



Project / Site name: Chapman Way, Tunbridge Wells

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

	List of TiwoL Actorights and Operators
Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total





Radhika Patel TRC Companies Ltd 20 Red Lion Street, London

WC1R 4PQ

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number: 23-55532

Project / Site name: Chapman Way Samples received on: 08/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

Analysis completed by: 18/09/2023

08/09/2023

Report Issue Number: 1 Report issued on: 18/09/2023

Samples Analysed: 5 soil samples

561063

Your order number:



Adam Fenwick Technical Reviewer

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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.





Your Order No: 561063

Lab Sample Number	2805876	2805877	2805878	2805879	2805880			
Sample Reference		RO103	RO103	RO103	RO103	RO103		
Sample Number				None Supplied				
Depth (m)	0.75	6.50	13.00	WAC	18.00			
Date Sampled	07/09/2023	07/09/2023	07/09/2023	07/09/2023	07/09/2023			
Time Taken		_	I	None Supplied				
		Limit of detection	Ao					
Analytical Parameter	⊆ .	of	Accreditation Status					
(Soil Analysis)	Units	dete	creditat Status					
		ectic	ion					
	-							
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	% kg	0.01	NONE NONE	6.2	17	18	18	2.4
Total mass of sample received	ĸg	0.001	NONE	0.9	0.9	1	1.2	0.2
A.L	Tumo	N/A	ISO 17025	Not detected	Not detected	NI-4 -1-441	Not detected	ı
Asbestos in Soil	Type N/A	N/A	N/A	Not-detected	Not-detected	Not-detected	Not-detected	-
Asbestos Analyst ID	14/74	14//1	10/70	MLO	MLO	MLO	MLO	N/A
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.1	8.6	8.0	8.0	8.0
рн - Automateu Total Cyanide	mg/kg	1	MCERTS	-	-	-	13	-
Total Syaniac	mg/kg	- 				-		
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-	530	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	-	0.266	-
Water Soluble SO4 16hr extraction (2:1 Leachate	9/1	0.00123	WICERTS					
Equivalent)	mg/l	1.25	MCERTS	-	-	1	266	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	-	2.3	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	-	1.3	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.53	0.2	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.36	0.22	0.13	0.1	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.13	0.2	2	0.52	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.15	0.22	1.1	0.28	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.4	1.2	4	2	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.63	0.33	0.78	0.57	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	4.9	3	3.5	4.2	< 0.05
Pyrene	mg/kg	0.05	MCERTS MCERTS	4.6	2.6	3	3.6	< 0.05
Benzo(a)anthracene	mg/kg mg/kg	0.05	MCERTS	2.6	1.6 1.5	1.4 1.3	1.8	< 0.05
Chrysene Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	3.6	2.4	1.6	1.8 2.1	< 0.05 < 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.6	0.98	0.93	0.85	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.9	1.8	1.4	1.8	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.9	1.5	0.88	1	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.54	0.34	0.2	0.23	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3	1.6	0.96	1.1	< 0.05
	-	-	•	-	-	-		
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	30.1	19.5	23.7	22.2	< 0.80
			1				1	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.9	12	15	21	72
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.3	1.9	1	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	13	3	2.5	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	26	35	32	42	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	35	32	42	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	76	84	110	34
Lead (aqua regia extractable)	mg/kg	1	MCERTS	43	150	210	260	50
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.8	1	0.9	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	31	40	54	55
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	260	260	290	74





Your Order No: 561063

Lab Sample Number				2805876	2805877	2805878	2805879	2805880
Sample Reference	RO103	RO103	RO103	RO103	RO103			
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied			
Depth (m)				0.75	6.50	13.00	WAC	18.00
Date Sampled				07/09/2023	07/09/2023	07/09/2023	07/09/2023	07/09/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Monoaromatics & Oxygenates								
Benzene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
o-xylene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	-	-	-	< 0.1	-
		0.1	NONE	0.40	0.40	0.10	0.10	0.10
TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic > EC8 - EC10 _{HS_1D_AL}	mg/kg	0.1	NONE MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg mg/kg	2	MCERTS	1.9 6.1	10	2.1 8.6	8	< 1.0 < 2.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL} TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	16	39	20	14	< 8.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	63	170	110	56	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) EH_CU_1D_AL	mg/kg	10	NONE	86	220	140	81	< 10
otto /.iiipridite (200 2000/ EH_CU+HS_1D_AL	5. 49			00	220	140	01	< 10
TPH-CWG - Aromatic >EC5 - EC7 HS 1D AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
			1	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.1	NONE					
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR} TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}		0.1	NONE MCERTS	< 1.0	< 1.0	1.5	< 1.0	< 1.0
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR} TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR} TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg		.		< 1.0 6.1	1.5 6.4	< 1.0 < 2.0	< 1.0 < 2.0
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR} TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR} TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR} TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg mg/kg	1	MCERTS	< 1.0				
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR} TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg mg/kg mg/kg	1 2	MCERTS MCERTS	< 1.0 6.5	6.1	6.4	< 2.0	< 2.0

 $\label{eq:U/S} U/S = Unsuitable \ Sample \quad I/S = \ Insufficient \ Sample \quad ND = Not \ detected$





* 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 *
2805876	RO103	None Supplied	0.75	Brown sandy loam with gravel and vegetation.
2805877	RO103	None Supplied	6.5	Brown clay with gravel.
2805878	RO103	None Supplied	13	Brown clay with gravel.
2805879	RO103	None Supplied	WAC	Brown clay with gravel.
2805880	RO103	None Supplied	18	Grey clay and sand.





Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
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
Total cyanide in soil	Determination of total cyanide 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
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.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
	I				





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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

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MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total





Radhika Patel

TRC Companies Ltd□
20 Red Lion Street, London
WC1R 4PQ

Your order number:

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number: 23-5534

Project / Site name: Chapman Way Samples received on: 08/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

Analysis completed by: 15/09/2023

08/09/2023

Report Issue Number: 1 Report issued on: 15/09/2023

Samples Analysed: 10:1 WAC sample

561063

Joanna Szwagrzak Junior Reporting Specialist 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.

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

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i2 Analytical

7 Woodshots Meadow Croxley Green Business Park Watford, WD18 8YS



Company Comp			
Location			
Lab Reference (Sample Number) 2805881 / 2805882	nt: TRC COMP	С СОМР	
Sampling Date 07/09/2023 Inert Waste Landfill			
Sampling Date 07/09/2023 RO103 Inert Waste Landfill	andfill Waste Acceptant	Martin Control	
Depth (m) Solid Waste Analysis TOC (%)** 1.3 3% 50% 500 6000 50%	Limits Stable Non-		
Depth (m) Dep	reactive		
TOC (%)**	Vaste HAZARDOUS	AZARDOUS Hazardou vaste in non- hazardous	
Loss on Ignition (%) ** ■ 1			
STEX (μg/kg)** < 5.0	% 5%	5% 6%	
Sum of PCBs (mg/kg)** 0.027 1 Mineral Oil (mg/kg) ⊕ (Li, QLi, Ac.) 53 500 Total PAH (WAC-17) (mg/kg) 22.4		10%	
Mineral Oil (mg/kg) et.10.cu., k. 53 50 500 Total PAH (WAC-17) (mg/kg) 22.4 100 100 pH (units)** 8.2 10.1 Add Neutralisation Capacity (mmol / kg) 6.5 10.1 10.1 Limit val Eluate Analysis 10:1 mg/l mg/kg 11.1 Limit val using BS E Arsenic * 0.0018 0.0178 0.5 0.236 0.236 20 Arsenic * 0.0018 0.0236 0.0236 20 20 Cadmium * 0.0033 0.033 0.5 20 Copper * 0.015 0.015 0.15 2 Mercury * 0.0033 0.033 0.5 0.5 Nickel * 0.003 0.030 0.0 0.0 Nickel * 0.0005 0.0000 0.0 0.0 Nickel * 0.0010 0.0010 0.0 0.0 Selenium * 0.0040 0.0040 0.0 0.0 Selenium	00		
Total PAH (WAC-17) (mg/kg) 22.4 100 pH (units)*** 8.2 10.1	-		
Total PAH (WAC-17) (mg/kg) 22.4 100 pH (units)*** 8.2 10.1	0		
March Marc	0		
Bluate Analysis 10:1 10:	- >6	>6	
No.1	To be evaluated	be evaluated To be evalu	
BS EN 12457 - 2 preparation utilising end over end leaching procedure) mg/l mg/kg mg/k	mit values for compliance le	r compliance leaching test	
Arsenic * 0.0018 0.0178 0.5 Barium * 0.0236 0.0236 20 Cadmium * < 0.0001	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Barium * 0.0236 0.0236 20 Cadmium * < 0.0001	5 2	2 25	
Cadmium * < 0.0001			
Chromium * 0.0033 0.033 0.5 Copper * 0.015 0.15 2 Mercury * < 0.0005	19959000		
Copper * 0.015 0.15 2 Mercury * < 0.0005			
Mercury * < 0.0005			
Molybdenum * 0.0552 0.552 0.5 Nickel * 0.0030 0.030 0.4 Lead * < 0.0010	10,001	1001 UL 200010	
Nickel * 0.0030 0.030 0.4 Lead * < 0.0010			
Lead * < 0.0010			
Antimony *	C (C)	0.00 0.00	
Selenium * < 0.0040			
Zinc * 0.0086 0.086 4 Chloride * 4.7 47 800 Fluoride* 0.52 5.2 10 Sulphate * 39 390 1000 TDS* 63 630 4000 Phenol Index (Monohydric Phenols) * < 0.010	200	2012	
Chloride * 4.7 47 800 Fluoride* 0.52 5.2 10 Sulphate * 39 390 1000 TDS* 63 630 4000 Phenol Index (Monohydric Phenols) * < 0.010			
Fluoride* 0.52 5.2 10 Sulphate * 39 39 390 1000 TDS* 63 630 4000 Phenol Index (Monohydric Phenols) * < 0.010 1 DOC 4.87 48.7 500 Leach Test Information 50 Stone Content (%) < 0.1 50 Sample Mass (kg) 1.2 5.2 10 Sulphate * 5.2 10 Significant Sig	50	50 200	
Sulphate * 39 390 1000 TDS* 63 630 4000 Phenol Index (Monohydric Phenols) * < 0.010	0 15000	15000 25000	
TDS* 63 630 4000	150	150 500	
Phenol Index (Monohydric Phenols) * < 0.010	20000	20000 50000	
DOC 4.87 48.7 500 Leach Test Information Stone Content (%) < 0.1	00 60000	60000 100000	
Leach Test Information			
Stone Content (%) < 0.1	00 800	800 1000	
Stone Content (%) < 0.1			
Sample Mass (kg) 1.2			
Dry Matter (%) 97			
Moisture (%) 2.6			
Results are expressed on a dry weight basis, after correction for moisture content where applicable. *= UKAS accredi	accredited (liquid eluate ana	auid aluata analusis antu'	

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended)

and Ed. Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.





* 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 *
2805881	RO103	None Supplied	None Supplied	Brown clay with gravel.





Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

	1	1			1
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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-PL	W	NONE
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.	LO47-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 with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 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
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 at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	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
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.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073-PL	W	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
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
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
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





Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Monohydric phenols 10:1 WAC	Determination of phenois 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
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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acron	ym Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Tota	l Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total





Radhika Patel

TRC Companies Ltd 20 Red Lion Street, London WC1R 4PQ

i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, **WD18 8YS**

Analytical Report Number: 23-56280

Project / Site name: Chapman Way Tunbridge Wells Samples received on: 13/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

13/09/2023

Your order number: 561063 Analysis completed by: 20/09/2023

Report Issue Number: Report issued on: 20/09/2023

Samples Analysed: 4 soil samples

> Izabela Wójcik Reporting Specialist 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.





