

Appendix G Site monitoring data and ground gas risk assessment

Site: NMGH Job number: C-32425 Client: Manchester University NHS Foundati Gas analyser: GA5000 Equipment check OK: Y Service in date: Y Calibration check OK: Y Name of person monitoring: See Notes.							Notes on site conditions:																
							Date			Operator			Weather Conditions										
							13/11/2024			Enital			Cloudy, dry, calm, cool.										
							25/11/2024			Enital			Cloudy, dry, calm, cool.										
							10/12/2024			Enital			Sunny spells, dry, calm, cool.										

Hydrock Bulk Gases Ternary Plot Analysis



Client:	Manchester University NHS Foundation Trust
Site Name:	North Manchester General Hospital
Contract Number:	32425
Assessment Date:	19/12/2024

Screened Strata:	e.g Made Ground only
Site Zone:	e.g. east of site only



Key:	
	Indicative of landfill gas migration (assuming source composition 60% methane / 40% carbon dioxide) as it displaces air from the ground. Assumes no chemical changes. Below 20% methane and 13% carbon dioxide relationship for landfill gas migration unclear. Arrow shows direction of dilution with fresh air
	Microbial respiration of organic material in soil. Zero methane and low flow. (Direct consumption of oxygen to produce carbon dioxide)
	Potentially indicative of methane outgassing from groundwater to borehole headspace (Hydrock dataset).
	Potentially indicative of microbial degradation of LNAPL vapours in unsaturated zone. (Hydrock dataset)
	Indicative of a landfill gas source (e.g 60% CH4 / 40% CO2)
	Indicative of geogenic gas (e.g mine-workings)
	Fresh air
Additional Notes	
A direct linear downwards relationship between CO ₂ and O ₂ indicates depletion of oxygen to produce carbon dioxide via microbial respiration using the following equation: CH ₂ O + O ₂ --> CO ₂ + H ₂ O In this scenerio CO ₂ + O ₂ should be around 21% (i.e. the O ₂ concentration in the atmosphere)	
There may also be trace amounts of methane up to about 3% caused by anaerobic decomposition in small anaerobic hotspots or the reduction of carbon dioxide by methanogens. Oxygen concentrations may be depleted but in this scenario oxygen deficient air is not likely to be emitted quickly from the ground and it does not pose a risk.	
After:	Wilson et al, 2018. Ground Gas Information Sheet No. 1 Hydrock datasets (methane outgassing / LNAPL vapour degradation)
Version:	1 09/07/2019

Appendix H Contamination test results and GQRA

Contamination test results



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Analytical Report Number : 24-051722

Replaces Analytical Report Number: 24-051722, issue no. 1
Additional analysis undertaken.
Asbestos Quantification added to samples 368433 and 368434 as per client's request.

Project / Site name:	North Manchester General Hospital	Samples received on:	01/11/2024
Your job number:	32425	Samples instructed on/ Analysis started on:	05/11/2024
Your order number:	PO37657	Analysis completed by:	13/11/2024
Report Issue Number:	2	Report issued on:	14/11/2024
Samples Analysed:	6 soil samples		

Signed: 

Adan Cazas Garcia
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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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: 24-051722

Project / Site name: North Manchester General Hospital

Your Order No: PO37657

Lab Sample Number	368429	368430	368431	368432	368433
Sample Reference	CP101	WS101	WS102	WS103	WS104
Sample Number	ES1	ES1	ES1	ES1	ES1
Depth (m)	0.30	0.20	0.50	0.40	0.50
Date Sampled	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	< 0.1	13.6	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	15	14	17	18
Total mass of sample received	kg	0.1	NONE	0.3	0.3	0.3	0.3	0.3

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	PKU	PKU	PKU	PKU	MBI
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-	-	< 0.001
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8	8.3	8.1	7.7	7.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2400	550	460	720	410
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.19	0.275	0.228	0.358	0.204
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1190	275	228	358	204
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.011	0.012	0.017	0.032	0.02

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	1.5	1.3	0.42	0.58	0.15
Acenaphthylene	mg/kg	0.05	MCERTS	0.11	0.11	0.24	0.16	0.16
Acenaphthene	mg/kg	0.05	MCERTS	1.6	2.7	0.47	0.61	0.29
Fluorene	mg/kg	0.05	MCERTS	1.5	1.9	0.63	0.64	0.34
Phenanthrene	mg/kg	0.05	MCERTS	9.9	14	4.5	5.2	3.9
Anthracene	mg/kg	0.05	MCERTS	2.2	3.6	0.95	1.1	0.85
Fluoranthene	mg/kg	0.05	MCERTS	11	18	6.5	7.3	6.1
Pyrene	mg/kg	0.05	MCERTS	10	16	5.8	6.6	5.6
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.7	7.4	2.7	3.1	2.6
Chrysene	mg/kg	0.05	MCERTS	5	7.8	2.9	3.4	2.7
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	4.9	8.7	3.3	3.7	3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	2.4	3	1.1	1.6	1.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.7	7.4	2.8	3.3	2.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.2	3.3	1.3	1.6	1.2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.51	0.87	0.27	0.35	0.29
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.5	3.7	1.5	1.9	1.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	64.7	99.7	35.4	41.1	32.3
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Analytical Report Number: 24-051722
Project / Site name: North Manchester General Hospital
Your Order No: PO37657

Lab Sample Number	368429	368430	368431	368432	368433
Sample Reference	CP101	WS101	WS102	WS103	WS104
Sample Number	ES1	ES1	ES1	ES1	ES1
Depth (m)	0.30	0.20	0.50	0.40	0.50
Date Sampled	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	12	13	17	29
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.9	0.86	1.6	1.1	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	3	2.5	1.6	3.3	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.4	0.3	0.6	< 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	18	22	13	15	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	22	14	16	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	54	36	51	49
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	190	88	160	170
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	0.5	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	22	15	19	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.2	1.3	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	27	26	32	28	35
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	160	74	130	110

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	-	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	-	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	-	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	4.2	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	13	-	-	-	-
TPHCWG - Aliphatic >EC16 - EC35 _{EH_CU_1D_AL}	mg/kg	10	MCERTS	62	-	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	49	-	-	-	-
TPHCWG - Aliphatic >EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	12	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	66	-	-	-	-
TPHCWG - Aliphatic >EC5 - EC44 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	79	-	-	-	-

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	-	-	-	-
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	-	-	-	-
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	-	-	-	-
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	5.8	-	-	-	-
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	33	-	-	-	-
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	39	-	-	-	-
TPHCWG - Aromatic >EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4	-	-	-	-
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	78	-	-	-	-
TPHCWG - Aromatic >EC5 - EC44 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	78	-	-	-	-

TPH Total >EC5 - EC44 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	160	-	-	-	-
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	-	-	-
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	8	MCERTS	< 8.0	-	-	-	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	-	-	-

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



Analytical Report Number: 24-051722
Project / Site name: North Manchester General Hospital
Your Order No: PO37657

Lab Sample Number	368434			
Sample Reference	WS105			
Sample Number	ES2			
Depth (m)	0.60			
Date Sampled	30/10/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	15
Total mass of sample received	kg	0.1	NONE	0.3

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MBI
Actinolite detected	Type	N/A	ISO 17025	Not-detected
Amosite detected	Type	N/A	ISO 17025	Detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.3
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	3800
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.9
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1900
Fraction Organic Carbon (FOC) Automated	N/A	0.001	MCERTS	0.0077

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.54
Acenaphthylene	mg/kg	0.05	MCERTS	0.11
Acenaphthene	mg/kg	0.05	MCERTS	1.1
Fluorene	mg/kg	0.05	MCERTS	0.96
Phenanthrene	mg/kg	0.05	MCERTS	8
Anthracene	mg/kg	0.05	MCERTS	2.1
Fluoranthene	mg/kg	0.05	MCERTS	11
Pyrene	mg/kg	0.05	MCERTS	9.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.7
Chrysene	mg/kg	0.05	MCERTS	4.8
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	5.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.46
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.3

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	59.2
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Analytical Report Number: 24-051722
Project / Site name: North Manchester General Hospital
Your Order No: PO37657

Lab Sample Number	368434			
Sample Reference	WS105			
Sample Number	ES2			
Depth (m)	0.60			
Date Sampled	30/10/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.8
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (III)	mg/kg	1	NONE	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	30
Lead (aqua regia extractable)	mg/kg	1	MCERTS	350
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	230

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	2.9
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC16 - EC35 _{EH_CU_1D_AL}	mg/kg	10	MCERTS	28
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	28
TPHCWG - Aliphatic >EC35 - EC44 _{EH_CU_1D_AL}	mg/kg	8.4	NONE	< 8.4
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	30
TPHCWG - Aliphatic >EC5 - EC44 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	30

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	5.3
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	31
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	27
TPHCWG - Aromatic >EC35 - EC44 _{EH_CU_1D_AR}	mg/kg	8.4	NONE	< 8.4
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	63
TPHCWG - Aromatic >EC5 - EC44 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	63

TPH Total >EC5 - EC44 _{EH_CU+HS_1D_TOTAL}	mg/kg	10	NONE	94
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VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0
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	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

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



Analytical Report Number: 24-051722
Project / Site name: North Manchester General Hospital
Your Order No: PO37657

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 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
368433	WS104	0.50	102	Loose Fibres	Chrysotile	< 0.001	< 0.001
368434	WS105	0.60	100	Loose Fibres	Amosite & Chrysotile	< 0.001	< 0.001

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



Analytical Report Number : 24-051722
Project / Site name: North Manchester General Hospital

* 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 *
368429	CP101	ES1	0.3	Brown clay and loam with gravel
368430	WS101	ES1	0.2	Brown clay and loam with gravel
368431	WS102	ES1	0.5	Brown loam and sand with gravel and stones
368432	WS103	ES1	0.4	Brown loam and clay with gravel and vegetation
368433	WS104	ES1	0.5	Brown loam and clay with gravel
368434	WS105	ES2	0.6	Brown clay and loam with gravel

Analytical Report Number : 24-051722
Project / Site name: North Manchester General Hospital

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
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, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
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	L038B	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	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
TPH Chromatogram in soil	TPH Chromatogram in soil	In-house method	L064B	D	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Chromium III in soil	In-house method by calculation from total Cr and Cr VI	In-house method by calculation	L080-PL/L130B	W	NONE
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
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	MCERTS
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	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
Fraction Organic Carbon FOC Automated	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate	In-house method	L009B	D	MCERTS



Analytical Report Number : 24-051722
Project / Site name: North Manchester General Hospital

