< 0.080	< 0.080	0.14	< 0.080	< 0.080
Copper (Dissolved)	U	1450	µg/l	1.0	13	10	7.6	6.4	11
Mercury (Dissolved)	U	1450	µg/l	0.50	5.4	2.0	12	3.4	6.3
Nickel (Dissolved)	U	1450	µg/l	1.0	4.3	3.2	1.8	1.0	1.2
Lead (Dissolved)	U	1450	µg/l	1.0	4.8	2.5	9.5	12	1.0
Selenium (Dissolved)	U	1450	µg/l	1.0	< 1.0	< 1.0	1.3	< 1.0	1.5
Zinc (Dissolved)	U	1450	µg/l	1.0	7.4	9.9	37	93	2.5
Chromium (Hexavalent)	U	1490	µg/l	20	2.4	6.4	37	84	34
Total Of 16 PAH's	N	1700	µg/l	2.0	< 20	< 20	< 20	< 20	< 20
Total Phenols	U	1920	mg/l	0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Sulphur	N	1220	mg/l	1.0	21	73	80	120	16
Thiocyanate	U	1300	mg/l	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total TPH >C6-C40	U	1670	µg/l	10	< 10	< 10	< 10	< 10	< 10

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-p-phenylenediamine.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenzo[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

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- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt

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Final Report

Report No.:	20-01171-1		
Initial Date of Issue:	23-Jan-2020		
Client	Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	James Davies		
Project	C14947 - Hillingdon Hospital		
Quotation No.:		Date Received:	15-Jan-2020
Order No.:		Date Instructed:	15-Jan-2020
No. of Samples:	3		
Turnaround (Wkdays):	5	Results Due:	21-Jan-2020
Date Approved:	23-Jan-2020		
Approved By:			
Details:	Glynn Harvey, Laboratory Manager		

Client: Ground Engineering Limited		Chemtest Job No.:		20-01171	20-01171	20-01171
Quotation No.:		Chemtest Sample ID.:		953640	953641	953642
		Client Sample ID.:		W1	W1	W1
		Sample Location:		WS3	SW1	SW2
		Sample Type:		WATER	WATER	WATER
		Top Depth (m):		0.56	0.00	0.00
		Date Sampled:		10-Jan-2020	10-Jan-2020	10-Jan-2020
Determinand	Accred.	SOP	Units	LOD		
pH	U	1010		N/A	8.6	8.6
Sulphate	U	1220	mg/l	1.0		
Cyanide (Free)	U	1300	mg/l	0.050	< 0.050	
Cyanide (Total)	U	1300	mg/l	0.050	< 0.050	
Sulphide	U	1325	mg/l	0.050	0.067	
Chromium (Hexavalent)	U	1490	µg/l	20	21	
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	
Total Phenols	U	1920	mg/l	0.030	< 0.030	
Sulphur	N	1220	mg/l	1.0	180	
Thiocyanate	U	1300	mg/l	0.50	< 0.50	
Calcium	U	1415	mg/l	5.0	120	120
Arsenic (Dissolved)	U	1450	mg/l	0.0010	0.012	
Boron (Dissolved)	U	1450	mg/l	0.020	0.43	
Cadmium (Dissolved)	U	1450	mg/l	0.000080	< 0.00008	
Chromium (Dissolved)	U	1450	mg/l	0.0010	0.031	
Copper (Dissolved)	U	1450	mg/l	0.0010	0.011	
Mercury (Dissolved)		1450	mg/l	0.00050	< 0.00050	
Nickel (Dissolved)	U	1450	mg/l	0.0010	0.0024	
Lead (Dissolved)	U	1450	mg/l	0.0010	0.0014	
Selenium (Dissolved)	U	1450	mg/l	0.0010	0.022	
Zinc (Dissolved)	U	1450	mg/l	0.0010	0.014	
Dissolved Organic Carbon	U	1610	mg/l	2.0	7.4	8.7
Total TPH >C6-C40	U	1670	µg/l	10	260	

SOP	Title	Parameters Included	Method summary
1010	pH Value of Waters	pH	pH Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1325	Sulphide in Waters	Sulphides	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using N,N-dimethyl-pphenylenediamine.
1415	Cations in Waters by ICP-MS	Sodium; Potassium; Calcium; Magnesium	Direct determination by inductively coupled plasma - mass spectrometry (ICP-MS).
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1490	Hexavalent Chromium in Waters	Chromium [VI]	Automated colorimetric analysis by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1670	Total Petroleum Hydrocarbons (TPH) in Waters by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO	Pentane extraction / GC FID detection
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