Project / Site name: Chapman Way Tunbridge Wells

Your Order No: 561063

Lab Sample Number				2810063	2810064	2810065	2810066
Sample Reference	RO101	RO101	RO101	RO101			
Sample Number		None Supplied	None Supplied	WAC	None Supplied		
Depth (m)		1.50	9.50	None Supplied	3.50		
Date Sampled		11/09/2023	11/09/2023	11/09/2023	11/09/2023		
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Time Tuken				None Supplied	топе заррнеа	None Supplied	rtoric Supplica
		Limit of detection	Accreditation Status				
Analytical Parameter	Units	of c	cred Sta				
(Soil Analysis)	its	lete	itati				
		ctio	on				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	12	18	18	7.3
Total mass of sample received	kg	0.001	NONE	0.8	0.7	1.2	0.8
,	-						
Asbestos in Soil	Туре	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	IZJ	IZJ	IZJ	IZJ
	-						
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	7.1	7.3	8.6	8.2
Total Cyanide	mg/kg	1	MCERTS	1	-	< 1.0	-
Mater Soluble Sulphete on SO4 1/hr sutreation (2.1)	w /1	2.5	MOEDTO	-	-	520	_
Water Soluble Sulphate as SO4 16hr extraction (2:1) Water Soluble SO4 16hr extraction (2:1 Leachate	mg/kg	2.5	MCERTS				
Equivalent)	g/l	0.00125	MCERTS	-	-	0.26	-
Water Soluble SO4 16hr extraction (2:1 Leachate		4.05	MOEDTO	-	_	260	_
Equivalent)	mg/l %	1.25 0.1	MCERTS MCERTS				
Organic Matter (automated) Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	1.8	-
Total Organic Carbon (TOC) - Automated	,0	0.1	WICEKTS	-	-	1.1	-
Chanisted DALIS							
Speciated PAHs Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.16	0.49	< 0.05
'	mg/kg	0.05	MCERTS	< 0.05	0.16	0.49	< 0.05
Acenaphthylene Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	0.06	1.9	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.17	2.4	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	1.4	14	0.06
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.23	3.7	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	2.5	17	0.1
Pyrene	mg/kg	0.05	MCERTS	< 0.05	2.2	14	0.1
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	1.3	6	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	1.5	5.3	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	2.1	5.6	0.06
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.95	3.4	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.8	5.9	0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	1.1	2.9	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.25	0.57	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	1.1	3	< 0.05
Total PAH	m a /lea	0.8	ISO 17025				
Speciated Total EPA-16 PAHs	mg/kg	0.6	130 17025	< 0.80	16.8	85.7	< 0.80
Heavy Metals / Metalloids			MOEDEO				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.8	18	13	15
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	1.7	1.5	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2 1.8	MCERTS MCERTS	< 0.2	0.8	< 0.2	< 0.2
Chromium (Hexavalent)	mg/kg mg/kg	1.8	NONE	< 1.8 14	< 1.8 21	< 1.8 25	< 1.8 10
Chromium (III) Chromium (aqua regia extractable)	mg/kg	1	MCERTS	14	22	26	11
Cnromium (aqua regia extractable) Copper (aqua regia extractable)	mg/kg	1	MCERTS	11	120	36	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	9.2	430	69	8.7
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.6	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	9.3	22	23	7.6
		1	MCERTS	< 1.0		< 1.0	< 1.0
Selenium (aqua regia extractable)	mg/kg		WICERIS	< 1.0	< 1.0	< 1.0	





Project / Site name: Chapman Way Tunbridge Wells

Your Order No: 561063

					T	T	
Lab Sample Number		2810063	2810064	2810065	2810066		
Sample Reference		RO101	RO101	RO101	RO101		
Sample Number				None Supplied	None Supplied	WAC	None Supplied
Depth (m)		1.50	9.50	None Supplied	3.50		
Date Sampled		11/09/2023	11/09/2023	11/09/2023	11/09/2023		
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Management of Comments					•	•	
Monoaromatics & Oxygenates		-	MCERTS	5.0		5.0	5.0
Benzene -	μg/kg	5 5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	μg/kg			< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	μg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-xylene	μg/kg	5 5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
0-xylene	μg/kg μg/kg	5	MCERTS NONE	< 5.0	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	pg/kg	3	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Petroleum Hydrocarbons							
Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	-	-	< 0.1	-
TPH-CWG - Aliphatic >EC5 - EC6 HS 1D AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 _{HS 1D AL}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	1.8	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	3.4	3.5	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	< 8.0	10	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	16	21	12
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	25	35	13
TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	9.3	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	55	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	20	64	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	27	130	< 10
VOCs							
Chloromethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Chloroethane	μg/kg	5	NONE	-	< 5.0	-	-
Bromomethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Vinyl Chloride	μg/kg	5	NONE	-	< 5.0	-	-
Trichlorofluoromethane	μg/kg	5	NONE	-	< 5.0	-	-
1,1-dichloroethene	μg/kg	5	NONE	-	< 5.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	μg/kg	5	NONE	-	< 5.0	-	-
Trans 1,2-dichloroethylene	μg/kg	5	NONE	-	< 5.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	5	NONE	-	< 5.0	-	-
1,1-dichloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
2,2-Dichloropropane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Chloroform	μg/kg	5	NONE	-	< 5.0	-	-
1,1,1-Trichloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,2-dichloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,1-Dichloropropene	μg/kg 	5	ISO 17025	-	< 5.0	-	-
Cis-1,2-dichloroethene	μg/kg 	5	ISO 17025	-	< 5.0	-	-
Benzene	μg/kg 	5	MCERTS	-	< 5.0	-	-
Carbontetrachloride	μg/kg	5	NONE	-	< 5.0	-	-
1,2-dichloropropane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Trichloroethene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Dibromomethane	μg/kg	5	ISO 17025	-	< 5.0	-	-





Project / Site name: Chapman Way Tunbridge Wells

Your Order No: 561063

Lab Sample Number				2810063	2810064	2810065	2810066
Sample Reference		RO101	RO101	RO101	RO101		
Sample Number		None Supplied	None Supplied	WAC	None Supplied		
Depth (m)				1.50	9.50	None Supplied	3.50
Date Sampled				11/09/2023	11/09/2023	11/09/2023	11/09/2023
Time Taken		None Supplied	None Supplied	None Supplied	None Supplied		
		=					
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
		ctio	ion				
			100 47005				
Bromodichloromethane	μg/kg 	5	ISO 17025	-	< 5.0	-	-
Cis-1,3-dichloropropene	μg/kg 	5	ISO 17025	-	< 5.0	-	-
Trans-1,3-dichloropropene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Toluene	μg/kg	5	MCERTS	-	< 5.0	-	-
1,1,2-Trichloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,3-Dichloropropane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Dibromochloromethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Tetrachloroethene	μg/kg	5	NONE	-	< 5.0	-	-
1,2-Dibromoethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Chlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,1,1,2-Tetrachloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Ethylbenzene	μg/kg	5	MCERTS	-	< 5.0	-	-
p & m-xylene	μg/kg	5	MCERTS	-	< 5.0	-	-
Styrene	μg/kg	5	ISO 17025	-	< 5.0	_	-
Bromoform	μg/kg	5	NONE	-	< 5.0	-	-
o-xylene	μg/kg	5	MCERTS	-	< 5.0	_	_
Isopropylbenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,1,2,2-Tetrachloroethane	μg/kg	5	ISO 17025	-	< 5.0	-	-
Bromobenzene	μg/kg	5	NONE	-	< 5.0	-	-
	μg/kg	5	ISO 17025				-
N-Propylbenzene		5	ISO 17025	-	< 5.0	-	
2-Chlorotoluene	μg/kg			-	< 5.0	-	-
4-Chlorotoluene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,3,5-Trimethylbenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Tert-Butylbenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,2,4-Trimethylbenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Sec-Butylbenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,3-dichlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
P-Isopropyltoluene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,4-dichlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,2-dichlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Butylbenzene	μg/kg	5	NONE	-	< 5.0	-	-
1,2-Dibromo-3-chloropropane	μg/kg	5	ISO 17025	-	< 5.0	-	-
1,2,4-Trichlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
Hexachlorobutadiene	μg/kg	5	NONE	-	< 5.0	-	-
1,2,3-Trichlorobenzene	μg/kg	5	ISO 17025	-	< 5.0	-	-
	п						
PCBs by GC-MS							
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	_	_	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	_	_	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	-	-	-
	mg/kg	0.001	MCERTS	< 0.001	-	-	-
PCB Congener 190	mg/kg	0.001	MCERTS				
PCB Congener 180	mg/kg	0.001	MOEKTS	< 0.001	-	-	-
T-t-LDOD- his CO MC							
Total PCBs by GC-MS	ma ce /1/ -	0.007	MCEDIC	_			1
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected





Project / Site name: Chapman Way Tunbridge Wells

* 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 *
2810063	RO101	None Supplied	1.5	Brown clay.
2810064	RO101	None Supplied	9.5	Brown clay.
2810065	RO101	WAC	None Supplied	Brown clay.
2810066	RO101	None Supplied	3.5	Brown clay.