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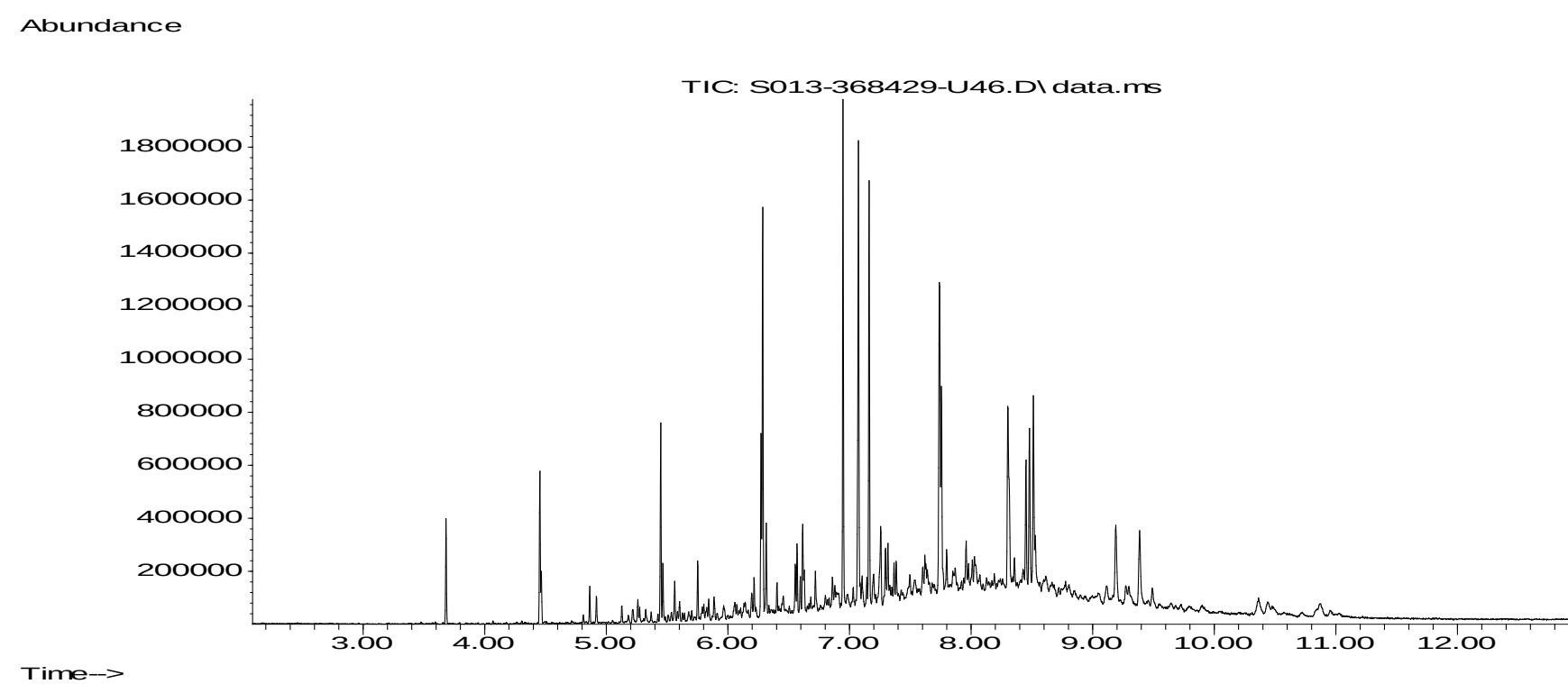
For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been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

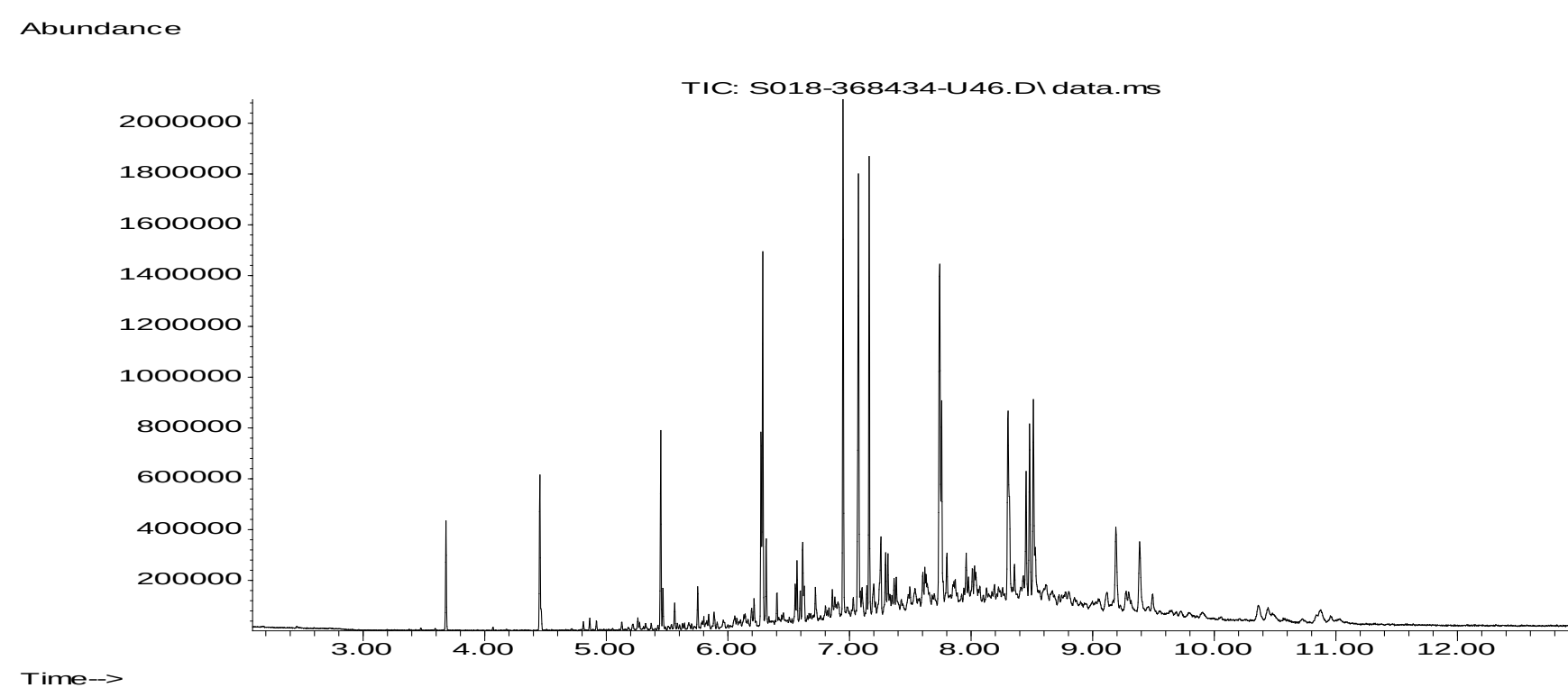
Information in Support of Analytical Results

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 - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution







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Analytical Report Number : 24-052722

Project / Site name:	North Manchester General Hospital	Samples received on:	01/11/2024
Your job number:	32425	Samples instructed on/ Analysis started on:	11/11/2024
Your order number:	PO37924	Analysis completed by:	15/11/2024
Report Issue Number:	1	Report issued on:	15/11/2024
Samples Analysed:	1 soil sample - 1 leachate sample		

Signed: _____

Adan Cazas Garcia
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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: 24-052722
Project / Site name: North Manchester General Hospital
Your Order No: PO37924

Lab Sample Number				373535
Sample Reference				WS105
Sample Number				ES1
Depth (m)				0.20
Date Sampled				30/10/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	36.2
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.1	NONE	0.3

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8.3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.3
Loss on Ignition @ 450°C	%	0.2	MCERTS	3.9
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	23

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.9
Acenaphthylene	mg/kg	0.05	MCERTS	0.09
Acenaphthene	mg/kg	0.05	MCERTS	1.9
Fluorene	mg/kg	0.05	MCERTS	1.4
Phenanthrene	mg/kg	0.05	MCERTS	10
Anthracene	mg/kg	0.05	MCERTS	2.5
Fluoranthene	mg/kg	0.05	MCERTS	15
Pyrene	mg/kg	0.05	MCERTS	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	5.9
Chrysene	mg/kg	0.05	MCERTS	6.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	6.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.54
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.1
Coronene	mg/kg	0.05	NONE	1

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	81.5
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Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	86
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VOCs

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	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

Total BTEX	µg/kg	10	MCERTS	< 10
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Analytical Report Number: 24-052722
Project / Site name: North Manchester General Hospital
Your Order No: PO37924

Lab Sample Number				373535
Sample Reference				WS105
Sample Number				ES1
Depth (m)				0.20
Date Sampled				30/10/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

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
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001

Total PCBs	mg/kg	0.007	MCERTS	< 0.007
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-052722
Project / Site name: North Manchester General Hospital

* 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 *
373535	WS105	ES1	0.2	Brown loam and clay with vegetation and stones

Analytical Report Number : 24-052722
Project / Site name: North Manchester General Hospital

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
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	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 (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	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	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
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	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	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	L046B	W	NONE
Loss on ignition of soil @ 450°C	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
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025



Analytical Report Number : 24-052722
Project / Site name: North Manchester General Hospital

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
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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 aravimetrically 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 - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution



Sample Deviation Report



Analytical Report Number : 24-052722
Project / Site name: North Manchester General Hospital
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 Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS105	ES1	S	373535	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS105	ES1	S	373535	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS105	ES1	S	373535	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c



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Analytical Report Number : 24-052405

Project / Site name:	North Manchester General Hospital	Samples received on:	01/11/2024
Your job number:	32425	Samples instructed on/ Analysis started on:	07/11/2024
Your order number:	PO37924	Analysis completed by:	13/11/2024
Report Issue Number:	1	Report issued on:	14/11/2024
Samples Analysed:	1 soil sample - 1 leachate sample		

Signed: _____

Adan Cazas Garcia
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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: 24-052405
Project / Site name: North Manchester General Hospital
Your Order No: PO37924

Lab Sample Number	371845			
Sample Reference	WS103			
Sample Number	2			
Depth (m)	0.90			
Date Sampled	30/10/2024			
Time Taken	None Supplied			
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	37.8
Moisture Content	%	0.01	NONE	13
Total mass of sample received	kg	0.1	NONE	0.3

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	8
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.7
Loss on Ignition @ 450°C	%	0.2	MCERTS	6.4
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	3.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.7
Acenaphthylene	mg/kg	0.05	MCERTS	2.2
Acenaphthene	mg/kg	0.05	MCERTS	1.4
Fluorene	mg/kg	0.05	MCERTS	2.4
Phenanthrene	mg/kg	0.05	MCERTS	21
Anthracene	mg/kg	0.05	MCERTS	5
Fluoranthene	mg/kg	0.05	MCERTS	21
Pyrene	mg/kg	0.05	MCERTS	18
Benzo(a)anthracene	mg/kg	0.05	MCERTS	7.2
Chrysene	mg/kg	0.05	MCERTS	6.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	7
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	3.3
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	3.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.62
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.8
Coronene	mg/kg	0.05	NONE	2

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	114
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Petroleum Hydrocarbons

Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	< 10
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VOCs

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	8	MCERTS	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0

Total BTEX	µg/kg	10	MCERTS	< 10
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Analytical Report Number: 24-052405
Project / Site name: North Manchester General Hospital
Your Order No: PO37924

Lab Sample Number	371845
Sample Reference	WS103
Sample Number	2
Depth (m)	0.90
Date Sampled	30/10/2024
Time Taken	None Supplied

Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
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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
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001

Total PCBs	mg/kg	0.007	MCERTS	< 0.007
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U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected



Analytical Report Number : 24-052405
Project / Site name: North Manchester General Hospital

* 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 *
371845	WS103	2	0.9	Brown sand with stones

Analytical Report Number : 24-052405
Project / Site name: North Manchester General Hospital

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
pH at 20°C in soil	Determination of pH in soil by addition of water followed by electrometric measurement	In-house method	L005B	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 (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	NONE
PCB's By GC-MS in soil	Determination of PCB by extraction with hexane followed by GC-MS	In-house method based on USEPA 8082	L027B	D	MCERTS
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L031B	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	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved organic carbon in leachate by TOC/DOC NDIR Analyser	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037B	W	NONE
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	L039B	W	ISO 17025
Sample Preparation		In-house method	L043B	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	L046B	W	NONE
Loss on ignition of soil @ 450°C	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
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088-PL	D/W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025



Analytical Report Number : 24-052405
Project / Site name: North Manchester General Hospital

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
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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 aravimetrically 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 - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

GAC derivation

Background

Initially, the Hydrock GAC were derived following the publishing of soil guideline values (SGV), toxicological (TOX) reports and associated publications by the Environment Agency (EA) in 2009 referenced under Science Report SC050021 (EA, 2009a, b, c, d). The Hydrock GAC have then been periodically updated following publication of new information on toxicological, physico-chemical, land use or receptor parameters, namely:

- » LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathanial, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.
- » CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environment.
- » CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment.
- » LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathanial, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathanial, J. F.
- » CL:AIRE, 2021-2024. 'C4SL Phase 2 Technical Reports'. Contaminated Land: Applications in Real Environment.
- » CL:AIRE, 2022. C4SL Phase 2 Technical Report for 1,2-dichloroethane. Contaminated Land: Applications in Real Environment.
- » CL:AIRE, 2024. C4SL Phase 2 Technical Reports for cis-1,2-dichloroethene, trans-1,2-dichloroethene and naphthalene. Contaminated Land: Applications in Real Environment.