Project / Site name: Chapman Way Tunbridge Wells

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

•				
Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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
Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
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
Determination of total cyanide 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
Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). Determination of metals in soil by aqua-regia digestion followed by ICP-OES. Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-OES. Moisture content, determined gravimetrically. (30 oC) Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to CoA for analyte specific accreditation. Determination of PCB by extraction with acetone and hexane followed by GC-MS. Determination of PH in soil by addition of water followed by automated electrometric measurement. Determination of hydrocarbons C6-C10 by headspace GC-MS. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Determination of total cyanide by distillation followed by colorimetry. Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. Determination of PEEX in soil by headspace GC-MS. Individual components MCERTS accredited In-house method by calculation from total Cr and Cr VI.	Determination of water soluble suiphate by ICP-DES in house method. Determination of metals in soil by aqua-regia digestion followed by ICP-DES. Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-DES. Albestos Identification with dispersion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-DES. Albestos Identification with dispersion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-DES. Albestos Identification of water soluble boron in soil by water extract followed by ICP-DES. In house method based on Second Site Properties version 3 In house method based on USEPA 8270 In house method based on USEPA 8270 In house method based on USEPA 8270 Determination of PAH compounds in soil by extraction in In-house method based on USEPA 8082 Determination of PAH in soil by addition of water followed by in house method based on USEPA 8082 Determination of pH in soil by addition of water followed by in house method based on USEPA 8082 Determination of pH in soil by addition of water followed by in house method based on USEPA 8082 Standard preparation for all samples unless otherwise detailed. Cravimetric determination of stone > 10 mm as 86 dry weight. Determination of total cyanide by distillation followed by colorimetry. Determination of total cyanide by distillation followed by in house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skaldr) In-house method based on USEPAB260 Determination of volatile organic compounds in soil by headspace GC-MS. In-house method based on USEPAB260. Determination of PAH by beadspace GC-MS. In-house method based on USEPAB260. Determination of PAH by beadspace GC-MS. In-house method by calculation In-house method by calculation	Determination of water soluble sulphate by ICP-DES. Results reported directly (leachate equivalent). Determination of metals in soil by aqua-regial digestion followed by ICP-DES. Abbestos identification with the use of polarised light microscopy in conjunction with dispersion staining techniques. Abbestos identification with the use of polarised light microscopy in conjunction with dispersion staining techniques. Abbestos identification with the use of polarised light microscopy in conjunction with dispersion staining techniques. Determination of water soluble boron in soil by hot water extract followed by ICP-DES. Moisture content, determined gravimetrically, (30 oC) In house method based on Second Site Properties extract followed by ICP-DES. Moisture content, determined gravimetrically, (30 oC) In house method based on USEPA 8270 L038-PL determination of PAH compounds in soil by extraction in dishoromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Refer to Cox for analyte specific accreditation. Determination of PES by extraction with acetone and nexane followed by GC-MS. Determination of pH in soil by addition of water followed by In house method based on USEPA 8082 L027-PL Determination of pH in soil by addition of water followed by In house method based on USEPA 8082 L099-PL Determination of pydrocarbons C6-C10 by headspace GC-In-house method based on British Standard detailed. Convineirs determination of stone > 10 mm as Sc. dry vielght. Determination of total cyanide by distillation followed by In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) Determination of volatile organic compounds in soil by needspace GC-MS. In-house method based on USEPA8260 L099-PL L099-PL Determination of volatile organic compounds in soil by needspace GC-MS. In-house method based on USEPA8260 L099-PL L099-PL	Analysis of the properties of the special supplies by ICP-OES, consists reported first yoliable supplies by ICP-OES, consists reported first yoliable supplies by ICP-OES, and corrected for extraction ratio (soil equivalent). Determination of metals in soil by aqual-regial digestion followed by ICP-OES. Asbestos identification with the use of polarised light increasingly inconjunction with dispersion staining techniques. Asbestos identification with dispersion staining techniques. Determination of water soluble boron in soil by hot water version 3. Determination of water soluble boron in soil by hot water version 3. Moisture content, determined gravimetrically, (30 oC). In house method based on ISEPA 8270. Determination of PAR compounds in soil by extraction in dichloronethane and hozone followed by CC-MS with the use of surrogate and therand standards. Refer to CoA for analyte specific accreditation. Determination of PCB by extraction with accione and hozone followed by GC-MS. Standard preparation for all samples unless otherwise detailed. Crownetic measurement. Determination of pH in soil by addition of water followed by analytic specific accreditation. Standard preparation for all samples unless otherwise detailed. Crownetic measurement. Determination of total cyanide by distillation followed by activation of sone > 10 mm as 7s. dry weight. Determination of volatic properties in soil by outdising with postassium dichromatic followed by ultration with incoming with noil by addition of sone > 10 mm as 7s. dry weight. Determination of volatic properties in soil by outdising with postassium dichromate followed by litration with incoming with noil by addition of sone > 10 mm as 7s. dry weight. Determination of total cyanide by distillation followed by inchange and chromate followed by litration with incoming with postassium dichromate followed by litration with incoming with postassium dichromate followed by litration with incoming with postassium dichromate followed by litration with incoming with





Project / Site name: Chapman Way Tunbridge Wells

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

	List of HWOL Acronyms and Operators
Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total





Radhika Patel

TRC Companies Ltd 20 Red Lion Street, London WC1R 4PQ

Your order number:

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

Analytical Report Number: 23-56281

Project / Site name: Chapman Way Tunbridge Wells Samples received on: 13/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

Analysis completed by: 21/09/2023

13/09/2023

Report Issue Number: 1 **Report issued on:** 21/09/2023

Samples Analysed: 10:1 WAC sample

561063

Joanna Szwagrzak
Junior Reporting Specialist
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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.





i2 Analytical

7 Woodshots Meadow Croxley Green Business Park Watford, WD18 8YS



Location Chapman Way Tunbric				
Lab Reference (Sample Number) 2810067 / 28100				
Lab Reference (Sample Number) 2810067 / 28100				
Lab Reference (Sample Number) 2810067 / 28100				
Cab Reference (Sample Number) 2810067 / 28100		Client:	TRC COMP	
Cab Reference (Sample Number) 2810067 / 28100	-5000	4		
Sampling Date 11/09/2023 R0101 WAC	ge Wells			
Sampling Date	68	Landfill	Waste Acceptance	e Criteria
Sample ID R0101 WAC			Limits	
Depth (m) Solid Waste Analysis			Stable Non- reactive	
Solid Waste Analysis 1.1		Inert Waste	HAZARDOUS	Hazardous
TOC (%)** Loss on Ignition (%) ** BTEX (µg/kg)** Sum of PCBs (mg/kg)** Mineral Oil (mg/kg) et al. D. CU.AL Total PAH (WAC-17) (mg/kg) PH (units)** Acid Neutralisation Capacity (mmol / kg) Barium * Casses of the state of the				Waste Landfil
Loss on Ignition (%) ** 3.9 BTEX (µg/kg)** < 5.0				
BTEX (µg/kg)**		3%	5%	6%
Sum of PCBs (mg/kg)** < 0.007		==	-	10%
Mineral Oil (mg/kg) EH, 10, CU, AL 40 Total PAH (WAC-17) (mg/kg) 86.7 pH (units)** 7.7 Acid Neutralisation Capacity (mmol / kg) 3.9 Eluate Analysis 10:1 (BS EN 12457 - 2 preparation utilising end over end leaching procedure) mg/l Arsenic * 0.0020 Barium * 0.00790 Cadmium * < 0.0001		6000		
Total PAH (WAC-17) (mg/kg) 86.7 pH (units)*** 7.7 Acid Neutralisation Capacity (mmol / kg) 3.9 Eluate Analysis 10:1 (BS EN 12457 - 2 preparation utilising end over end leaching procedure) mg/l Arsenic * 0.0020 Barium * 0.0790 Cadmium * < 0.0001		1		
PH (units)** 7.7		500		
Acid Neutralisation Capacity (mmol / kg) 3.9 10:1		100		
Bluate Analysis 10:1			>6	7
(BS EN 12457 - 2 preparation utilising end over end leaching procedure) Arsenic * Barium * 0.0020 Cadmium * 0.00790 Cadmium * 0.0015 Copper * 0.028 Mercury * 0.0150 Molybdenum * 0.0150 Noikel * 0.0036 Lead * 0.0036 Lead * 0.0044 Antimony * Selenium * 2.7 Fluoride * Fluoride * Sulphate * 32 TDS* DOC 14.7 Leach Test Information Stone Content (%) Sample Mass (kg) Dry Matter (%) 0.0020 0.014 0.0150 0.020 0.020 0.0150 0.020 0.020 0.0150 0.020 0.020 0.0150 0.020 0.020 0.0150 0.020			To be evaluated	To be evaluate
procedure) mg/l Arsenic * 0.0020 Barium * 0.0790 Cadmium * 0.0001 Chromium * 0.0015 Copper * 0.028 Mercury * < 0.0005	10:1	Limit valu	es for compliance le	eaching test
Barium * 0.0790	mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Barium * 0.0790	0.0199	0.5	2	25
Cadmium * < 0.0001	0.790	20	100	300
Chromium * 0.0015 Copper * 0.028 Mercury * < 0.0005	< 0.0008	0.04	1	5
Copper * 0.028 Mercury * < 0.0005	0.016	0.5	10	70
Mercury * < 0.0005	0.28	2	50	100
Molybdenum * 0.0150 Nickel * 0.0036 Lead * 0.0044 Antimony * 0.0034 Selenium * < 0.0040	< 0.0050	0.01	0.2	2
Nickel * 0.0036 Lead * 0.0044 Antimony * 0.0034 Selenium * < 0.0040	0.150	0.5	10	30
Lead * 0.0044 Antimony * 0.0034 Selenium * < 0.0040	0.036	0.4	10	40
Antimony * 0.0034	0.044	0.5	10	50
Selenium * < 0.0040	0.034	0.06	0.7	5
Zinc * 0.020 Chloride * 2.7 Fluoride* 0.61 Sulphate * 32 TDS* 160 Phenol Index (Monohydric Phenols) * < 0.010	< 0.040	0.1	0.5	7
Chloride * 2.7 Fluoride* 0.61 Sulphate * 32 TDS* 160 Phenol Index (Monohydric Phenols) * < 0.010	0.20	4	50	200
Fluoride* 0.61 Sulphate * 32 TDS* 160 Phenol Index (Monohydric Phenols) * < 0.010	27	800	15000	25000
Sulphate * 32 TDS* 160 Phenol Index (Monohydric Phenols) * < 0.010	6.1	10	150	500
TDS*	320	1000	20000	50000
Phenol Index (Monohydric Phenols) * < 0.010	1600	4000	60000	100000
DOC 14.7 Leach Test Information Stone Content (%) < 0.1 Sample Mass (kg) 1.2 Dry Matter (%) 82	< 0.10	1	-	-
Leach Test Information	147	500	800	1000
Stone Content (%)				
Sample Mass (kg) 1.2 Dry Matter (%) 82				
Sample Mass (kg) 1.2 Dry Matter (%) 82				
Dry Matter (%) 82				
Moisture (%)				
	<u>'</u>		•	
Results are expressed on a dry weight basis, after correction for moisture content where applicable. Stated limits are for guidance only and i2 cannot be held responsible for any discrepencies with current legislation		*= UKAS accredit	ed (liquid eluate ana	lysis only)

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.





Project / Site name: Chapman Way Tunbridge Wells

* 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 *
I	2810067	RO101	WAC	None Supplied	Brown clay.





Project / Site name: Chapman Way Tunbridge Wells

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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-PL	W	NONE
Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L076-PL	D	NONE
Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
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
Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073-PL	W	MCERTS
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
Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
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
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
	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis. Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe. Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace. Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID. Moisture content, determined gravimetrically. (30 oC) Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Determination of PCB by extraction with acetone and hexane followed by GC-MS. Determination of pH in soil by addition of water followed by electrometric measurement. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited Determination of Chloride colorimetrically by discrete analyser. Determination of Chloride colorimetrically by discrete analyser.	10-1 (as recieved, moisture adjusted) end over end contraction with water for 24 hours. Eluate filtered prior to analysis. Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe. Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace. Determination of mineral oil fraction extractable hydrocarbons in soil by GC-MS/GC-FID. Moisture content, determined gravimetrically, (30 oC) In house method with silica gel split/clean up. Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. Determination of PCB by extraction with acetone and hexane followed by GC-MS with the use of surrogate and internal standards. Determination of pH in soil by addition of water followed by in house method based on USEPA 8082 Determination of pH in soil by addition of water followed by lin house method based on British Standard hexane followed by GC-MS. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as 76. dry weight. Determination of organic matter in soil by oxidising with potassium dichromate followed by litration with iron (II) suphate. Determination of BTEX in soil by headspace GC-MS. In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation Determination of metals in leachate by acidification followed by ICP-OES. Determination of Chloride colorimetrically by discrete analyser. Determination of Chloride colorimetrically by discrete analyser. Determination of Chloride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode. Determination of fluorde in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	Analytical Method Description Analytical Method Reference number 10:1 (as recleved, misisture adjusted) end over end extraction with water for 24 hours. Estate filtered prior to analysis. Determination of acid neutralisation capacity by addition of analysis and Testing of Wastes to Meet Landfill Waste Acceptance** Determination of side neutralisation capacity by addition of acceptance** Determination of loss on spritise in soil by gravimetrically with the sample being ignited in a muffle furnace. Determination of mineral of fraction extractable hydrocarbons in soil by GC-MS/GC-FID. Mosture content, determined gravimetrically (30 oC) In house method with silica gel split/clean up. hydrocarbons in soil by GC-MS/GC-FID. Nosture content, determined gravimetrically (30 oC) In house method with silica gel split/clean up. hydrocarbons in soil by extraction in dischoromation of PMI compounds in soil by extraction in thouse method. L019-UK/PL Determination of PMI compounds in soil by extraction in dischoromation and hosens followed by GC-MS with the use of surrogate and internal standards. Determination of PMI possibly addition of water followed by In house method based on USEPA 8082 L027-PL Determination of pH in soil by addition of water followed by In house method. L005-PL electrometric measurement. Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as Methods and MCRRTs requirements. Standard preparation for all samples unless otherwise detailed Gravimetric followed by litration with ron (II) sulphate. Determination of BTEX in soil by headspace GC-MS. In house method based on USEPA8260. Refer to condition individual components McERTS accredited Determination of metals in leachate by addition of the house method based on MEWAM 2006 Methods individual components McERTS accredited Determination of fluoride colorimetrically by discrete in house based on MEWAM Method ISBN 117516260. Determination of fluoride in leachate by 1:1ratio with a buff	Analystical Method Description Analystical Method Reference number Analysts 10.1 (or reclesed, moliture adjusted) and over and or analysts with vester for 24 hours. Examile filtered prior to inalysis. Determination of acid neutralisation capacity by addition of acid relatification with vester for 24 hours. Examile filtered prior to inalysis. Determination of loss on ignition in soil by gravimetrically and Testing of Wiscles to Meet Landfill Waste Acceptance? Determination of hoss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace. Determination of mineral oil fraction extractable hydrocarbons in soil by CC-MS/GC-FID. Mosture content, determined gravimetrically, (30 oC) In house method, In house method and USEPA 8270. Determination of PAH compounds in soil by extraction in dichiprometrane and hocane followed by CC-MS-With the same of surrogate and hocane followed by CC-MS-With the same of surrogate and hocane followed by CC-MS-With the same of surrogate and hocane followed by CC-MS-With the same of surrogate and hocane followed by CC-MS-With the same of surrogate and hocane followed by CC-MS-With the same followed by CC-MS-With acetone and hocane followed by CC-MS-With the same followed by CC-MS-With acetone and hocane followed by ITM house method. Determination of BH in soil by addition of water followed by ITM house method. LOGS-PL W Determination of BHS in soil by beadspace CC-MS-With Iron (II) sulphate. Determination of BHS in soil by beadspace CC-MS-With Iron (II) sulphate. Determination of metals in leachate by addification followed by ITM house method based on USEPA8260. Refer to LOGS-PL W Determination of MERI's accredited To house method based on USEPA8260. Refer to LOGS-PL W Determination of Chioride colorimetrically by discrete analyses. In house method based on USEPA8260. Refer to LOGS-PL W Determination of Chioride colorimetrically by discrete an