Land use scenarios

Hydrock has derived generic assessment criteria (GAC) for human health based on the six exposure scenarios defined in CL:AIRE (2014) using generic default assumptions from published guidance. GAC for each exposure scenario have been derived for three soil organic matter (SOM) contents, 1%, 2.5% and 6%.

All GAC have been rounded to two significant figures.

Exposure parameters

The exposure parameters used for the Hydrock GAC are the default parameters stated in SR3, unless updated in CL:AIRE (2014) where the CL:AIRE (2014) values have been adopted.

Approach to consumption rates

Hydrock have adopted the 90th percentile consumption rates from Table 3.4 of CL:AIRE (2014) for all produce types. This is noted to be more conservative than the "top two" approach taken in the derivation of C4SLs.

Approach to plant uptake for GAC omitted in CL:AIRE (2010)

Plant uptake factors were not identified in CL:AIRE (2010) for antimony, barium and molybdenum. Hydrock has sourced the required parameter values from ORNL (1984) in order to derive GAC that are inclusive of the homegrown produce exposure pathway.

Chemical and toxicity parameters

The chemical and toxicity parameters have been adopted based on the following documents:

- » IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.
- » LQM/CIEH, 2015.
- » ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.
- » CL:AIRE, 2010.
- » RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.
- » LQM/CIEH, 2009.
- » EA, 2009a.

Approach to Cyanide GAC

The Hydrock GAC for free cyanide have been derived based on ingestion of a bolus of contaminated soil. The GAC are derived for acute exposure of a child (0-6 years old) for all land uses except commercial, where the GAC are derived for acute exposure of an adult (16-65 years old). For the purpose of GQRA, the child value may be adopted for all land use scenarios.

For complex cyanide, the GAC have been derived based on chronic exposure, using the default exposure scenarios but excluding the consumption of homegrown produce, soil attached to homegrown produce, indoor vapour and outdoor vapour pathways. The chronic health criteria value (HCV) for complex cyanide is based on the EA (2009a) HCV for free cyanide and the ratio of toxicity between free and complex cyanide proposed by RIVM (2001).

Approach to Phenol GAC

In accordance with the EA Science Report SC050021 / Phenol SGV, a $GAC_{ing/inh}$ has been derived for ingested and inhaled phenol using the CLEA model, with a GAC_{derm} derived for dermal contact using Equation 5.7 within SR3. The lower of the $GAC_{ing/inh}$ and GAC_{derm} has been adopted as the final GAC.

Approach to PCB GAC

GAC for assessing the non-dioxin-like risk from PCBs have been based on the "Dutch 7". As the TDI used by the authors of the Dutch guidance is for the sum of the 7 individual congeners, the TDI has been divided by 7 to create a TDI for each congener. The non-dioxin-like risk from PCBs is therefore assessed using a Hazard Index approach as for total petroleum hydrocarbons (TPH).

Sub-surface soil to indoor air correction factors

Reflecting the approach taken by the Environment Agency in the development of revised SGV in 2009 for BTEX, a sub-surface soil to indoor air correction factor of 10 has been applied for petroleum hydrocarbons in order to account for over-prediction of vapour intrusion into building using the Johnson and Ettinger approach.

The correction factor of 10 has been applied to the following petroleum hydrocarbons (it makes negligible difference to less volatile TPH and PAH compounds):

- » TPHCWG fractions, namely aliphatic EC>5-44 and aromatic EC>6-44;
- » PAHs (acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene);
- » BTEX;
- » Isopropylbenzene;

- » Propylbenzene;
- » 1,2,4- and 1,3,5-trimethylbenzene; and
- » Styrene.

Approach to saturation limits

The CLEA model includes a traffic light colour system to highlight when saturated soil conditions have potentially been exceeded for the vapour pathways during calculation of assessment criteria. The colours represent:

- » Green: the assessment criteria do not exceed the saturated soil concentration.
- » Amber: the assessment criteria exceed the saturated soil concentration but the contribution of the indoor and outdoor vapour pathway to total exposure is less than 10% and will not significantly affect the assessment criteria.
- » Red: the assessment criteria exceed the saturated soil concentration and the contribution of the indoor and outdoor vapour pathway to total exposure is greater than 10% and will significantly affect the assessment criteria.

Hydrock have not applied any further calculations or assessment in relation to saturation limits during GAC derivation, with the CLEA-modelled GAC being presented as the GAC. Consideration of saturation limits is undertaken during the data assessment stage.

References

CL:AIRE, 2010. 'The EIC/AGS/CL:AIRE Soil Generic Assessment Criteria for Human Health Risk Assessment'. Environmental Industries Commission, The Association of Geotechnical and Geoenvironmental Specialists and Contaminated Land: Applications in Real Environment.

CL:AIRE, 2014. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination', Revision 2, DEFRA research project SP1010. Contaminated Land: Applications in Real Environment

CL:AIRE, 2021-2024. C4SL Phase 2 Technical Reports for tetrachloroethene, trichloroethene and vinyl chloride. Contaminated Land: Applications in Real Environment.

CL:AIRE, 2022. C4SL Phase 2 Technical Report for 1,2-dichloroethane. Contaminated Land: Applications in Real Environment.

CL:AIRE, 2024. C4SL Phase 2 Technical Reports for cis-1,2-dichloroethene, trans-1,2-dichloroethene and naphthalene. Contaminated Land: Applications in Real Environment.

EA, 2009a. 'Science Reports SC050021 – SGV and TOX reports for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'; 'Supplementary information for the derivation of SGV for: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs', and 'Contaminants in soil: updated collation of toxicological data and intake values for humans: benzene, toluene, ethylbenzene, xylene, arsenic, nickel, mercury, selenium, cadmium, inorganic cyanide, phenol, dioxins, furans and dioxin-like PCBs'. Environment Agency.

EA, 2009b. 'Science Report – SC050021/SR2. Human health toxicological assessment of contaminants in soil'. Environment Agency.

EA, 2009c. 'Science Report – SC050021/SR3. Updated technical background to the CLEA model'. Environment Agency.

EA, 2009d. 'Science Report – SC050021/SR4. CLEA Software (version 1.05) Handbook'. Environment Agency.

IRIS, 2016. 'Toxicological Review of Trimethylbenzenes'. Integrated Risk Information System, National Centre for Environmental Assessment, office of Research and Development, U.S. Environmental Protection Agency.

LQM/CIEH, 2009. LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment, second edition. Nathaniel, C. P., McCaffrey, C., Ashmore, M., Cheng, Y., Gillet, A. G., Ogden, R. C. and Scott, D.

LQM/CIEH, 2015. 'The LQM/CIEH S4ULs for Human Health Risk Assessment'. Nathaniel, C. P., McCaffrey, C., Gillet, A. G., Ogden, R. C. and Nathaniel, J. F.

ORNL, 1984. 'ORNL-5786. A Review and Analysis of Parameters for Assessing Transport of Environmentally released Radionuclides through Agriculture'. Oak Ridge National Laboratory.

RIVM, 2001. RIVM Report 711701 025 'HCV Re-evaluation of human-toxicological maximum-permissible risk levels'. National Institute of Public Health and the Environment.

Human health GQRA

Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Client: Site: Job no.: Lab. report no(s).:														Default - Human Health - commercial (1%SOM) Manchester University NHS Foundation Trust North Manchester General Hospital 32425 24-052722-1, 24-051722-2, 24-052405-1														Data Filters Zone: All Strata: All Depth Min (m bgl): 0.2 Depth Max (m bgl): 0.9 Dataset mean SOM%: 2.86 Scenario SOM%: 1														WS105-2-0.2 WS105-2-0.9 CP101-0.3 WS101-0.2 WS102-0.5 WS103-0.4 WS104-0.5 WS105-0.6										
All values in mg/kg unless otherwise stated																												Date	30/10/24	30/10/24	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024														
																												Zone																								
																												Location	WS105	WS103	CP101	WS101	WS102	WS103	WS104	WS105																
																												Depth (m bgl)	0.2	0.9	0.3	0.2	0.5	0.4	0.5	0.6																
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @1% SOM	GAC	GAC Source	Strata	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground																												
-	Asbestos																																																			
P1020	Asbestos Identified	text	Y/N	6	-	-	-	-	No. of detects:	2	-	-	-				Not-detected	Not-detected	Not-detected	Not-detected	Detected	Detected																														
P188g	Asbestos Screen Name	text	Y/N	6	-	-	-	-	-		-	-	-								Chrysotile, - Loose Fibres	Chrysotile, Amosite, -Loose Fibres																														
12172-67-7	Actinolite detected	text	Y/N	0	-	-	-	-	-		-		-																																							
12172-73-5	Amosite detected	text	Y/N	0	-	-	-	-	-		-		-																																							
17068-78-9	Anthophyllite detected	text	Y/N	0	-	-	-	-	-		-		-																																							
12001-29-5	Chrysotile detected	text	Y/N	0	-	-	-	-	-		-		-																																							
12001-28-4	Crocidolite detected	text	Y/N	0	-	-	-	-	-		-		-																																							
14567-73-8	Tremolite detected	text	Y/N	0	-	-	-	-	-		-		-																																							
P1885	Asbestos Quant. (Stage 2)	%	0.001	2	0.001	0.001	0.001	0.001	No. > LOD:	0	-	-	-								<0.001	<0.001																														
P1935	Asbestos Quant. Total	%	0.001	0					No. > LOD:		-		-																																							
P1826	Asbestos Quant. (Stage 3)	%	0.001	0					No. > LOD:		-		-																																							
-	Asbestos Quant. Total (Stages 2+3)	%	0.001	0					No. > LOD:		-		-																																							
P188o	Asbestos Containing Material Types Detected (ACM)	text	-	2	-	-	-	-	-		-	-	-									Loose Fibres	Loose Fibres																													
o	Hydrock Default Suite - FOC / SOM / pH										-																																									
P1085	FOC (dimensionless)	l	0.001	6	0.008	0.032	0.017	0.015	0.01		-	-	-				0.011	0.012	0.017	0.032	0.02	0.0077																														
-	SOM (calculated)	%	0.1724	6	1.33	5.52	2.86	2.50	1.50		-	-	-				1.8964	2.0688	2.9308	5.5168	3.448	1.32748																														
P1334	pH (su)	pH Units	0.1	8	7.30	8.30	7.90	8.00	0.37		-	-	-		8.3	8	8	8.3	8.1	7.7	7.5	7.3																														
o	Hydrock Default Suite - Metals & PAH																																																			
7440-38-2	Arsenic	mg/kg	1	6	10.00	29.00	15.67	13.00	6.92	0	NR	640	C4SL - CL:AIRE 2014				13	12	13	17	29	10																														
7440-41-7	Beryllium	mg/kg	0.06	6	0.80	1.60	1.06	1.00	0.29	0	NR	12	Hydrock Derived				0.9	0.86	1.6	1.1	1.1	0.8																														
7440-42-8	Boron	mg/kg	0.2	6	1.30	3.30	2.18	2.05	0.87	0	NR	240000	Hydrock Derived				3	2.5	1.6	3.3	1.4	1.3																														
7440-43-9	Cadmium	mg/kg	0.2	6	0.20	0.60	0.38	0.40	0.13	0	NR	410	C4SL - CL:AIRE 2014				0.4	0.4	0.3	0.6	<0.2	0.4																														
16065-83-1	Chromium (III)	mg/kg	1	6	13.00	22.00	17.67	18.50	3.20	0	NR	8400	Hydrock Derived				18	22	13	15	19	19																														
18540-29-9	Chromium (VI)	mg/kg	1.8	6	1.80	1.80	1.80	1.80	0.00	0	NR	49	C4SL - CL:AIRE 2014				<1.8	<1.8	<1.8	<1.8	<1.8	<1.8																														
7440-47-3	Chromium (Total)	mg/kg	1	6	14.00	22.00	18.17	18.50	2.86			-					18	22	14	16	19	20																														
7440-50-8	Copper	mg/kg	1	6	30.00	54.00	43.83	46.00	9.33	0	NR	68000	Hydrock Derived				43	54	36	51	49	30																														
7439-92-1	Lead	mg/kg	1	6	88.00	350.00	184.67	165.00	88.02	0	NR	2300	C4SL - CL:AIRE 2014				150	190	88	160	170	350																														
7439-97-6	Mercury, inorganic	mg/kg	0.3	6	0.30	0.60	0.40	0.35	0.13	0	NR	5100	Hydrock Derived				0.6	0.5	<0.3	<0.3	<0.3	0.4																														
7440-02-0	Nickel	mg/kg	1	6	15.00	23.00	20.67	22.00	3.14	0	NR	980	Hydrock Derived				22	22	15	19	23	23																														
7782-49-2	Selenium	mg/kg	1	6	1.00	1.30	1.08	1.00	0.13	0	NR	12000	Hydrock Derived				<1	<1	1.2	1.3	<1	<1																														
7440-62-2	Vanadium	mg/kg	1	6	25.00	35.00	28.83	27.50	3.87	0	NR	9000	Hydrock Derived				27	26	32	28	35	25																														
7440-66-6	Zinc	mg/kg	1	6	74.00	230.00	137.33	125.00	53.32	0	NR	730000	Hydrock Derived				120	160	74	130	110	230																														
P1095	Cyanide (free)	mg/kg	1	6	1.00	1.00	1.00	1.00	0.00	0	NR	24	Acute Risk - SoBRA 2020				<1	<1	<1	<1	<1	<1																														
P1186	Total Phenols (Monohydric)	mg/kg	1	6	1.00	1.00	1.00	1.00	0.00	0	24237	440	Hydrock Derived				<1	<1	<1	<1	<1	<1																														
83-32-9	Acenaphthene	mg/kg	0.05	8	0.29	2.70	1.26	1.25	0.81	0	57	110000	Hydrock Derived		1.9	1.4	1.6	2.7	0.47	0.61	0.29	1.1																														
208-96-8	Acenaphthylene	mg/kg	0.05	8	0.09	2.20	0.40	0.14	0.73	0	86	110000	Hydrock Derived		0.09	2.2	0.11	0.11	0.24	0.16	0.16	0.11																														
120-12-7	Anthracene	mg/kg	0.05	8	0.85	5.00	2.29	2.15	1.44	0	117	540000	Hydrock Derived		2.5	5	2.2	3.6	0.95	1.1	0.85	2.1																														
56-55-3	Benzo(a)anthracene	mg/kg	0.05	8	2.60	7.40	4.79	4.70	1.92	0	171	170	Hydrock Derived		5.9	7.2	4.7	7.4	2.7	3.1	2.6	4.7																														
50-32-8	Benzo(a)pyrene	mg/kg	0.05	8	2.50	7.40	4.89	4.60	2.00	0	0.91	77	C4SL - CL:AIRE 2014		6.5	7.4	4.7	7.4	2.8	3.3	2.5	4.5																														
205-99-2	Benzo(b)fluoranthene	mg/kg	0.05	8	3.00	8.70	5.39	5.15	2.06	0	1.22	44	Hydrock Derived		7.1	7	4.9	8.7	3.3	3.7	3	5.4																														
191-24-2	Benzo(ghi)perylene	mg/kg	0.05	8	1.40	3.80	2.53	2.40	0.93	0	0.02	3900	Hydrock Derived		3.1	3.8	2.5	3.7	1.5	1.9	1.4	2.3																														
207-08-9	Benzo(k)fluoranthene	mg/kg	0.05	8	1.10	3.30	2.20	2.15	0.85	0	0.69	1200	Hydrock Derived		3	3.3	2.4	3	1.1	1.6	1.3	1.9																														
218-01-9	Chrysene	mg/kg	0.05	8	2.70	7.80	4.95	4.90	1.88	0	0.44	350	Hydrock Derived		6.6	6.4	5	7.8	2.9	3.4	2.7	4.8																														
53-70-3	Dibenz(ah)anthracene	mg/kg	0.05	8	0.27	0.87	0.49	0.49	0.20	0	0.004	3.5	Hydrock Derived		0.54	0.62	0.51	0.87	0.27	0.35	0.29	0.46																														
206-44-0	Fluoranthene	mg/kg	0.05	8	6.10	21.00	11.99	11.00	5.54	0	19	23000	Hydrock Derived		15	21	11	18	6.5	7.3	6.1	11																														
86-73-7	Fluorene	mg/kg	0.05	8	0.34	2.40	1.22	1.18	0.71	0	31	71000	Hydrock Derived		1.4	2.4	1.5	1.9	0.63	0.64	0.34	0.96																														
193-39-5	Indeno(123cd)pyrene	mg/kg	0.05	8	1.20	3.40	2.21	2.10	0.85	0	0.06	500	Hydrock Derived		2.7	3.4	2.2	3.3	1.3	1.6	1.2	2																														
91-20-3	Naphthalene	mg/kg	0.05	8	0.15	1.50	0.76	0.64	0.45	0	76	1600	C4SL - CL:AIRE 2024		0.9	0.7	1.5	1.3	0.42	0.58	0.15	0.54																														
85-01-8	Phenanthrene	mg/kg	0.05	8	3.90	21.00	9.56	8.95	5.73	0	36	23000	Hydrock Derived		10	21	9.9	14	4.5	5.2	3.9	8																														

Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Client: Site: Job no.: Lab. report no(s).: Default - Human Health - commercial (1%SOM) Manchester University NHS Foundation Trust North Manchester General Hospital 32425 24-052722-1, 24-051722-2, 24-052405-1														Data Filters Zone: All Strata: All Depth Min (m bgl): 0.2 Depth Max (m bgl): 0.9										Hydrock now Stantec										WS105-2-0.2 WS103-2-0.2 CP101-2-0.3 WS101-2-0.2 WS102-2-0.5 WS103-2-0.4 WS104-2-0.5 WS105-2-0.6 WS106-2-0.5 WS107-2-0.4 WS108-2-0.3 WS109-2-0.2												
Dataset mean SOM%: 2.86																								Date	30/10/24	30/10/24	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	
Scenario SOM%: 1																								Zone																						
All values in mg/kg unless otherwise stated																								Location	WS105	WS103	CP101	WS101	WS102	WS103	WS104	WS105														
																								Depth (m bgl)	0.2	0.9	0.3	0.2	0.5	0.4	0.5	0.6														
CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	Soil Saturation Limit @1% SOM	GAC	GAC Source	Strata	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground																						
129-00-0	Pyrene	mg/kg	0.05	8	5.60	18.00	10.56	9.75	4.71	0	2.2	54000	Hydrock Derived		13	18	10	16	5.8	6.6	5.6	9.5																								
P1310	PAH 16 Total	mg/kg	0.8	6	32.30	99.70	55.40	50.15	25.30			-					64.7	99.7	35.4	41.1	32.3	59.2																								
o	TPH fractions																																													
P1407	TPH ali ECo5-EC06	mg/kg	0.001	2	0.01	0.01	0.01	0.01	0.000	0	304	3200	Hydrock Derived				<0.01					<0.01																								
P1408	TPH ali >EC06-EC08	mg/kg	0.001	2	0.01	0.01	0.01	0.01	0.000	0	144	7800	Hydrock Derived				<0.01					<0.01																								
P1409	TPH ali >EC08-EC10	mg/kg	0.001	2	0.01	0.01	0.01	0.01	0.000	0	78	2000	Hydrock Derived				<0.01					<0.01																								
P1410	TPH ali >EC10-EC12	mg/kg	1	2	1.00	1.00	1.00	1.00	0.00	0	48	9700	Hydrock Derived				<1					<1																								
P1411	TPH ali >EC12-EC16	mg/kg	2	2	2.90	4.20	3.55	3.55	0.92	0	24	59000	Hydrock Derived				4.2					2.9																								
	TPH ali >EC16-EC21	mg/kg	8	2	8.00	13.00	10.50	10.50	3.54			-					13					<8																								
	TPH ali >EC21-EC35	mg/kg	8	2	28.00	49.00	38.50	38.50	14.85			-					49					28																								
P1938	TPH ali >EC16-EC35	mg/kg	10	2	28.00	62.00	45.00	45.00	24.04	0	8	1600000	Hydrock Derived				62					28																								
P1415	TPH ali >EC35-EC44	mg/kg	8.4	2	8.40	12.00	10.20	10.20	2.55	0	8	1600000	Hydrock Derived				12					<8.4																								
	TPH ali >EC5-EC35	mg/kg	10	2	30.00	66.00	48.00	48.00	25.46			-					66					30																								
	TPH ali >EC5-EC44	mg/kg	10	2	30.00	79.00	54.50	54.50	34.65			-					79					30																								
P1441	TPH aro ECo5-EC07	mg/kg	0.001	2	0.01	0.01	0.01	0.01	0.00	0	1218	26000	Hydrock Derived				<0.01					<0.01																								
P1355	TPH aro >EC07-EC08	mg/kg	0.001	2	0.01	0.01	0.01	0.01	0.00	0	869	56000	Hydrock Derived				<0.01					<0.01																								
P1356	TPH aro >EC08-EC10	mg/kg	0.001	2	0.02	0.02	0.02	0.02	0.00	0	613	3500	Hydrock Derived				<0.02					<0.02																								
P1357	TPH aro >EC10-EC12	mg/kg	1	2	1.00	1.00	1.00	1.00	0.00	0	364	16000	Hydrock Derived				<1					<1																								
P1358	TPH aro >EC12-EC16	mg/kg	2	2	5.30	5.80	5.55	5.55	0.35	0	169	36000	Hydrock Derived				5.8					5.3																								
P1359	TPH aro >EC16-EC21	mg/kg	10	2	31.00	33.00	32.00	32.00	1.41	0	54	28000	Hydrock Derived				33					31																								
P1360	TPH aro >EC21-EC35	mg/kg	10	2	27.00	39.00	33.00	33.00	8.49	0	5	28000	Hydrock Derived				39					27																								
P1362	TPH aro >EC35-EC44	mg/kg	8.4	2	8.40	8.40	8.40	8.40	0.00	0	5	28000	Hydrock Derived				<8.4					<8.4																								
	TPH aro >EC5-EC35	mg/kg	10	2	63.00	78.00	70.50	70.50	10.61			-					78					63																								
	TPH aro >EC5-EC44	mg/kg	10	2	63.00	78.00	70.50	70.50	10.61			-					78					63																								
	Total TPH >EC5-EC44	mg/kg	10	2	94.00	160.00	127.00	127.00	46.67			-					160					94																								
o	VOCs - BTEX & MTBE																																													
71-43-2	Benzene	mg/kg	5	4	0.01	0.01	0.01	0.01	0.00	0	1218	27	C4SL - CL:AIRE 2014		<0.005	<0.005	<0.005					<0.005																								
108-88-3	Toluene	mg/kg	5	4	0.01	0.01	0.01	0.01	0.00	0	869	56000	Hydrock Derived		<0.005	<0.005	<0.005					<0.005																								
100-41-4	Ethylbenzene	mg/kg	5	4	0.01	0.01	0.01	0.01	0.00	0	518	5700	Hydrock Derived		<0.005	<0.005	<0.005					<0.005																								
95-47-6	Xylene, o-	mg/kg	5	4	0.01	0.01	0.01	0.01	0.00	0	478	6600	Hydrock Derived		<0.005	<0.005	<0.005					<0.005																								
	Xylene, p- (or combined m & p)	mg/kg	8	4	0.01	0.01	0.01	0.01	0.00			-			<0.008	<0.008	<0.008					<0.008																								
1634-04-4	MTBE	mg/kg	5	2	0.01	0.01	0.01	0.01	0.00	0	20358	7500	Hydrock Derived				<0.005					<0.005																								
o	Non-dioxin-like PCBs																																													
7012-37-5	PCB-28	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	29	1.3	Hydrock Derived		<0.001	<0.001																														
35693-99-3	PCB-52	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	7.7	1.3	Hydrock Derived		<0.001	<0.001																														
37680-73-2	PCB-101	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	26	1.3	Hydrock Derived		<0.001	<0.001																														
31508-00-6	PCB-118	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	698	1.3	Hydrock Derived		<0.001	<0.001																														
35065-28-2	PCB-138	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	0.17	1.3	Hydrock Derived		<0.001	<0.001																														
35065-27-1	PCB-153	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	4.5	1.3	Hydrock Derived		<0.001	<0.001																														
35065-29-3	PCB-180	mg/kg	0.001	2	0.00	0.00	0.00	0.00	0.00	0	4.4	1.3	Hydrock Derived		<0.001	<0.001																														
	Total PCB (ICES7)	mg/kg	0.007	2	0.01	0.01	0.01	0.01	0.00			-			<0.007	<0.007																														