Project / Site name: Chapman Way Tunbridge Wells

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	in-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
Monohydric phenois 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
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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD). For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acror	m Descriptions	
HS	Headspace Analysis	
M:	Mass spectrometry	
FIC	Flame Ionisation Detector	
G	Gas Chromatography	
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))	
CL	Clean-up - e.g. by Florisil®, silica gel	
10	GC - Single coil/column gas chromatography	
20	GC-GC - Double coil/column gas chromatography	
Tot	Aliphatics & Aromatics	
Al	Aliphatics	
AF	Aromatics	
#1	EH_2D_Total but with humics mathematically subtracted	
#2	EH_2D_Total but with fatty acids mathematically subtracted	
_	Operator - understore to separate acronyms (exception for +)	
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total	





Radhika Patel

TRC Companies Ltd 20 Red Lion Street, London WC1R 4PQ

i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, WD18 8YS

Analytical Report Number: 23-56285

Project / Site name: Chapman Way, Tunbridge Samples received on: 13/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

13/09/2023

Your order number: 561063 Analysis completed by: 20/09/2023

Report Issue Number: Report issued on: 20/09/2023

Samples Analysed: 4 soil samples

Joanna Szwagrzak Junior Reporting Specialist 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.





Analytical Report Number: 23-56285 Project / Site name: Chapman Way, Tunbridge

Your Order No: 561063

Speciated Total EPA-16 PAHs

Lab Sample Number			_	2810070	2810071	2810072	2810073
Sample Reference		R0104	R0104	R0104	R0104		
Sample Number				None Supplied	None Supplied	None Supplied	None Supplie
Depth (m)				0.75	5.50	WAC	10.40
Date Sampled	12/09/2023	12/09/2023	12/09/2023	12/09/2023			
Time Taken				None Supplied	None Supplied	None Supplied	None Supplie
		Lin	4				
	_	Limit of detection	Accreditation Status				
Analytical Parameter (Soil Analysis)	Units	f de	edit:				
(Son / Marysis)	o,	tect	atio				
		ion	ב				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.2	21	16	19
Total mass of sample received	kg	0.001	NONE	0.7	0.8	1.7	0.2
Asbestos in Soil Screen / Identification Name	Туре	N/A	ISO 17025	Chrysotile	Amosite	-	-
Asbestos in Soil	Туре	N/A	ISO 17025	Detected	Detected	Not-detected	Not-detecte
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	< 0.001	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	< 0.001	-	-
Asbestos Analyst ID	N/A	N/A	N/A	SPU	SPU	SPU	SPU
General Inorganics							
pH - Automated	pH Units	N/A	MCERTS	9.7	8.3	9.8	7.8
Total Cyanide	mg/kg	1	MCERTS	-	-	< 1.0	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	1300	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent) Water Soluble SO4 16hr extraction (2:1 Leachate	g/l	0.00125	MCERTS	-	-	0.647	-
Equivalent)	mg/l	1.25	MCERTS	-	-	647	-
Organic Matter (automated)	%	0.1	MCERTS	-	-	1.7	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-	-	1	-
,							<u> </u>
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	1.1	< 0.05	0.05	0.19
Acenaphthylene	mg/kg	0.05	MCERTS	0.24	0.17	0.16	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	3.4	0.09	0.13	0.28
Fluorene	mg/kg	0.05	MCERTS	3.6	0.14	0.22	0.28
Phenanthrene	mg/kg	0.05	MCERTS	25	0.87	1.1	2.4
Anthracene	mg/kg	0.05	MCERTS	7.4	0.25	0.26	0.6
Fluoranthene	mg/kg	0.05	MCERTS	33	1.8	1.9	2.7
Pyrene	mg/kg	0.05	MCERTS	30	1.5	1.7	2.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	15	0.8	0.76	1.5
Chrysene	mg/kg	0.05	MCERTS	12	0.88	0.87	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	17	1.3	1.2	1.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	7.3	0.43	0.43	0.65
Benzo(a)pyrene	mg/kg	0.05	MCERTS	15	1	0.98	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7	0.67	0.7	0.58
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	2	0.19	0.18	0.14
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	8.4	0.85	0.8	0.6
		-	-			= -	= -
Total PAH							
	ma/ka	0.0	ICO 1702E				

188

10.9

11.4

17





Analytical Report Number: 23-56285 Project / Site name: Chapman Way, Tunbridge

Your Order No: 561063

Lab Sample Number				2810070	2810071	2810072	2810073
Sample Reference	R0104	R0104	R0104	R0104			
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.75	5.50	WAC	10.40
Date Sampled		12/09/2023	12/09/2023	12/09/2023	12/09/2023		
Time Taken		None Supplied	None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Heavy Metals / Metalloids	<u>-</u>	-	<u>-</u>	-		-	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	8.5	15	12
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	1.2	0.9	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.5	0.9	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	20	34	27	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	34	28	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	31	72	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	170	180	81	32
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	16	21	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	110	160	90
Benzene Toluene Ethylbenzene p & m-xylene o-xylene MTBE (Methyl Tertiary Butyl Ether)	µg/kg µg/kg µg/kg µg/kg µg/kg	5 5 5 5 5	MCERTS MCERTS MCERTS MCERTS MCERTS MCERTS NONE	< 5.0 < 5.0 < 5.0 < 5.0 < 5.0 < 5.0			
Petroleum Hydrocarbons							
Petroleum Range Organics (C6 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	-	_	< 0.1	I -
	0 0		I .	_	_	V 0.1	_
TPH-CWG - Aliphatic >EC5 - EC6 HS 1D AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	5.8	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic > EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	13	4.4	5.2	3.6
TPH-CWG - Aliphatic > EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	32	10	12	14
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	180	32	30	24
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	230	47	47	42
					**		
TPH-CWG - Aromatic >EC5 - EC7 HS 1D AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	2.1	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	17	< 2.0	< 2.0	3
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	140	< 10	< 10	30
	mg/kg	10	MCERTS	720	< 10	14	46
TPH-CWG - Aromatic >EC21 - EC35 EH CU 1D AR	ilig/kg	10	WICEICIS	720	~ 10		

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected





Project / Site name: Chapman Way, Tunbridge

Your Order No: 561063

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2810070	R0104	0.75	132	Loose Fibres	Chrysotile	< 0.001	< 0.001
2810071	R0104	5.50	146	Loose Fibres	Amosite	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.





Project / Site name: Chapman Way, Tunbridge

* 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 *
2810070	R0104	None Supplied	0.75	Brown sand with gravel and brick.
2810071	R0104	None Supplied	5.5	Brown clay.
2810072	R0104	None Supplied	WAC	Brown clay.
2810073	R0104	None Supplied	10.4	Brown clay.





Analytical Report Number: 23-56285 Project / Site name: Chapman Way, Tunbridge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
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
Total cyanide in soil	Determination of total cyanide 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
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.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
	<u>I</u>	<u>l</u>			





Analytical Report Number : 23-56285 Project / Site name: Chapman Way, Tunbridge

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	n Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number: 23-56285 Project / Site name: Chapman Way, Tunbridge

 $This \ deviation \ report \ indicates \ the \ sample \ and \ test \ deviations \ that \ apply \ to \ the \ samples \ submitted \ for \ analysis. Please$ note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID			Sample Deviation	Test Name	Test Ref	Test Deviation
R0104	None Supplied	S	2810072	а	None Supplied	None Supplied	None Supplied





Radhika Patel

TRC Companies Ltd□ 20 Red Lion Street, London WC1R 4PQ

Your order number:





Analytical Report Number: 23-56287

Project / Site name: Chapman Way, Tunbridge Samples received on: 13/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

Analysis completed by: 22/09/2023

13/09/2023

Report Issue Number: 1 Report issued on: 22/09/2023

Samples Analysed: 10:1 WAC sample

51063



Anna Goc PL Head of Reporting Team 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies.

An estimate of measurement uncertainty can be provided on request.





i2 Analytical

7 Woodshots Meadow Croxley Green Business Park Watford, WD18 8YS



Waste Acceptance Criteria Analytical Report No:	1000.10	23-562	287				
report no.		23-30.					
					Client:	TRC COMP	
Location		Chapman Way	, Tunbridge				
(C					Landfill	Waste Acceptanc	e Criteria
Lab Reference (Sample Number)		2810079 / 2	2810080			Limits	
Sampling Date						Stable Non-	
Sample ID		R010	4			reactive	
Depth (m)					Inert Waste Landfill	HAZARDOUS waste in non- hazardous Landfill	Hazardous Waste Landfi
Solid Waste Analysis							
TOC (%)**	1.0				3%	5%	6%
Loss on Ignition (%) **	3.3						10%
BTEX (μg/kg)** ~	< 5.0				6000		
Sum of PCBs (mg/kg)**	< 0.007				1	-	
Mineral Oil (mg/kg) _{EH_1D_CU_AL}	52				500		
Total PAH (WAC-17) (mg/kg)	11.5				100		
pH (units)**	7.8				==	>6	==
Acid Neutralisation Capacity (mmol / kg)	10					To be evaluated	To be evaluate
Eluate Analysis	10:1			10:1	Limit valu	es for compliance le	eaching test
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN	I 12457-2 at L/S 10	l/kg (mg/kg)
Arsenic *	0.0037			0.0373	0.5	2	25
Barium *	0.0270			0.270	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0012			0.012	0.5	10	70
Copper *	0.031			0.31	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0143			0.143	0.5	10	30
Nickel *	0.0066			0.066	0.4	10	40
Lead *	0.0055			0.055	0.5	10	50
Antimony *	0.0066			0.066	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.011			0.11	4	50	200
Chloride *	3.2			32	800	15000	25000
Fluoride*	0.34			3.4	10	150	500
Sulphate *	30			300	1000	20000	50000
TDS*	120			1200	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	12	-
DOC	14.7			147	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.7						
Dry Matter (%)	84						
Moisture (%)	16						
Doculte are everywood on a dry use the best after a few arms of the second of the second on the seco	sturo conte ett	annlicable.			*= 1IVAC 20015 111	od (liquid clusto s==	lucis only)
Results are expressed on a dry weight basis, after correction for mo	sture content where a	applicable.			↑= UKAS accredit	ed (liquid eluate anal	iysis only)

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended)

and Ed. Guidance WM3.