Phytotoxic GQRA

Assessment of Chemicals of Potential Concern to Plant Life

Risk parameter:

Client:

Site:

Job no.:

Lab. report no(s):

Phytotoxic pH >7

Manchester University Foundation Trust

NMGH

32425

24-052722, 24-052405, 24-051722

Data Filters

Zone

Strata

Depth Min (m bgl)

Depth Max (m bgl)

Dataset mean pH

Scenario pH

All

All

0.2

0.9

7.90

>7

Hydrock

now

Stantec

WS101-2-02

WS102-2-02

CP101-2-02

WS101-2-02

WS102-2-02

WS103-2-02

WS104-2-02

WS105-2-02

WS106-2-02

All values in mg/kg unless otherwise stated

Date	30/10/24	30/10/24	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	
Zone	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	
Location	WS105	WS103	CP101	WS101	WS102	WS103	WS104	WS105	
Depth (m bgl)	0.2	0.9	0.3	0.2	0.5	0.4	0.5	0.6	

CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= GAC & > LoD	GAC	GAC Source	Strata	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	
	Hydrock Default Suite - FOC / SOM / pH																					
P1334	pH (su)	pH Units	0.1	8	7.30	8.30	7.90	8.00	0.37		-	-		8.3	8	8	8.3	8.1	7.7	7.5	7.3	
	Hydrock Default Suite - Metals & PAH																					
7440-38-2	Arsenic	mg/kg	1	6	10.00	29.00	15.67	13.00	6.92	0	250	MAFF 1998				13	12	13	17	29	10	
7440-42-8	Boron	mg/kg	0.2	6	1.30	3.30	2.18	2.05	0.87	0	5	Nable, et al. 1997				3	2.5	1.6	3.3	1.4	1.3	
16065-83-1	Chromium (III)	mg/kg	1	6	13.00	22.00	17.67	18.50	3.20	0	400	MAFF 1998 (Cr(TI))				18	22	13	15	19	19	
18540-29-9	Chromium (VI)	mg/kg	1.8	6	1.80	1.80	1.80	1.80	0.00	0	25	ICRCL 70/90 1990				<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	
7440-50-8	Copper	mg/kg	1	6	30.00	54.00	43.83	46.00	9.33	0	200	BS3882 2015				43	54	36	51	49	30	
7440-02-0	Nickel	mg/kg	1	6	15.00	23.00	20.67	22.00	3.14	0	110	BS3882 2015				22	22	15	19	23	23	
7440-66-6	Zinc	mg/kg	1	6	74.00	230.00	137.33	125.00	53.32	0	300	BS3882 2015				120	160	74	130	110	230	

Legend:

MG

HH

XX

Made Ground

Holt Heath Sand and Gravel

XX Other Codes

<0.02

0.02

64.00

Temperature

*<10

Y

-

*

Value below the laboratory reporting limit and are considered as being at the detection limit for the purposes of statistical analysis, as a conservative estimate.

Value greater than, or equal to, the generic assessment criterion (GAC).

Value exceed saturation limit and substance is liquid or solid at ambient temperature.

Value excluded from statistical analysis

Text result

Represents a determinand that was not tested.

represents a data point that is not included in the current filter settings

Template Version:

113: 22/10/24

1 of 1

19/11/2024, 16:14

UKWIR screening

Assessment of Chemicals of Potential Concern to Human Health

Risk parameter: Water UK (2014) - Risk Assessment for Water Pipes													Hydrock now Stantec												
Client: Manchester University NHS Foundation Trust													Data Filters												
Site: North Manchester General Hospital													Zone												
Job no.: 32425													Strata												
Lab. report no(s): 24-052722-1, 24-051722-2, 24-052405-1													Depth Min (m bgl)												
													Depth Max (m bgl)												
													All												
													ALL												
													0.2												
													0.9												
													Date	30/10/24	30/10/24	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024	30/10/2024		
													Zone												
													Strata	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground		
													Location	WS105	WS103	CP101	WS101	WS102	WS103	WS104	WS105				
All values in mg/kg unless otherwise stated													Depth (m bgl)	0.2	0.9	0.3	0.2	0.5	0.4	0.5	0.6				
GROUP	CAS No / P Code	Chemical of Potential Concern	Units	LoD	No. Samples	Min. Value	Max. Value	Mean	Median	Standard Deviation	No. Samples >= PE Threshold	PE Threshold													
		Test Group																							
	VOC	Total VOCs	mg/kg	0.001	8	0.150	0.150	0.761	0.640	0.45	6	0.5	0.9	0.7	1.5	1.3	0.42	0.58	0.15	0.54					
	BTEX_MTBE	Total BTEX & MTBE	mg/kg	0.001	4	b.d.l	b.d.l	-	-	-	0	0.1	b.d.l	b.d.l	b.d.l						b.d.l				
		Total SVOCs (excluding PAHs and those substances marked with an ')																							
	SVOC		mg/kg	0.1	0						0	2													
	C5-10	C5-EC10 aliphatic and aromatic hydrocarbons	mg/kg	0.001	2	b.d.l	b.d.l	-	-	-	0	2			b.d.l						b.d.l				
	C10-16	C10-EC16 aliphatic and aromatic hydrocarbons	mg/kg	1	2	8.200	8.200	9.100	9.100	1.27	1	10			10							8.2			
	C16-40	C16-EC40 aliphatic and aromatic hydrocarbons	mg/kg	10	2	86.000	86.000	116.000	116.000	42.43	0	500			146							86			
	PHENOL	Phenols' (from SVOC analysis)	mg/kg	0.1	0						0	2													
	CRESOL_CHLOR_PHEN	Cresols and chlorinated phenols' (from SVOC analysis)	mg/kg	0.1	0						0	2													
	ETHERS	Ethers'	mg/kg		0						0	0.5													
	NITRO	Nitrobenzene	mg/kg	0.1	0						0	0.5													
	KETONES	Ketones'	mg/kg		0						0	0.5													
	ALDEHYDES	Aldehydes'	mg/kg		0						0	0.5													
	AMINES	Amines	mg/kg		0							FAIL													
	CORR	Corrosive										n/a													
		o Hydrock Default Suite - FOC / SOM / pH																							
	P1334	pH (su)	pH Units	0.1	8	7.30	8.30	7.90	8.00	0.37		-	8.3	8	8	8.3	8.1	7.7	7.5	7.3					
	-	Hydrock Default Suite - Metals & PAH (Note - For the purposes of WIR 2014, naphthalene is considered a VOC substance)										-													
VOC	g1-20-3	Naphthalene	mg/kg	0.05	8	0.15	1.50	0.76	0.64	0.45		-	0.9	0.7	1.5	1.3	0.42	0.58	0.15	0.54					
		o TPH fractions																							
C5-10	P1407	TPH ali ECo5-EC06	mg/kg	0.001	0										<0.01						<0.01				
C5-10	P1408	TPH ali >EC06-EC08	mg/kg	0.001	0										<0.01						<0.01				
C5-10	P1409	TPH ali >EC08-EC10	mg/kg	0.001	0										<0.01						<0.01				
C10-16	P1410	TPH ali >EC10-EC12	mg/kg	1	0										<1						<1				
C10-16	P1411	TPH ali >EC12-EC16	mg/kg	2	2	2.90	4.20	3.55	3.55	0.92		-			4.2						2.9				
C16-40	P1938	TPH ali >EC16-EC35	mg/kg	10	2	28.00	62.00	45.00	45.00	24.04		-			62						28				
C16-40	P1415	TPH ali >EC35-EC44	mg/kg	8.4	1	12.00	12.00	12.00	12.00	-		-			12						<8.4				
C5-10	P1441	TPH aro ECo5-EC07	mg/kg	0.001	0										<0.01						<0.01				
C5-10	P1355	TPH aro >EC07-EC08	mg/kg	0.001	0										<0.01						<0.01				
C5-10	P1356	TPH aro >EC08-EC10	mg/kg	0.001	0										<0.02						<0.02				
C10-16	P1357	TPH aro >EC10-EC12	mg/kg	1	0										<1						<1				
C10-16	P1358	TPH aro >EC12-EC16	mg/kg	2	2	5.30	5.80	5.55	5.55	0.35		-			5.8						5.3				
C16-40	P1359	TPH aro >EC16-EC21	mg/kg	10	2	31.00	33.00	32.00	32.00	1.41		-			33						31				
C16-40	P1360	TPH aro >EC21-EC35	mg/kg	10	2	27.00	39.00	33.00	33.00	8.49		-			39						27				
C16-40	P1362	TPH aro >EC35-EC44	mg/kg	8.4	0										<8.4						<8.4				
		o VOCs - BTEX & MTBE																							
BTEX_MTBE	71-43-2	Benzene	mg/kg	5	0								<0.005	<0.005	<0.005						<0.005				
BTEX_MTBE	108-88-3	Toluene	mg/kg	5	0								<0.005	<0.005	<0.005						<0.005				
BTEX_MTBE	100-41-4	Ethylbenzene	mg/kg	5	0								<0.005	<0.005	<0.005						<0.005				
BTEX_MTBE	95-47-6	Xylene, o-	mg/kg	5	0								<0.005	<0.005	<0.005						<0.005				
BTEX_MTBE		Xylene, p- (or combined m & p)	mg/kg	8	0								<0.008	<0.008	<0.008						<0.008				
BTEX_MTBE	1634-04-4	MTBE	mg/kg	5	0										<0.005						<0.005				
Legend:			MG	Made Ground	<0.02		Value below the laboratory reporting limit are excluded from sum totals, as per the guidance.																		
			HH	Holt Heath Sand and Gravel	0.02		greater than, or equal to, the generic assessment criterion (GAC).																		
			XX	XX Other Codes	<10		Value excluded from statistical analysis																		
					Y		Text result																		