This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.





Project / Site name: Chapman Way, Tunbridge

* 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 *
2810079	R0104	None Supplied	None Supplied	Brown clay.





Analytical Report Number: 23-56287 Project / Site name: Chapman Way, Tunbridge

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

	•	•	1	T	
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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-PL	W	NONE
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.	L047-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 with silica gel split/clean up.	L076-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated WAC-17 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
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 at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	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
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.	L009-PL	D	MCERTS
BTEX in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Total BTEX in soil (Poland)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073-PL	W	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
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
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
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
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Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by EC probe using a factor of 0.6.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031-PL	W	ISO 17025
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
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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD). For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride). For method numbers ending in 'PL or B' 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. Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS Total or EH CU+HS Total

^{~ -} Quality control surrogate recovery outside of limits, other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Sample Deviation Report



Analytical Report Number: 23-56287 Project / Site name: Chapman Way, Tunbridge

 $This \ deviation \ report \ indicates \ the \ sample \ and \ test \ deviations \ that \ apply \ to \ the \ samples \ submitted \ for \ analysis. Please$ note that the associated result(s) may be unreliable and should be interpreted with care.

 $\label{eq:Key:a-No-sampling} \textbf{Key: a-No-sampling date b-Incorrect container c-Holding time d-Headspace e-Temperature}$

Sample ID	Other ID			Sample Deviation	Test Name	Test Ref	Test Deviation
R0104	None Supplied	L	2810080	a	None Supplied	None Supplied	None Supplied
R0104	None Supplied	S	2810079	a	None Supplied	None Supplied	None Supplied





Radhika Patel

TRC Companies Ltd 20 Red Lion Street, London WC1R 4PQ

i2 Analytical Ltd. 7 Woodshots Meadow, Croxley Green Business Park, Watford, Herts, **WD18 8YS**

Analytical Report Number: 23-56828

Project / Site name: Chapman Way, Turbridge Samples received on: 15/09/2023

Your job number: 561063 Samples instructed on/

Analysis started on:

15/09/2023

Your order number: 561063 Analysis completed by: 22/09/2023

Report Issue Number: Report issued on: 22/09/2023

Samples Analysed: 1 soil sample

Adam Fenwick

Technical Reviewer 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

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.





Your Order No: 561063

Lab Sample Number					2813211
Sample Reference		R0104			
Sample Number	None Supplied				
Depth (m)	19.00				
Date Sampled					13/09/2023
Time Taken				None Supplied	
Analytical Parameter (Soil Analysis)		Units	Limit of detection	Accreditation Status	
Stone Content		%	0.1	NONE	< 0.1
Moisture Content		%	0.01	NONE	19
Total mass of sample received		kg	0.001	NONE	0.8

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.8

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.23
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.17
Pyrene	mg/kg	0.05	MCERTS	0.17
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06
Chrysene	mg/kg	0.05	MCERTS	0.06
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.07
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

	Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	0.81
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11
Boron (water soluble)	mg/kg	0.2	MCERTS	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	55





Your Order No: 561063

Lab Sample Number		2813211		
Sample Reference	R0104			
Sample Number	None Supplied			
Depth (m)				19.00
Date Sampled				13/09/2023
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Monoaromatics & Oxygenates				
Benzene	μg/kg	5	MCERTS	< 5.0
Toluene	μg/kg	5	MCERTS	< 5.0
Ethylbenzene	μg/kg	5	MCERTS	< 5.0
p & m-xylene	μg/kg	5	MCERTS	< 5.0
o-xylene	μg/kg	5	MCERTS	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	5	NONE	< 5.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10

TPH-CWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.1	NONE	< 0.10
TPH-CWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10

 $\label{eq:U/S} \mbox{U/S} = \mbox{Unsuitable Sample} \quad \mbox{I/S} = \mbox{Insufficient Sample} \quad \mbox{ND} = \mbox{Not detected}$





Analytical Report Number: 23-56828

Project / Site name: Chapman Way, Turbridge

* 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 *
2813211	R0104	None Supplied	19	Brown sandy clay with gravel.





Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

					I
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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. Refer to CoA for analyte specific accreditation.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-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
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD). For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride). For method numbers ending in 'PL or B' 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.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics





Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				



Annex G: Screened Data

Human Health Generic Assessment Criteria

		Generic Assessment Criteria (mg/kg)				
Contaminant of Concern	Units	Residential (wHP)	Residential (woHP)	POS (Residential)	Commercial	Source
Heavy Metals						
Arsenic	mg/kg	37	40	79	640	S4UL
Boron	mg/kg	290	11000	21000	240000	S4UL
Cadmium	mg/kg	11	85	120	190	S4UL
Chromium (hexavalent)	mg/kg	6	6	7.7	33	S4UL
Chromium (III)	mg/kg	910	910	1500	8600	S4UL
Chromium	mg/kg	910	910	1500	8600	S4UL
Copper	mg/kg	2400	7100	12000	68000	S4UL
Lead	mg/kg	200	310	630	2330	C4SL
Mercury	mg/kg	40	56	120	1100	S4UL
Nickel	mg/kg	180	180	230	980	S4UL
Selenium	mg/kg	250	430	1100	12000	S4UL
Zinc	mg/kg	3700	40000	81000	730000	S4UL
Polycyclic Aromatic Hydrocarbons						
Naphthalene	mg/kg	2.3	2.3	4900	190	S4UL
Acenaphthylene	mg/kg	170	2900	15000	83000	S4UL
Acenaphthene	mg/kg	210	3000	15000	84000	S4UL
Fluorene	mg/kg	170	2800	9900	63000	S4UL
Phenanthrene	mg/kg	95	1300	3100	22000	S4UL
Anthracene	mg/kg	2400	31000	74000	520000	S4UL
Fluoranthene	mg/kg	280	1500	3100	23000	S4UL
Pyrene	mg/kg	620	3700	7400	54000	S4UL
Benzo(a)anthracene	mg/kg	7.2	11	29	170	S4UL
Chrysene	mg/kg	15	30	57	350	S4UL
Benzo(b)fluoranthene	mg/kg	2.6	3.9	7.1	44	S4UL
Benzo(k)fluoranthene	mg/kg	77	110	190	1200	S4UL
Benzo(a)pyrene	mg/kg	2.2	3.2	5.7	35	S4UL
Indeno(1,2,3-cd) pyrene	mg/kg	27	45	82	500	S4UL
Dibenz(a,h)anthracene	mg/kg		0.31	0.57	3.5	S4UL
Benzo(ghi)perylene	mg/kg		360	640	3900	S4UL
Monoaromatics	0 0		1			
Benzene	μg/kg	87	380	72000	27000	S4UL
Toluene	µg/kg	130000	880000	56000000	56000000	S4UL
Ethylbenzene	μg/kg	47000	83000	24000000	5700000	S4UL
p & m-xylene	µg/kg	56000	79000	41000000	5900000	S4UL
o-xylene	μg/kg	60000	88000	41000000	6600000	S4UL
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	49000	73000	-	7900000	EIC/AGS/CL:AIRE
Petroleum Hydrocarbons (Aliphatic)	,, 5 5					
TPH-CWG – Aliphatic >EC5 – EC6	mg/kg	42	42	570000	3200	S4UL
TPH-CWG – Aliphatic >EC6 – EC 8	mg/kg	100	100	600000	7800	S4UL
TPH-CWG – Aliphatic >EC8 – EC10	mg/kg	27	27	13000	2000	S4UL
TPH-CWG – Aliphatic >EC10 – EC12	mg/kg	130	130	13000	9700	S4UL
TPH-CWG – Aliphatic >EC12 – EC16	mg/kg	1100	1100	13000	59000	S4UL
TPH-CWG – Aliphatic >EC16 – EC21	mg/kg		65000	250000	1600000	S4UL

Human Health Generic Assessment Criteria

TPH-CWG – Aliphatic >EC21 – EC35	mg/kg	65000	65000	250000	1600000	S4UL
Petroleum Hydrocarbons (Aromatic)				•		•
TPH-CWG – Aromatic >EC5 – EC7	mg/kg	70	370	56000	26000	S4UL
TPH-CWG – Aromatic >EC7 – EC8	mg/kg	130	860	56000	56000	S4UL
TPH-CWG – Aromatic >EC8 – EC10	mg/kg	34	47	5000	3500	S4UL
TPH-CWG – Aromatic >EC10 – EC12	mg/kg	74	250	5000	16000	S4UL
TPH-CWG – Aromatic >EC12 – EC16	mg/kg	140	1800	5100	36000	S4UL
TPH-CWG – Aromatic >EC16 – EC21	mg/kg	260	1900	3800	28000	S4UL
TPH-CWG – Aromatic >EC21 – EC35	mg/kg	1100	1900	3800	28000	S4UL
Volatile Organic Compounds			•			•
Chloromethane	μg/kg	8.3	8.5	-	1000	EIC/AGS/CL:AIRE
Chloroethane	μg/kg	8300	8400	-	960000	EIC/AGS/CL:AIRE
Bromomethane	μg/kg	-	-	-	-	-
Vinyl Chloride	μg/kg	0.64	0.77	3500	59	S4UL
Trichlorofluoromethane	μg/kg	-	-	-	-	-
1,1-Dichloroethene	μg/kg	230	230	-	26000	EIC/AGS/CL:AIRE
1,1,2-Trichloro 1,2,2-Trifluoroethane	μg/kg	-	-	-	-	-
Cis-1,2-dichloroethene	μg/kg	110	120	-	14000	EIC/AGS/CL:AIRE
MTBE (Methyl Tertiary Butyl Ether)	μg/kg	49000	73000	-	7900000	EIC/AGS/CL:AIRE
1,1-Dichloroethane	μg/kg	2400	2500	-	280000	EIC/AGS/CL:AIRE
2,2-Dichloropropane	μg/kg	-	-	-	-	-
Trichloromethane	μg/kg	910	1200	2500000	99000	S4UL
1,1,1-Trichloroethane	μg/kg	8800	9000	140000000	660000	S4UL
1,2-Dichloroethane	μg/kg	7.1	9.2	29000	670	S4UL
1,1-Dichloropropene	μg/kg	-	-	-	-	-
Trans-1,2-dichloroethene	μg/kg	190	190	-	22000	EIC/AGS/CL:AIRE
Benzene	μg/kg	87	380	72000	27000	S4UL
Tetrachloromethane	μg/kg	26	26	890000	2900	S4UL
1,2-Dichloropropane	μg/kg	24	24	-	3300	EIC/AGS/CL:AIRE
Trichloroethene	μg/kg	16	17	120000	1200	S4UL
Dibromomethane	μg/kg	-	-	-	1	-
Bromodichloromethane	μg/kg	16	19	-	2100	EIC/AGS/CL:AIRE
Cis-1,3-dichloropropene	μg/kg	-	-	-	-	-
Trans-1,3-dichloropropene	μg/kg	-	-	-	-	-
Toluene	μg/kg	130000	880000	56000000	56000000	S4UL
1,1,2-Trichloroethane	μg/kg	600	880	-	94000	EIC/AGS/CL:AIRE
1,3-Dichloropropane	μg/kg	-	-	-	-	-
Dibromochloromethane	μg/kg	-	-	-	-	-
Tetrachloroethene	μg/kg	180	180	1400000	19000	S4UL
1,2-Dibromoethane	μg/kg	-	-	-	-	-
Chlorobenzene	μg/kg	460	460	11000000	56000	S4UL
1,1,1,2-Tetrachloroethane	μg/kg	1200	1500	1400000	110000	S4UL
Ethylbenzene	μg/kg	47000	83000	24000000	5700000	S4UL
p & m-Xylene	μg/kg	56000	79000	41000000	5900000	S4UL
Styrene	μg/kg	8100	35000	-	3300000	EIC/AGS/CL:AIRE
Tribromomethane	μg/kg	-	-	-	-	-
o-Xylene	μg/kg	60000	88000	41000000	6600000	S4UL