Controlled waters GQRA

Assessment of Water or Leachate Data

Scenario		Controlled Waters (England & Wales)										Hydrock  now 					
Assessment Level		RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples															
Data set:		Groundwater										Data Filters					
Client:		Manchester University NHS Foundation Trust															
Site:		North Manchester General Hospital															
Job no:		32425															
Lab. report no(s):		24-056224															
		Zone		All Zones													
		Strata Filter		All Strata													
		Date Min		25/11/2024													
		Date Max		25/11/2024													
										fix show							
		Determinand Designations			Sample Summaries								Water Quality Target (WQT) (Exceeded if Red Text)		-	-	
															-	-	
															25/11/24	25/11/24	
CAS / AGS Number	Determinand	EQS Category	Hazardous Substance Status	Solubility Limit (µg/l)	Units	Limit of Detection (Lod)	No. of Samples	No. of Samples > LoD	Min	Max	WQT Conversion Factor	DWS (England & Wales)	EQS (inland) (England and Wales)	CP101		CP102	
														953	485	953	485
P1133	Hardness as mg/l CaCO ₃	-	-	-	mgCaCO ₃ /l	1	2	0	309	363		-	-	-	-	309	363
P1134	pH (min.) (su)	O	-	-	pH Units		2	0	6.3	6.4	1	6.5	a,b	6	h	6.3	6.4
P1134	pH (max.) (su)	O	-	-	pH Units		2	0	6.3	6.4	1	9.5	a,b	9	h	6.3	6.4
P1287	Electrical conductivity (µS/cm)		-	-	µS/cm	10	2	2	1200	1500	1	2500	a,b	-	-	1200	1500
P1095	Cyanide (free) (hydrogen cyanide)	SP	NP	-	µg/l	1	2	0	<1	<1	1	-	-	1	h	<1	<1
57-12-5	Cyanide (total)	-	-	-	µg/l	1	2	1	<1	1.8	1	50	a,b	-	-	<1	1.8
P1839	Dissolved Organic Carbon (DOC) [mg/l]		-	-	mg/l	0.1	2	2	4.32	14.4	1000	-	-	-	-	4.32	14.4
P1140	Ammonium (NH ₄ ⁺)		NP	-	µg/l	15	2	2	68	100	1	500	a,b	-	-	100	68
P1238	Ammoniacal Nitrogen (as N)		NP	-	µg/l	15	2	2	53	81	1	-	-	300	g	81	53
P1720	Ammonia (unionised) (NH ₃ as N) (free ammoniacal)	SP	NP	-	µg/l	15	2	2	64	99	1	-	-	-	h	99	64
15541-45-4	Bromate (BrO ₃ ⁻)		-	-	mg/l	0.002	2	0	<0.002	<0.002	1000	0.01	a,b	-	-	<0.002	<0.002
16887-00-6	Chloride (Cl ⁻)	O	-	-	mg/l	0.15	2	0	280	300	1000	250	a,b	250	h	300	280
16984-48-8	Fluoride (F ⁻)	O	-	-	µg/l	50	2	0	61	63	1	1500	a,b	1000	h	61	63
P1348	Nitrate (NO ₃ ⁻)		-	-	mg/l	0.05	2	0	0.65	2.92	1000	50	a,b	-	-	2.92	0.65
P1349	Nitrite (NO ₂ ⁻)		-	-	µg/l	5	2	0	170	540	1	500	a,b	-	-	540	170
14808-79-8	Sulfate (SO ₄ ²⁻)	O	-	-	mg/l	0.045	2	2	106	201	1000	250	a,b	400	h	106	201
7429-90-5	Aluminium (Al) (dissolved)		-	-	µg/l	1	2	2	52	500	1	200	a,b	-	-	52	500
7440-36-0	Antimony (Sb) (dissolved)		NP	-	µg/l	0.4	2	0	<0.4	<0.4	1	5	a,b	-	-	<0.4	<0.4
7440-38-2	Arsenic (As) (dissolved)	SP	H	-	µg/l	0.15	2	2	0.55	1.18	1	10	a,b	50	h	0.55	1.18
7440-39-3	Barium (Ba) (dissolved)		-	-	µg/l	0.06	2	2	31	79	1	1300	e	-	-	79	31
7440-42-8	Boron (B) (dissolved)	O	NP	-	µg/l	10	2	2	62	95	1	1000	a,b	2000	h	62	95
7440-43-9	Cadmium (Cd) (dissolved)	PHS	NP	-	µg/l	0.02	2	2	0.06	0.18	1	5	a,b	0.08	h	0.06	0.18
7440-70-2	Calcium (Ca) (dissolved)		-	-	mg/l		0				1000	-	-	-	-		
16065-83-1	Chromium (Cr III) (dissolved)	SP	-	-	µg/l	5	2	0	<5	<5	1	-	-	4.7	h	<5	<5
18540-29-9	Chromium (Cr VI) (dissolved)	SP	H	-	µg/l	5	2	0	<5	<5	1	-	-	3.4	h	<5	<5
7440-47-3	Chromium (Cr) (dissolved)		-	-	µg/l	0.2	2	2	0.4	1.3	1	50	a,b	-	-	0.4	1.3
7440-48-4	Cobalt (Co) (dissolved)	O	NP	-	µg/l	0.2	2	2	9	23	1	-	-	3	h	23	9
7440-50-8	Copper (Cu) (dissolved)	SP	NP	-	µg/l	0.5	2	2	1.6	7.4	1	2000	a,b	1	h	1.6	7.4
7439-89-6	Iron (Fe) (dissolved)	SP	-	-	mg/l	0.004	2	2	0.024	0.35	1000	0.2	a,b	1	h	0.35	0.024
7439-92-1	Lead (Pb) (dissolved)	PS	H	-	µg/l	0.2	2	0	<0.2	<0.2	1	10	a,b	1.2	h	<0.2	<0.2
7439-95-4	Magnesium (Mg) (dissolved)		-	-	mg/l		0				1000	-	-	-	-		
P1286	Manganese (Mn) (dissolved)	SP	-	-	µg/l	0.05	2	2	600	2300	1	50	a,b	123	h	2300	600
7439-97-6	Mercury (Hg) (dissolved)	PHS	H	-	56 µg/l	0.05	2	0	<0.05	<0.05	1	1	a,b	0.07	h	<0.05	<0.05
7440-02-0	Nickel (Ni) (dissolved)	PS	NP	-	µg/l	0.5	2	2	15	22	1	20	a,b	4	h	22	15
7782-49-2	Selenium (Se) (dissolved)		NP	-	µg/l	0.6	2	2	1.3	4	1	10	a,b	-	-	1.3	4
7440-22-4	Silver (Ag) (dissolved)	O	-	-	µg/l	0.05	2	0	<0.05	<0.05	1	-	-	0.05	h	<0.05	<0.05
7440-23-5	Sodium (Na) (dissolved)		-	-	mg/l	0.01	2	2	140	250	1000	200	a,b	-	-	140	250
7440-31-5	Tin (Sn) (dissolved)	O	-	-	µg/l	0.2	2	2	1.1	3	1	-	-	25	h	3	1.1
7440-62-2	Vanadium (V) (dissolved)	O	-	-	µg/l	0.2	2	0	<0.2	<0.2	1	-	-	20	h	<0.2	<0.2
7440-66-6	Zinc (Zn) (dissolved)	SP	NP	-	µg/l	0.5	2	2	25	27	1	-	-	10.9	h	27	25
83-32-9	Acenaphthene		H	-	4110 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
208-96-8	Acenaphthylene		-	-	7950 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
120-12-7	Anthracene	PHS	H	-	56 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	0.1	h	<0.01	<0.01
56-55-3	Benzo(a)anthracene		-	-	3.8 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
50-32-8	Benzo(a)pyrene	PHS	H	-	3.8 µg/l	0.01	2	0	<0.01	<0.01	1	0.01	a,b	0.00017	h	<0.01	<0.01
205-99-2	Benzo(b)fluoranthene	PHS	H	-	2 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	0.017	h	<0.01	<0.01
191-24-2	Benzo(ghi)perylene	PHS	H	-	0.26 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	0.0082	h	<0.01	<0.01
207-08-9	Benzo(k)fluoranthene	PHS	H	-	0.8 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	0.017	h	<0.01	<0.01
218-01-9	Chrysene		-	-	2 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
53-70-3	Dibenz(a,h)anthracene		-	-	0.6 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
206-44-0	Fluoranthene	PS	H	-	230 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	0.0063	h	<0.01	<0.01
86-73-7	Fluorene		-	-	1860 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
193-39-5	Indeno(1,2,3-cd)pyrene	PHS	H	-	0.2 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
91-20-3	Naphthalene	PS	NP	-	19000 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	2	h	<0.01	<0.01
85-01-8	Phenanthrene		-	-	1120 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
129-00-0	Pyrene		-	-	130 µg/l	0.01	2	0	<0.01	<0.01	1	-	-	-	-	<0.01	<0.01
GRP01	PAHs - sum of benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene	PHS	H	-	µg/l	0.04	2	0	<0.04	<0.04	1	0.1	a,b	-	-	<0.04	<0.04
P1877	Total Phenols	SP	NP	-	84100000 µg/l	1	2	1	<1	1.3	1	-	-	7.7	h	1.3	<1
P1407	Aliphatic >EC5-EC6		-	-	35900 µg/l	1	2	0	<1	<1	1	15000	e	10	j	<1	<1
P1408	Aliphatic >EC6-EC8		-	-	5370 µg/l	1	2	0	<1	<1	1	15000	e	10	j	<1	<1
P1409	Aliphatic >EC8-EC10		-	-	427 µg/l	1	2	0	<1	<1	1	300	e	10	j	<1	<1
P1410	Aliphatic >EC10-EC12		-	-	33.9 µg/l	10	2	0	<10	<10	1	300	e	10	j	<10	<10