Human Health Generic Assessment Criteria

1,1,2,2-Tetrachloroethane	μg/kg	1600	3900	1400000	270000	S4UL
Isopropylbenzene	μg/kg	11000	12000	-	1400000	EIC/AGS/CL:AIRE
Bromobenzene	μg/kg	870	910	-	97000	EIC/AGS/CL:AIRE
n-Propylbenzene	μg/kg	34000	40000	-	4100000	EIC/AGS/CL:AIRE
2-Chlorotoluene	μg/kg	-	-	-	-	-
4-Chlorotoluene	μg/kg	-	-	-	-	-
1,3,5-Trimethylbenzene	μg/kg	-	-	-	-	-
tert-Butylbenzene	μg/kg	-	-	-	•	-
1,2,4-Trimethylbenzene	μg/kg	350	410	-	42000	EIC/AGS/CL:AIRE
sec-Butylbenzene	μg/kg	-	-	-	-	-
1,3-Dichlorobenzene	μg/kg	400	440	300000	30000	S4UL
p-Isopropyltoluene	μg/kg	-	-	-	1	-
1,2-Dichlorobenzene	μg/kg	23000	24000	9000000	2000000	S4UL
1,4-Dichlorobenzene	μg/kg	61000	61000	17000000	4400000	S4UL
Butylbenzene	μg/kg	-	-	-	1	-
1,2-Dibromo-3-chloropropane	μg/kg	-	-	-	1	-
1,2,4-Trichlorobenzene	μg/kg	2600	2600	15000000	220000	S4UL
Hexachlorobutadiene	μg/kg	290	320	25000	31000	S4UL
1,2,3-Trichlorobenzene	μg/kg	1500	1500	1800000	102000	S4UL

Key							
Source Reference	Document						
S4UL	Nathanail, CP et al (2015) The LQM/CIEH S4ULs for human health risk assessment.						
C4SL	Department for Environment, Food and Rural Affairs (2014) SP1010: Development						
	of category 4 screening levels for assessment of land affected by contamination –						
	policy companion document.						
EIC/AGS/CL:AIRE	Environmental Industries Commission, The Association of Geotechnical and						
	Geoenvironmental Specialists and Contaminated Land: Applications in Real						
	Environments (2009) The EIC/AGS/CL:AIRE soil generic assessment criteria for						
	human health risk assessment.						

Notes:

The above GAC are for guidance only when assessing risk to human health receptors for specific development scenarios.

The absence of GAC for a substance does not necessarily imply there is no risk.

Some substances may be known by alternative names.

GAC given for organic compounds are based on the asusmption of 1% soil organic matter.

Abbreviations:

GAC Generic Assessment Criiteria
wHP With homegrown produce
woHP Without homegrown produce

POS Public open space

Generic Assessment Criteria for Assessing Vapour Risk to Human Health from Volatile Contaminants in Groundwater

		SoBRA Generic Assessment Criteria (µg/I)			
Contaminant of Concern	Units	Residential	Commercial		
Polycyclic Aromatic Hydrocarbons					
Naphthalene	μg/l	220	23000		
Acenaphthylene	μg/l	170000	15000000		
Acenaphthene	μg/l	220000	20000000		
Fluorene	μg/l	-	-		
Phenanthrene	μg/l	-	-		
Anthracene	μg/l	-	-		
Fluoranthene	μg/l	210000	18000000		
Pyrene	μg/l	-	-		
Benzo(a)anthracene	μg/l	-	-		
Chrysene	μg/l	-	-		
Benzo(b)fluoranthene	μg/l	0.00017	-		
Benzo(k)fluoranthene	μg/l	0.00017	-		
Benzo(a)pyrene	μg/l	0.00017	-		
Indeno(1,2,3-cd) pyrene	μg/l	-	-		
Dibenz(a,h)anthracene	μg/l	0.00017	-		
Benzo(ghi)perylene	μg/l	0.00017	-		
Monoaromatics					
Benzene	μg/l	210	20000		
Toluene	μg/l	230000	230000		
Ethylbenzene	μg/l	10000	960000		
p & m-xylene	μg/l	9500	94000		
o-xylene	μg/l	12000	1100000		
MTBE (Methyl Tertiary Butyl Ether)	μg/l	83000	7800000		
Petroleum Hydrocarbons (Aliphatic)					
TPH-CWG – Aliphatic >EC5 – EC6	μg/l	1900	190000		
TPH-CWG – Aliphatic >EC6 – EC 8	μg/l	1500	150000		
TPH-CWG – Aliphatic >EC8 – EC10	μg/l	57	5700		
TPH-CWG – Aliphatic >EC10 – EC12	μg/l	37	3600		
TPH-CWG – Aliphatic >EC12 – EC16	μg/l	-	-		
TPH-CWG – Aliphatic >EC16 – EC21	μg/l	-	-		
TPH-CWG – Aliphatic >EC21 – EC35	μg/l	-	-		
Petroleum Hydrocarbons (Aromatic)					
TPH-CWG – Aromatic >EC5 – EC7	μg/l	210000	20000000		
TPH-CWG – Aromatic >EC7 – EC8	μg/l	220000	21000000		
TPH-CWG – Aromatic >EC8 – EC10	μg/l	1900	190000		
TPH-CWG – Aromatic >EC10 – EC12	μg/l	6800	660000		
TPH-CWG – Aromatic >EC12 – EC16	μg/l	39000	3700000		
TPH-CWG – Aromatic >EC16 – EC21	μg/l	-	-		
TPH-CWG – Aromatic >EC21 – EC35	μg/l	-	-		
Volatile Organic Compounds					
1,1-Dichloroethene	μg/l	160	16000		
MTBE (Methyl Tertiary Butyl Ether)	μg/l	83000	7800000		
· · · · · · · · · · · · · · · · · · ·			260000		

Generic Assessment Criteria for Assessing Vapour Risk to Human Health from Volatile Contaminants in Groundwater

1,1,1-Trichloroethane	μg/l	3000	290000
1,2-Dichloroethane	μg/l	8.9	850
Benzene	μg/l	210	20000
1,2-Dichloropropane	μg/l	22	2600
Toluene	μg/l	230000	21000000
1,1,2-Trichloroethane	μg/l	520	49000
1,1,1,2-Tetrachloroethane	μg/l	240	22000
Ethylbenzene	μg/l	10000	960000
p & m-Xylene	μg/l	9500	94000
Styrene	μg/l	8800	810000
o-Xylene	μg/l	12000	1100000
1,1,2,2-Tetrachloroethane	μg/l	1600	150000
Isopropylbenzene	μg/l	850	86000
n-Propylbenzene	μg/l	2700	240000
1,2,4-Trimethylbenzene	μg/l	24	2200
1,2-Dichlorobenzene	μg/l	2000	220000
1,2,4-Trichlorobenzene	μg/l	68	7200
1,2,3-Trichlorobenzene	μg/l	35	3100

Key					
Source Reference	Document				
	Society of Brownfield Risk Assessment, Development of Generic Assessment Criteria for Assessing Vapour Risk to Human Health from Volatile Contaminants in Groundwater, 2017				

Notes:

The above GAC are for guidance only when assessing risk to human health from volatile contaminants in groundwater. The absence of GAC for a substance does not necessarily imply there is no risk.

Some substances may be known by alternative names.

Abbreviations:

GAC Generic Assessment Criiteria

Contaminant of Concern	Units	EQS	Source	DWS	Source
General Inorganics					
Total Cyanide	μg/l	1	GUK 22	50	WSR 18
Sulphate	mg/l	400	GUK 22	250	WSR 18
Chloride	mg/l	250	GUK 22	250	WSR 18
Ammonium as NH4	μg/l	-	•	500	WSR 18
Heavy Metals					
Arsenic	μg/l	50	GUK 22	10	WSR 18
Boron	μg/l	2,000	GUK 22	1,000	WSR 18
Cadmium	μg/l	0.08	GUK 22	5	WSR 18
Chromium (hexavalent)	μg/l	3.4	GUK 22	5.4	US EPA RfD
Chromium	μg/l	4.7	GUK 22	50	WSR 18
Copper	μg/l	1	GUK 22	2,000	WSR 18
Lead	μg/l	1.2	GUK 22	10	WSR 18
Mercury	μg/l	0.07	GUK 22	1	WSR 18
Nickel	μg/l	4	GUK 22	20	WSR 18
Selenium	μg/l	-	-	10	WSR 18
Zinc	μg/l	10.9	GUK 22	5000	US EPA
Polycyclic Aromatic Hydrocarbons	T			· · · · · · · · · · · · · · · · · · ·	
Naphthalene	μg/l	2	GUK 22	0.1	DWI 17
Acenaphthylene	μg/l	-	-	0.1	DWI 17
Acenaphthene	μg/l	-	-	0.1	DWI 17
Fluorene	μg/l	-	-	0.1	DWI 17
Phenanthrene	μg/l	-	-	0.1	DWI 17
Anthracene	μg/l	0.1	GUK 22	0.1	DWI 17
Fluoranthene	μg/l	0.0063	GUK 22	0.1	DWI 17
Pyrene	μg/l	-	-	0.01	DWI 17
Benzo(a)anthracene	µg/l	-	-	0.1	DWI 17
Chrysene	µg/l	- 0.00017	-	0.1	DWI 17
Benzo(b)fluoranthene	μg/l	0.00017	GUK 22	0.1 0.1	DWI 17
Benzo(k)fluoranthene	µg/l	0.00017 0.00017	GUK 22 GUK 22	0.1	DWI 17 DWI 17
Benzo(a)pyrene Indeno(1,2,3-cd) pyrene	μg/l	0.00017	GUK 22	0.1	DWI 17
Dibenz(a,h)anthracene	µg/l	0.00017	GUN 22	0.1	DWI 17
Benzo(ghi)perylene	μg/l μg/l	0.00017	GUK 22	0.1	DWI 17
Total EPA-16 PAHs	μg/l	0.00017		0.1	DWI 17
Monoaromatics	ру/ і			0.1	DVVIII
Benzene	μg/l	10	GUK 22	10	PHG 17
Toluene	μg/l	74	GUK 22	700	PHG 17
Ethylbenzene	µg/l	20	EQS R&D	300	PHG 17
p & m-xylene	μg/l	30	GUK 22	500	PHG 17
o-xylene	μg/l	30	GUK 22	500	PHG 17
MTBE (Methyl Tertiary Butyl Ether)	μg/l	-	-	-	-
Petroleum Hydrocarbons (Aliphatic)	1.3				
TPH-CWG – Aliphatic >EC5 – EC6	μg/l	-	-	15000	PHG 17
TPH-CWG – Aliphatic >EC6 – EC 8	µg/l	-	-	15000	PHG 17

Trichlorofluoromethane µg/l - </th <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>						
TPH-CWG – Aliphatic >EC12 – EC16 µg/l - 300 PHG 17 TPH-CWG – Aliphatic >EC16 – EC21 µg/l - - 300 PHG 17 TPH-CWG – Aliphatic >EC16 – EC21 µg/l - - 300 PHG 17 Petroleum Hydrocarbons (Aromatic) TPH-CWG – Aromatic >EC6 – EC7 µg/l - - 10 PHG 17 TPH-CWG – Aromatic >EC7 – EC8 µg/l - - 700 PHG 17 TPH-CWG – Aromatic >EC10 – EC12 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC16 – EC21 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC16 – EC21 µg/l - - - - - Volatile Organic Compounds Chloromethane µg/l <td>TPH-CWG – Aliphatic >EC8 – EC10</td> <td>μg/l</td> <td>-</td> <td>-</td> <td>300</td> <td>PHG 17</td>	TPH-CWG – Aliphatic >EC8 – EC10	μg/l	-	-	300	PHG 17
TPH-CWG - Aliphatic > EC21 - EC35	TPH-CWG – Aliphatic >EC10 – EC12	μg/l	-	-	300	PHG 17
TPH-CWG – Aliphatic > EC21 – EC35 µg/I - 300 PHG 17 Petroleum Hydrocarbons (Aromatic) TPH-CWG – Aromatic > EC7 µg/I - - 10 PHG 17 TPH-CWG – Aromatic > EC7 – EC8 µg/I - - 700 PHG 17 TPH-CWG – Aromatic > EC10 – EC12 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC12 – EC16 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/I - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/I - - - - Chloroethane µg/I - - - - - Chloroethane µg/I - - - <t< td=""><td>TPH-CWG – Aliphatic >EC12 – EC16</td><td>μg/l</td><td>-</td><td>-</td><td>300</td><td>PHG 17</td></t<>	TPH-CWG – Aliphatic >EC12 – EC16	μg/l	-	-	300	PHG 17
Petroleum Hydrocarbons (Aromatic) TPH-CWG - Aromatic > EC5 - EC7	TPH-CWG – Aliphatic >EC16 – EC21	μg/l	-	-	300	PHG 17
TPH-CWG – Aromatic >EC5 – EC7 µg/l - - 10 PHG 17 TPH-CWG – Aromatic >EC8 – EC10 µg/l - - 700 PHG 17 TPH-CWG – Aromatic >EC8 – EC10 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC10 – EC12 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - - - Chloratic Propertion µg/l - - - - - - - - - - - - - - <td>TPH-CWG – Aliphatic >EC21 – EC35</td> <td>μg/l</td> <td>-</td> <td>-</td> <td>300</td> <td>PHG 17</td>	TPH-CWG – Aliphatic >EC21 – EC35	μg/l	-	-	300	PHG 17
TPH-CWG – Aromatic > EC7 – EC8 µg/l - - 700 PHG 17 TPH-CWG – Aromatic > EC8 – EC10 µg/l - - 300 PHG 17 TPH-CWG – Aromatic > EC10 – EC12 µg/l - - 90 PHG 17 TPH-CWG – Aromatic > EC10 – EC21 µg/l - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic > EC21 – EC35 µg/l - - 90 PHG 17 Volatile Organic Compounds PHG 17 PHG 17 PHG 17 PHG 17 Volatile Organic Compounds PHG 17 PHG 17 PHG 17 PHG 17 Chloromethane µg/l - - - - - - - - - - - - - - -<	Petroleum Hydrocarbons (Aromatic)					
TPH-CWG – Aromatic >EC8 – EC10 µg/l - - 300 PHG 17 TPH-CWG – Aromatic >EC10 – EC12 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC12 – EC16 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC10 – EC21 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC10 – EC35 µg/l - - - - Chloroethane µg/l - - - - - Chloroethane µg/l - <t< td=""><td>TPH-CWG – Aromatic >EC5 – EC7</td><td>μg/l</td><td>-</td><td>-</td><td>10</td><td>PHG 17</td></t<>	TPH-CWG – Aromatic >EC5 – EC7	μg/l	-	-	10	PHG 17
TPH-CWG – Aromatic >EC10 – EC12 µg/I - - 90 PHG 17 TPH-CWG – Aromatic >EC12 – EC16 µg/I - - 90 PHG 17 TPH-CWG – Aromatic >EC16 – EC21 µg/I - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/I - - 90 PHG 17 Volatile Organic Compounds Chloroethane µg/I - - - - Chloroethane µg/I -	TPH-CWG – Aromatic >EC7 – EC8	μg/l	-	-	700	PHG 17
TPH-CWG – Aromatic xEC12 – EC16 µg/l - - 90 PHG 17 TPH-CWG – Aromatic xEC16 – EC21 µg/l - - 90 PHG 17 TPH-CWG – Aromatic xEC1 – EC35 µg/l - - 90 PHG 17 Volatile Organic Compounds Chloroethane µg/l - - - - Chloroethane µg/l - - - - - Bromomethane µg/l - - - - - Minyl Chloride µg/l - - - - - Minyl Chloride µg/l -	TPH-CWG – Aromatic >EC8 – EC10	μg/l	-	-	300	PHG 17
TPH-CWG – Aromatic >EC12 – EC16 µg/l - 90 PHG 17 TPH-CWG – Aromatic >EC16 – EC21 µg/l - - 90 PHG 17 TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 Volatile Organic Compounds Chloromethane µg/l - - - - Chloroethane µg/l - - - - - Eromomethane µg/l -	TPH-CWG – Aromatic >EC10 – EC12	μg/l	-	-	90	PHG 17
TPH-CWG – Aromatic >EC21 – EC35 µg/l - - 90 PHG 17 Volatile Organic Compounds Chloromethane µg/l -	TPH-CWG – Aromatic >EC12 – EC16		-	-	90	PHG 17
Volatile Organic Compounds	TPH-CWG – Aromatic >EC16 – EC21	μg/l	-	-	90	PHG 17
Chloromethane μg/l - - - - Bromomethane μg/l - - - - Winyl Chloride μg/l - - - - Vinyl Chloride μg/l - - - - Trichlorofluoromethane μg/l - - - - 1,1-Dichloroethane μg/l - - - - 1,1-Z-dichloroethane μg/l - - - - MTBE (Methyl Tertiary Butyl Ether) μg/l - - - - 1,1-Dichloroethane μg/l - - - - 1,1-Dichloropthane μg/l - - - - 1,2-Dichloroethane μg/l 10 GWK 22 100 (300) WSR 18 (WHO 22) 1,1-Dichloropropene μg/l 10 GWK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene μg/l - - - - </td <td>TPH-CWG – Aromatic >EC21 – EC35</td> <td>μg/l</td> <td>-</td> <td>-</td> <td>90</td> <td>PHG 17</td>	TPH-CWG – Aromatic >EC21 – EC35	μg/l	-	-	90	PHG 17
Chloroethane μg/l - - - - Bromomethane μg/l - - - - - Vinyl Chloride μg/l 0.375 WFD 15 0.5 (0.3) WSR 18 (WHO 22) Trichlorofluoromethane μg/l - - - - 1,1-Dichloroethene μg/l - - - - Cis-1,2-dichloroethene μg/l - - - - - MTBE (Methyl Tertiary Butyl Ether) μg/l -	Volatile Organic Compounds			•	•	
Chloroethane µg/I - - - - Bromomethane µg/I - - - - - Vinyl Chloride µg/I 0.375 WFD 15 0.5 (0.3) WSR 18 (WHO 22) Trichlorofucomethane µg/I - - - - 1,1-Dichloroethene µg/I - - - - Cis-1,2-dichloroethene µg/I - - - - MTBE (Methyl Tertiary Butyl Ether) µg/I - - - - - 1,1-Dichloroethane µg/I -	Chloromethane	μg/l	-	-	-	-
Vinyl Chloride μg/l 0.375 WFD 15 0.5 (0.3) WSR 18 (WHO 22) Trichlorofluoromethane μg/l - - - - 1,1-Dichloroethene μg/l - - - - 1,1,2-Trichloro 1,2,2-Trifluoroethane μg/l - - - - Cis-1,2-dichloroethene μg/l - - - - - MTBE (Methyl Tertiary Butyl Ether) μg/l -	Chloroethane		-	-	-	-
Vinyl Chloride μg/I 0.375 WFD 15 0.5 (0.3) WSR 18 (WHO 22) Trichlorofluoromethane μg/I - - - - - 1,1-Dichloroethene μg/I - - - - - MTBE (Methyl Tertiary Butyl Ether) μg/I - - - - - 1,1-Dichloroethane μg/I - - - - - 1,1-Dichloroethane μg/I - - - - - 2,2-Dichloropropane μg/I - - - - - 1,1-Dichloroethane μg/I 100 GUK 22 100 (300) WSR 18 (WHO 22) 1,1,1-Trichloroethane μg/I 100 GUK 22 - - - 1,2-Dichloropthane μg/I 10 GUK 22 3 (30) WSR 18 (WHO 22) Tertachloroethane μg/I - - 50 WHO 22 Tetrachloromethane μg/I - -	Bromomethane	μg/l	-	-	-	-
Trichlorofluoromethane µg/l - - - - 1,1-Dichloroethene µg/l - - - - 1,1,2-Trichloro 1,2,2-Trifluoroethane µg/l - - - - Cis-1,2-dichloroethene µg/l - - 50 WHO 22 MTBE (Methyl Tertiary Butyl Ether) µg/l - - - - 1,1-Dichloroethane µg/l - - - - 2,2-Dichloropropane µg/l - - - - 1,1-Trichloroethane µg/l 100 GUK 22 100 (300) WSR 18 (WHO 22) 1,1-Dichloropthane µg/l 10 GUK 22 - - - 1,2-Dichloroethane µg/l 10 GUK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene µg/l - - - - - - - - - - - - - - - - <td< td=""><td>Vinyl Chloride</td><td></td><td>0.375</td><td>WFD 15</td><td>0.5 (0.3)</td><td>WSR 18 (WHO 22)</td></td<>	Vinyl Chloride		0.375	WFD 15	0.5 (0.3)	WSR 18 (WHO 22)
1,1-Dichloroethene µg/l -	Trichlorofluoromethane		-	-	-	-
Cis-1,2-dichloroethene µg/I - - 50 WHO 22 MTBE (Methyl Tertiary Butyl Ether) µg/I - - - - 1,1-Dichloroethane µg/I - - - - 2,2-Dichloropropane µg/I - - - - Trichloroethane µg/I 100 GUK 22 100 (300) WSR 18 (WHO 22) 1,1,1-Trichloroethane µg/I 100 GUK 22 - - - 1,2-Dichloroethane µg/I 10 GUK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene µg/I - - - - - 1,2-Dichloropropene µg/I - - - - - - 1,2-Dichloropropane µg/I 1 GUK 22 10 (8) WSR 18 (WHO 22) - Dibromomethane µg/I - - - - - Bromodichloromethane µg/I - - - <	1,1-Dichloroethene	μg/l	-	-	-	-
Cis-1,2-dichloroethene µg/I - - 50 WHO 22 MTBE (Methyl Tertiary Butyl Ether) µg/I - - - - 1,1-Dichloroethane µg/I - - - - 2,2-Dichloropropane µg/I - - - - Trichloroethane µg/I 100 GUK 22 100 (300) WSR 18 (WHO 22) 1,1-Trichloroethane µg/I 100 GUK 22 - - - 1,2-Dichloroethane µg/I 10 GUK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene µg/I - - - - - 1,2-Dichloropropene µg/I - - 50 WHO 22 WHO 22 Tetrachloroethene µg/I - - - - - 1,2-Dichloropropane µg/I 10 GUK 22 10 (8) WSR 18 (WHO 22) Dibromodichloromethane µg/I - - - -	1,1,2-Trichloro 1,2,2-Trifluoroethane		-	-	-	-
MTBE (Methyl Tertiary Butyl Ether) µg/l -	Cis-1,2-dichloroethene		-	-	50	WHO 22
1,1-Dichloroethane µg/l -	MTBE (Methyl Tertiary Butyl Ether)		-	-	-	-
2,2-Dichloropropane µg/l -	1,1-Dichloroethane		-	-	-	-
1,1,1-Trichloroethane µg/I 100 GUK 22 - - 1,2-Dichloroethane µg/I 10 GUK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene µg/I - - - - Trans-1,2-dichloroethene µg/I - - 50 WHO 22 Tetrachloromethane µg/I 12 GUK 22 - - - 1,2-Dichloropropane µg/I - <td>2,2-Dichloropropane</td> <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	2,2-Dichloropropane		-	-	-	-
1,2-Dichloroethane µg/I 10 GUK 22 3 (30) WSR 18 (WHO 22) 1,1-Dichloropropene µg/I - - - - Trans-1,2-dichloroethene µg/I - - 50 WHO 22 Tetrachloromethane µg/I 12 GUK 22 - - - 1,2-Dichloropropane µg/I -	Trichloromethane	μg/l	2.5	GUK 22	100 (300)	WSR 18 (WHO 22)
1,1-Dichloropropene µg/l -	1,1,1-Trichloroethane	μg/l	100	GUK 22	-	-
Trans-1,2-dichloroethene μg/l - - 50 WHO 22 Tetrachloromethane μg/l 12 GUK 22 - - 1,2-Dichloropropane μg/l - - - - Trichloroethene μg/l 10 GUK 22 10 (8) WSR 18 (WHO 22) Dibromomethane μg/l - - - - Bromodichloromethane μg/l - - 100 WSR 18 Cis-1,3-dichloropropene μg/l - - - - Trans-1,3-dichloropropene μg/l - - - - 1,1,2-Trichloroethane μg/l 400 GUK 22 - - 1,3-Dichloropropane μg/l - - - - 1,3-Dichloromethane μg/l - - - - Dibromochloromethane μg/l - - 100 WSR 18 Tetrachloroethane μg/l - - 0.4	1,2-Dichloroethane	μg/l	10	GUK 22	3 (30)	WSR 18 (WHO 22)
Tetrachloromethane μg/l 12 GUK 22 - - 1,2-Dichloropropane μg/l - - - - Trichloroethene μg/l 10 GUK 22 10 (8) WSR 18 (WHO 22) Dibromomethane μg/l - - - - Bromodichloromethane μg/l - - - - Bromodichloromethane μg/l - - - - - Cis-1,3-dichloropropene μg/l - <td>1,1-Dichloropropene</td> <td>μg/l</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>	1,1-Dichloropropene	μg/l	-	-	-	-
1,2-Dichloropropane µg/l -	Trans-1,2-dichloroethene	μg/l	-	-	50	WHO 22
1,2-Dichloropropane µg/l -	Tetrachloromethane	μg/l	12	GUK 22	-	-
Dibromomethane μg/l -	1,2-Dichloropropane		-	-	-	-
Dibromomethane μg/l - - - Bromodichloromethane μg/l - - 100 WSR 18 Cis-1,3-dichloropropene μg/l - - - - Trans-1,3-dichloropropene μg/l - - - - 1,1,2-Trichloroethane μg/l 400 GUK 22 - - 1,3-Dichloropropane μg/l - - - - Dibromochloromethane μg/l - - 100 WSR 18 Tetrachloroethene μg/l 10 GUK 22 100 WHO 22 1,2-Dibromoethane μg/l - - 0.4 WHO 22 Chlorobenzene μg/l - - - - 1,1,1,2-Tetrachloroethane μg/l - - - - Styrene μg/l 50 GUK 22 20 WHO 22 Tribromomethane μg/l - - - -	Trichloroethene	μg/l	10	GUK 22	10 (8)	WSR 18 (WHO 22)
Cis-1,3-dichloropropene μg/l - - - Trans-1,3-dichloropropene μg/l - - - 1,1,2-Trichloroethane μg/l 400 GUK 22 - - 1,3-Dichloropropane μg/l - - - - Dibromochloromethane μg/l - - 100 WSR 18 Tetrachloroethene μg/l 10 GUK 22 100 WHO 22 1,2-Dibromoethane μg/l - - 0.4 WHO 22 Chlorobenzene μg/l - - - - 1,1,1,2-Tetrachloroethane μg/l - - - - Styrene μg/l 50 GUK 22 20 WHO 22 Tribromomethane μg/l - - 100 WSR 18	Dibromomethane	μg/l	-	-	-	-
Trans-1,3-dichloropropene μg/l - - - 1,1,2-Trichloroethane μg/l 400 GUK 22 - - 1,3-Dichloropropane μg/l - - - - Dibromochloromethane μg/l - - 100 WSR 18 Tetrachloroethene μg/l 10 GUK 22 100 WHO 22 1,2-Dibromoethane μg/l - - 0.4 WHO 22 Chlorobenzene μg/l - - - - 1,1,1,2-Tetrachloroethane μg/l - - - - Styrene μg/l 50 GUK 22 20 WHO 22 Tribromomethane μg/l - - 100 WSR 18	Bromodichloromethane	μg/l	-	-	100	WSR 18
Trans-1,3-dichloropropene μg/l -	Cis-1,3-dichloropropene	μg/l	-	-	-	-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Trans-1,3-dichloropropene	μg/l	-	-	-	-
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	1,1,2-Trichloroethane		400	GUK 22	-	-
	1,3-Dichloropropane	μg/l	-	-	-	-
	Dibromochloromethane	μg/l	-	-	100	WSR 18
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Tetrachloroethene		10	GUK 22	100	WHO 22
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1,2-Dibromoethane		-	-	0.4	WHO 22
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Chlorobenzene		-	-	-	-
Styrene μg/I 50 GUK 22 20 WHO 22 Tribromomethane μg/I - - 100 WSR 18	1,1,1,2-Tetrachloroethane		-	-	-	-
Tribromomethane μg/l 100 WSR 18	Styrene		50	GUK 22	20	WHO 22
	3		-	-	100	WSR 18
	1,1,2,2-Tetrachloroethane	μg/l	-	-	-	-