Assessment of Water or Leachate Data

Scenario Controlled Waters (England & Wales)											Hydrock  now 									
Assessment Level RTM Level 2 - Groundwater Beneath Source Assessment - groundwater samples																				
Data set: Groundwater																				
Client: Manchester University NHS Foundation Trust																				
Site: North Manchester General Hospital																				
Job no: 32425																				
Lab. report no(s): 24-056224																				
											Data Filters									
											Zone All Zones									
											Strata Filter All Strata									
											Date Min 25/11/2024									
											Date Max 25/11/2024									
											fix show									
		Determinand Designations			Sample Summaries								Water Quality Target (WQT) (Exceeded if Red Text)				-	-		
																	-	-		
																	25/11/24	25/11/24		
CAS / AGS Number	Determinand	EQS Category	Hazardous Substance Status	Solubility Limit (µg/l)	Units	Limit of Detection (Lod)	No. of Samples	No. of Samples > LoD	Min	Max	WQT Conversion Factor	DWS (England & Wales)		EQS (inland) (England and Wales)		CP101	CP102			
																9.53	4.85			
P1411	Aliphatic >EC12-EC16	-	-	0.759	µg/l	10	2	0	<10	<10	1	300	e	10	j	<10	<10			
P1412	Aliphatic >EC16-EC21	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1413	Aliphatic >EC21-EC35	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1938	Aliphatic >EC16-EC35	-	-	0.00254	µg/l	10	2	0	<10	<10	1	-	-	10	j	<10	<10			
P1415	Aliphatic >EC35-EC44	-	-	0.00254	µg/l	10	2	0	<10	<10	1	-	-	10	j	<10	<10			
P1418	Aliphatic >EC5-EC35	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1420	Aliphatic >EC5-EC44	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1441	Aromatic EC5-EC7	-	-	1780000	µg/l	1	2	0	<1	<1	1	1	e	10	j	<1	<1			
P1355	Aromatic >EC7-EC8	-	-	590000	µg/l	1	2	0	<1	<1	1	700	e	10	j	<1	<1			
P1356	Aromatic >EC8-EC10	-	-	64600	µg/l	1	2	0	<1	<1	1	300	e	10	j	<1	<1			
P1357	Aromatic >EC10-EC12	-	-	24500	µg/l	10	2	0	<10	<10	1	90	e	10	j	<10	<10			
P1358	Aromatic > EC12-EC16	-	-	5750	µg/l	10	2	0	<10	<10	1	90	e	10	j	<10	<10			
P1359	Aromatic >EC16-EC21	-	-	653	µg/l	10	2	0	<10	<10	1	90	e	10	j	<10	<10			
P1360	Aromatic >EC21-EC35	-	-	6.61	µg/l	10	2	0	<10	<10	1	90	e	10	j	<10	<10			
P1362	Aromatic >EC35-EC44	-	-	6.61	µg/l	10	2	0	<10	<10	1	-	-	10	j	<10	<10			
P1365	Aromatic >EC5-EC35	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1941	Aromatic >EC5-EC44	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
P1373	TPH EC5-44	-	-	-	µg/l	10	2	0	<10	<10	1	-	-	-	-	<10	<10			
71-43-2	Benzene	PS	H	1780000	µg/l	3	2	0	<3	<3	1	1	a,b	10	h	<3	<3			
108-88-3	Toluene	SP	H	590000	µg/l	3	2	0	<3	<3	1	700	e	74	h	<3	<3			
100-41-4	Ethylbenzene	-	H	180000	µg/l	3	2	0	<3	<3	1	300	e	20	i	<3	<3			
P1374	m,p-Xylene	O	H	200000	µg/l	3	2	0	<3	<3	1	500	e	30	h	<3	<3			
95-47-6	o-Xylene	O	H	173000	µg/l	3	2	0	<3	<3	1	500	e	30	h	<3	<3			
1634-04-4	Methyl tertiary butyl ether (MTBE)	-	NP	48000000	µg/l	3	2	0	<3	<3	1	15	e	-	-	<3	<3			
P1092	m,p,o-Xylene (sum)	O	H	-	µg/l	3	2	0	<3	<3	1	500	e	30	h	<3	<3			

Appendix I Waste assessment

HazWasteOnline™ assessment

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



2AUL9-6P7OA-Y4M3Y

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

North Manchester General Hospital

Description/Comments

i2 lab cert: 24-051722; i2 lab cert: 24-052405; i2 lab cert: 24-052541; i2 lab cert:

Project

32425

Site

NMGH

Classified by

Name: **Annabel Edwards**
Date: **20 Nov 2024 15:01 GMT**
Telephone: **07909210962**
Company: **Hydrock Consultants Ltd**
Over Court Barns, Over Lane
Almondsbury
Bristol
BS32 4DF

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

CERTIFIED

Course
Hazardous Waste Classification

Date
07 Dec 2023

Next 3 year Refresher due by Dec 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

Crescent Drive, Crumpsall, Manchester

Post Code M8 5RB

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

Redevelopment of car park to a waste transfer compound.

Description of the specific process, sub-process and/or activity that created the waste

Waste created during excavation of soils for site levelling and foundations.

Description of the waste

Made Ground comprising brown slightly clayey sandy gravel of brick, sandstone, mudstone and concrete. Occasionally there are fragments of metal and wood.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results			Page
					Inert	SNRHW	Hazardous	
1	CP101-ES1-30102024-0.30		Non Hazardous		-	-	-	3
2	WS101-ES1-30102024-0.20		Non Hazardous		-	-	-	6
3	WS102-ES1-30102024-0.50		Non Hazardous		-	-	-	8
4	WS103-ES1-30102024-0.40		Non Hazardous		-	-	-	10
5	WS104-ES1-30102024-0.50		Non Hazardous		-	-	-	12
6	WS105-ES2-30102024-0.60		Non Hazardous		-	-	-	14
7	WS103-2-30102024-0.90		Non Hazardous		Fail	Pass	N/A	17
8	WS105-ES1-30102024-0.20		Non Hazardous		Pass	Pass	N/A	20

Related documents

#	Name	Description
1	24-051722_batch.batch	i2 Analytical .batch file used to populate the Job
2	24-051722_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
3	24-052405_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
4	24-052541_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
5	24-052722_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
6	Hydrock Standard plus Cresol (ammended Lead)	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Annabel Edwards

Created date: 20 Nov 2024 15:01 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	23
Appendix B: Rationale for selection of metal species	24
Appendix C: Version	25

Classification of sample: CP101-ES1-30102024-0.30

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
CP101-ES1-30102024-0.30	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
15% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		1.6 mg/kg		1.36 mg/kg	0.000136 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.11 mg/kg		0.0935 mg/kg	0.00000935 %	✓	
3	anthracene	204-371-1	120-12-7		2.2 mg/kg		1.87 mg/kg	0.000187 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4		13 mg/kg	1.32	14.59 mg/kg	0.00146 %	✓	
5	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
6	benzo[a]anthracene	601-033-00-9	200-280-6		4.7 mg/kg		3.995 mg/kg	0.0004 %	✓	
7	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		4.7 mg/kg		3.995 mg/kg	0.0004 %	✓	
8	benzo[b]fluoranthene	601-034-00-4	205-911-9		4.9 mg/kg		4.165 mg/kg	0.000417 %	✓	
9	benzo[ghi]perylene	205-883-8	191-24-2		2.5 mg/kg		2.125 mg/kg	0.000213 %	✓	
10	benzo[k]fluoranthene	601-036-00-5	205-916-6		2.4 mg/kg		2.04 mg/kg	0.000204 %	✓	
11	beryllium { beryllium oxide }	004-003-00-8	215-133-1		0.9 mg/kg	2.775	2.123 mg/kg	0.000212 %	✓	
12	boron { diboron trioxide }	005-008-00-8	215-125-8		3 mg/kg	3.22	8.211 mg/kg	0.000821 %	✓	
13	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1	0.4 mg/kg	1.285	0.437 mg/kg	0.000034 %	✓	
14	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
15	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
16	chrysene	601-048-00-0	205-923-4		5 mg/kg		4.25 mg/kg	0.000425 %	✓	
17	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7		43 mg/kg	1.126	41.151 mg/kg	0.00412 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
19	dibenz[a,h]anthracene				0.51 mg/kg		0.434 mg/kg	0.0000433 %		✓	
	601-041-00-2	200-181-8	53-70-3								
20	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
21	fluoranthene				11 mg/kg		9.35 mg/kg	0.000935 %		✓	
		205-912-4	206-44-0								
22	fluorene				1.5 mg/kg		1.275 mg/kg	0.000127 %		✓	
		201-695-5	86-73-7								
23	indeno[123-cd]pyrene				2.2 mg/kg		1.87 mg/kg	0.000187 %		✓	
		205-893-2	193-39-5								
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	150 mg/kg		127.5 mg/kg	0.0127 %		✓	
	082-001-00-6										
25	mercury { mercury dichloride }				0.6 mg/kg	1.353	0.69 mg/kg	0.000069 %		✓	
	080-010-00-X	231-299-8	7487-94-7								
26	naphthalene				1.5 mg/kg		1.275 mg/kg	0.000127 %		✓	
	601-052-00-2	202-049-5	91-20-3								
27	nickel { nickel dihydroxide }				22 mg/kg	1.579	29.537 mg/kg	0.00295 %		✓	
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
28	pH				8 pH		8 pH	8pH			
			PH								
29	phenanthrene				9.9 mg/kg		8.415 mg/kg	0.000841 %		✓	
		201-581-5	85-01-8								
30	pyrene				10 mg/kg		8.5 mg/kg	0.00085 %		✓	
		204-927-3	129-00-0								
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
32	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
33	TPH (C6 to C40) petroleum group				157 mg/kg		133.45 mg/kg	0.0133 %		✓	
			TPH								
34	xylene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %			<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
35	zinc { zinc oxide }				120 mg/kg	1.245	126.961 mg/kg	0.0127 %		✓	
	030-013-00-7	215-222-5	1314-13-2								
36	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
37	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
38	vanadium { divanadium pentaoxide; vanadium pentoxide }				27 mg/kg	1.785	40.97 mg/kg	0.0041 %		✓	
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0615 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%)
because: Concentration is too low to be flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0133%)

Classification of sample: WS101-ES1-30102024-0.20

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS101-ES1-30102024-0.20	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		2.7 mg/kg		2.295	mg/kg	0.00023 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.11 mg/kg		0.0935	mg/kg	0.0000935 %	✓	
3	anthracene	204-371-1	120-12-7		3.6 mg/kg		3.06	mg/kg	0.000306 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4		12 mg/kg	1.32	13.467	mg/kg	0.00135 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6		7.4 mg/kg		6.29	mg/kg	0.000629 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		7.4 mg/kg		6.29	mg/kg	0.000629 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9		8.7 mg/kg		7.395	mg/kg	0.000739 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		3.7 mg/kg		3.145	mg/kg	0.000315 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6		3 mg/kg		2.55	mg/kg	0.000255 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1		0.86 mg/kg	2.775	2.029	mg/kg	0.000203 %	✓	
11	boron { diboron trioxide }	005-008-00-8	215-125-8		2.5 mg/kg	3.22	6.842	mg/kg	0.000684 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1	0.4 mg/kg	1.285	0.437	mg/kg	0.000034 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		22 mg/kg	1.462	32.154	mg/kg	0.00322 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4		7.8 mg/kg		6.63	mg/kg	0.000663 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7		54 mg/kg	1.126	51.678	mg/kg	0.00517 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.87 mg/kg		0.74 mg/kg	0.000074 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				18 mg/kg		15.3 mg/kg	0.00153 %	✓		
		205-912-4	206-44-0								
20	fluorene				1.9 mg/kg		1.615 mg/kg	0.000162 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				3.3 mg/kg		2.805 mg/kg	0.000281 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	190 mg/kg		161.5 mg/kg	0.0162 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				0.5 mg/kg	1.353	0.575 mg/kg	0.0000575 %	✓		
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				1.3 mg/kg		1.105 mg/kg	0.000111 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				22 mg/kg	1.579	29.537 mg/kg	0.00295 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.3 pH		8.3 pH	8.3 pH			
			PH								
27	phenanthrene				14 mg/kg		11.9 mg/kg	0.00119 %	✓		
		201-581-5	85-01-8								
28	pyrene				16 mg/kg		13.6 mg/kg	0.00136 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				160 mg/kg	1.245	169.281 mg/kg	0.0169 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				26 mg/kg	1.785	39.453 mg/kg	0.00395 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0599 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS102-ES1-30102024-0.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS102-ES1-30102024-0.50	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
14% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 14% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		acenaphthene				0.47 mg/kg		0.404 mg/kg	0.0000404 %	✓	
			201-469-6	83-32-9							
2		acenaphthylene				0.24 mg/kg		0.206 mg/kg	0.0000206 %	✓	
			205-917-1	208-96-8							
3		anthracene				0.95 mg/kg		0.817 mg/kg	0.0000817 %	✓	
			204-371-1	120-12-7							
4		arsenic { arsenic trioxide }				13 mg/kg	1.32	14.761 mg/kg	0.00148 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
5		benzo[a]anthracene				2.7 mg/kg		2.322 mg/kg	0.000232 %	✓	
		601-033-00-9	200-280-6	56-55-3							
6		benzo[a]pyrene; benzo[def]chrysene				2.8 mg/kg		2.408 mg/kg	0.000241 %	✓	
		601-032-00-3	200-028-5	50-32-8							
7		benzo[b]fluoranthene				3.3 mg/kg		2.838 mg/kg	0.000284 %	✓	
		601-034-00-4	205-911-9	205-99-2							
8		benzo[ghi]perylene				1.5 mg/kg		1.29 mg/kg	0.000129 %	✓	
			205-883-8	191-24-2							
9		benzo[k]fluoranthene				1.1 mg/kg		0.946 mg/kg	0.0000946 %	✓	
		601-036-00-5	205-916-6	207-08-9							
10		beryllium { beryllium oxide }				1.6 mg/kg	2.775	3.819 mg/kg	0.000382 %	✓	
		004-003-00-8	215-133-1	1304-56-9							
11		boron { diboron trioxide }				1.6 mg/kg	3.22	4.431 mg/kg	0.000443 %	✓	
		005-008-00-8	215-125-8	1303-86-2							
12		cadmium { cadmium sulfide }			1	0.3 mg/kg	1.285	0.332 mg/kg	0.0000258 %	✓	
		048-010-00-4	215-147-8	1306-23-6							
13		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				13 mg/kg	1.462	19 mg/kg	0.0019 %		
			215-160-9	1308-38-9							
14		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
		024-001-00-0	215-607-8	1333-82-0							
15		chrysene				2.9 mg/kg		2.494 mg/kg	0.000249 %	✓	
		601-048-00-0	205-923-4	218-01-9							
16		copper { dicopper oxide; copper (I) oxide }				36 mg/kg	1.126	34.858 mg/kg	0.00349 %	✓	
		029-002-00-X	215-270-7	1317-39-1							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.27 mg/kg		0.232 mg/kg	0.0000232 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				6.5 mg/kg		5.59 mg/kg	0.000559 %	✓		
		205-912-4	206-44-0								
20	fluorene				0.63 mg/kg		0.542 mg/kg	0.0000542 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				1.3 mg/kg		1.118 mg/kg	0.000112 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	88 mg/kg		75.68 mg/kg	0.00757 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.42 mg/kg		0.361 mg/kg	0.0000361 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				15 mg/kg	1.579	20.376 mg/kg	0.00204 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				8.1 pH		8.1 pH	8.1 pH			
			P1186								
27	phenanthrene				4.5 mg/kg		3.87 mg/kg	0.000387 %	✓		
		201-581-5	85-01-8								
28	pyrene				5.8 mg/kg		4.988 mg/kg	0.000499 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.2 mg/kg	1.405	1.45 mg/kg	0.000145 %	✓		
	034-002-00-8										
30	zinc { zinc oxide }				74 mg/kg	1.245	79.214 mg/kg	0.00792 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				32 mg/kg	1.785	49.128 mg/kg	0.00491 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.034 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
🔍	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS103-ES1-30102024-0.40