Isopropylbenzene	μg/l	-	-	-	-
Bromobenzene	µg/l	-	-	-	-
n-Propylbenzene	µg/l	-	-	-	-
2-Chlorotoluene	µg/l	-	-	-	-
4-Chlorotoluene	μg/l	-	-	-	-
1,3,5-Trimethylbenzene	μg/l	-	-	-	-
tert-Butylbenzene	µg/l	-	-	-	-
1,2,4-Trimethylbenzene	μg/l	-	-	-	-
sec-Butylbenzene	μg/l	-	-	-	-
1,3-Dichlorobenzene	μg/l	-	-	-	-
p-lsopropyltoluene	μg/l	-	-	-	-
1,2-Dichlorobenzene	μg/l	20	GUK 22	1000	WHO 22
1,4-Dichlorobenzene	μg/l	20	GUK 22	300	WHO 22
Butylbenzene	μg/l	-	-	-	-
1,2-Dibromo-3-chloropropane	μg/l	-	-	1	WHO 22
1,2,4-Trichlorobenzene	μg/l	0.4	GUK 22	-	-
Hexachlorobutadiene	μg/l	-	-	0.6	WHO 22
1,2,3-Trichlorobenzene	μg/l	0.4	GUK 22	-	-
Semi-volatile Organic Compounds					
Aniline	μg/l	-	-	-	-
Phenol	μg/l	7.7	GUK 22	-	-
2-Chlorophenol	μg/l	50	GUK 22	-	-
Bis(2-chloroethyl)ether	μg/l	-	-	-	-
1,3-Dichlorobenzene	μg/l	-	-	-	-
Bis(2-chloroisopropyl)ether	μg/l	-	-	-	-
2-Methylphenol	μg/l	-	-	-	-
Hexachloroethane	μg/l	-	-	-	-
Nitrobenzene	μg/l	-	-	-	-
4-Methylphenol	μg/l	-	-	-	-
Isophorone	μg/l	-	-	-	-
2-Nitrophenol	μg/l	-	-	-	-
2,4-Dimethylphenol	μg/l	-	-	-	-
Bis(2-chloroethoxy)methane	μg/l	-	-	-	-
2,4-Dichlorophenol	μg/l	4.2	GUK 22	-	-
4-Chloroaniline	μg/l	-	-	-	-
Hexachlorobutadiene	μg/l	-	-	0.6	WHO 22
4-Chloro-3-methylphenol	μg/l	-	-	-	-
2,4,6-Trichlorophenol	μg/l	-	-	200	WHO 22
2,4,5-Trichlorophenol	μg/l	-	-	-	-
2-Methylnaphthalene	μg/l	-	-	-	-
2-Chloronaphthalene	μg/l	-	-	-	-
Dimethylphthalate	μg/l	800	GUK 22	-	-
2,6-Dinitrotoluene	μg/l	-	-	-	-
2,4-Dinitrotoluene	μg/l	-	-	-	-
Dibenzofuran	μg/l	-	-	-	-
4-Chlorophenyl phenyl ether	μg/l	-	-	-	-
Diethyl phthalate	μg/l	200	GUK 22	-	-

4-Nitroaniline	μg/l	1	-	-	-
Azobenzene	μg/l	1	-	1	-
Bromophenyl phenyl ether	μg/l	-	-	-	-
Hexachlorobenzene	μg/l	1	-	1	-
Carbazole	μg/l	-	-	ı	-
Dibutyl phthalate	μg/l	8	GUK 22	-	-
Anthraquinone	μg/l	-	-	-	-
Butyl benzyl phthalate	μg/l	1	-	1	-

Key				
Source Reference	Document			
PHG 17	Petroleum Hydrocarbons in Groundwater (CL:AIRE, 2017, ISBN 978-1-905046-31-7).			
DWI 17	DEFRA, Drinking Water Inspectorate, 2017.			
WFD 15	The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.			
WSR 18	The Water Supply (Water Quality) Regulations 2018 (Statutory Instrument 2018 No. 647).			
EQS R&D	Proposed Environmental Quality Standards for Ethylbenzene in Water R&D Technical Report P2-115/TR4 (Annual Average) 2002.			
GUK 22	Gov.UK February 2022. Surface water pollution risk assessment for your environmental permit. (www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit).			
WHO 22	World Health Organisation Guidelines for drinking water quality: fourth edition incorporating the first and second addenda 2022.			
US EPA RfD	US EPA Refence Dose, presented in the Drinking Water Inspectorate 2015.			
US EPA	US EPA Secondary Drinking Water Standards.			

Notes:

The above GAC are for guidance only when assessing risk to groundwater and surface water receptors.

The absence of GAC for a substance does not necessarily imply there is no risk.

Some substances may be known by alternative names.

EQS referenced are annual average concentrations for inland (freshwater) surface waters.

Alternative EQS are available for assessing risk to estuarine or marine water environments.

The EQS for cadmium is based on hardness band 40mg to less than 50mg CaCO3/I.

Abbreviations:

EQS Environmental Quality Standards
DWS UK Drinking Water Standards
GAC Generic Assessment Criiteria