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS103-ES1-30102024-0.40	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
17% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 17% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	acenaphthene	201-469-6	83-32-9		0.61 mg/kg		0.506	mg/kg	0.0000506 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.16 mg/kg		0.133	mg/kg	0.0000133 %	✓	
3	anthracene	204-371-1	120-12-7		1.1 mg/kg		0.913	mg/kg	0.0000913 %	✓	
4	arsenic { arsenic trioxide }	033-003-00-0	215-481-4		17 mg/kg	1.32	18.63	mg/kg	0.00186 %	✓	
5	benzo[a]anthracene	601-033-00-9	200-280-6		3.1 mg/kg		2.573	mg/kg	0.000257 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		3.3 mg/kg		2.739	mg/kg	0.000274 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9		3.7 mg/kg		3.071	mg/kg	0.000307 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		1.9 mg/kg		1.577	mg/kg	0.000158 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6		1.6 mg/kg		1.328	mg/kg	0.000133 %	✓	
10	beryllium { beryllium oxide }	004-003-00-8	215-133-1		1.1 mg/kg	2.775	2.534	mg/kg	0.000253 %	✓	
11	boron { diboron trioxide }	005-008-00-8	215-125-8		3.3 mg/kg	3.22	8.819	mg/kg	0.000882 %	✓	
12	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1	0.6 mg/kg	1.285	0.64	mg/kg	0.0000498 %	✓	
13	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }	215-160-9	1308-38-9		15 mg/kg	1.462	21.923	mg/kg	0.00219 %		
14	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<1.8 mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
15	chrysene	601-048-00-0	205-923-4		3.4 mg/kg		2.822	mg/kg	0.000282 %	✓	
16	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7		51 mg/kg	1.126	47.659	mg/kg	0.00477 %	✓	

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.35 mg/kg		0.291 mg/kg	0.0000291 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				7.3 mg/kg		6.059 mg/kg	0.000606 %	✓		
		205-912-4	206-44-0								
20	fluorene				0.64 mg/kg		0.531 mg/kg	0.0000531 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				1.6 mg/kg		1.328 mg/kg	0.000133 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	160 mg/kg		132.8 mg/kg	0.0133 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.58 mg/kg		0.481 mg/kg	0.0000481 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				19 mg/kg	1.579	24.909 mg/kg	0.00249 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				7.7 pH		7.7 pH	7.7 pH			
			P1186								
27	phenanthrene				5.2 mg/kg		4.316 mg/kg	0.000432 %	✓		
		201-581-5	85-01-8								
28	pyrene				6.6 mg/kg		5.478 mg/kg	0.000548 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1.3 mg/kg	1.405	1.516 mg/kg	0.000152 %	✓		
	034-002-00-8										
30	zinc { zinc oxide }				130 mg/kg	1.245	134.305 mg/kg	0.0134 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
32	vanadium { divanadium pentaoxide; vanadium pentoxide }				28 mg/kg	1.785	41.488 mg/kg	0.00415 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0476 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
•	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS104-ES1-30102024-0.50

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS104-ES1-30102024-0.50	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1	●	acenaphthene				0.29 mg/kg		0.238 mg/kg	0.0000238 %	✓	
			201-469-6	83-32-9							
2	●	acenaphthylene				0.16 mg/kg		0.131 mg/kg	0.0000131 %	✓	
			205-917-1	208-96-8							
3	●	anthracene				0.85 mg/kg		0.697 mg/kg	0.0000697 %	✓	
			204-371-1	120-12-7							
4	🚫	arsenic { arsenic trioxide }				29 mg/kg	1.32	31.397 mg/kg	0.00314 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
5		benzo[a]anthracene				2.6 mg/kg		2.132 mg/kg	0.000213 %	✓	
		601-033-00-9	200-280-6	56-55-3							
6		benzo[a]pyrene; benzo[def]chrysene				2.5 mg/kg		2.05 mg/kg	0.000205 %	✓	
		601-032-00-3	200-028-5	50-32-8							
7		benzo[b]fluoranthene				3 mg/kg		2.46 mg/kg	0.000246 %	✓	
		601-034-00-4	205-911-9	205-99-2							
8	●	benzo[ghi]perylene				1.4 mg/kg		1.148 mg/kg	0.000115 %	✓	
			205-883-8	191-24-2							
9		benzo[k]fluoranthene				1.3 mg/kg		1.066 mg/kg	0.000107 %	✓	
		601-036-00-5	205-916-6	207-08-9							
10	🚫	beryllium { beryllium oxide }				1.1 mg/kg	2.775	2.503 mg/kg	0.00025 %	✓	
		004-003-00-8	215-133-1	1304-56-9							
11	🚫	boron { diboron trioxide }				1.4 mg/kg	3.22	3.696 mg/kg	0.00037 %	✓	
		005-008-00-8	215-125-8	1303-86-2							
12	🚫	cadmium { cadmium sulfide }			1	<0.2 mg/kg	1.285	<0.257 mg/kg	<0.00002 %		<LOD
		048-010-00-4	215-147-8	1306-23-6							
13	🚫	chromium in chromium(III) compounds { ● chromium(III) oxide (worst case) }				19 mg/kg	1.462	27.77 mg/kg	0.00278 %		
			215-160-9	1308-38-9							
14	🚫	chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<LOD
		024-001-00-0	215-607-8	1333-82-0							
15		chrysene				2.7 mg/kg		2.214 mg/kg	0.000221 %	✓	
		601-048-00-0	205-923-4	218-01-9							
16	🚫	copper { dicopper oxide; copper (I) oxide }				49 mg/kg	1.126	45.238 mg/kg	0.00452 %	✓	
		029-002-00-X	215-270-7	1317-39-1							

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
17	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
18	dibenz[a,h]anthracene				0.29 mg/kg		0.238 mg/kg	0.0000238 %	✓		
	601-041-00-2	200-181-8	53-70-3								
19	fluoranthene				6.1 mg/kg		5.002 mg/kg	0.0005 %	✓		
		205-912-4	206-44-0								
20	fluorene				0.34 mg/kg		0.279 mg/kg	0.0000279 %	✓		
		201-695-5	86-73-7								
21	indeno[123-cd]pyrene				1.2 mg/kg		0.984 mg/kg	0.0000984 %	✓		
		205-893-2	193-39-5								
22	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	170 mg/kg		139.4 mg/kg	0.0139 %	✓		
	082-001-00-6										
23	mercury { mercury dichloride }				<0.3 mg/kg	1.353	<0.406 mg/kg	<0.0000406 %			<LOD
	080-010-00-X	231-299-8	7487-94-7								
24	naphthalene				0.15 mg/kg		0.123 mg/kg	0.0000123 %	✓		
	601-052-00-2	202-049-5	91-20-3								
25	nickel { nickel dihydroxide }				23 mg/kg	1.579	29.789 mg/kg	0.00298 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
26	pH				7.5 pH		7.5 pH	7.5 pH			
			PH								
27	phenanthrene				3.9 mg/kg		3.198 mg/kg	0.00032 %	✓		
		201-581-5	85-01-8								
28	pyrene				5.6 mg/kg		4.592 mg/kg	0.000459 %	✓		
		204-927-3	129-00-0								
29	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
30	zinc { zinc oxide }				110 mg/kg	1.245	112.273 mg/kg	0.0112 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
31	asbestos				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5								
32	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
33	vanadium { divanadium pentaoxide; vanadium pentoxide }				35 mg/kg	1.785	51.235 mg/kg	0.00512 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0478 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: WS105-ES2-30102024-0.60

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name: **WS105-ES2-30102024-0.60** LoW Code: Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content: **15%** Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
(wet weight correction)

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
1		acenaphthene				1.1	mg/kg		0.935	mg/kg	0.0000935 %	✔	
			201-469-6	83-32-9									
2		acenaphthylene				0.11	mg/kg		0.0935	mg/kg	0.00000935 %	✔	
			205-917-1	208-96-8									
3		anthracene				2.1	mg/kg		1.785	mg/kg	0.000179 %	✔	
			204-371-1	120-12-7									
4		arsenic { arsenic trioxide }				10	mg/kg	1.32	11.223	mg/kg	0.00112 %	✔	
		033-003-00-0	215-481-4	1327-53-3									
5		benzene				<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
6		benzo[a]anthracene				4.7	mg/kg		3.995	mg/kg	0.0004 %	✔	
		601-033-00-9	200-280-6	56-55-3									
7		benzo[a]pyrene; benzo[def]chrysene				4.5	mg/kg		3.825	mg/kg	0.000383 %	✔	
		601-032-00-3	200-028-5	50-32-8									
8		benzo[b]fluoranthene				5.4	mg/kg		4.59	mg/kg	0.000459 %	✔	
		601-034-00-4	205-911-9	205-99-2									
9		benzo[ghi]perylene				2.3	mg/kg		1.955	mg/kg	0.000195 %	✔	
			205-883-8	191-24-2									
10		benzo[k]fluoranthene				1.9	mg/kg		1.615	mg/kg	0.000162 %	✔	
		601-036-00-5	205-916-6	207-08-9									
11		beryllium { beryllium oxide }				0.8	mg/kg	2.775	1.887	mg/kg	0.000189 %	✔	
		004-003-00-8	215-133-1	1304-56-9									
12		boron { diboron trioxide }				1.3	mg/kg	3.22	3.558	mg/kg	0.000356 %	✔	
		005-008-00-8	215-125-8	1303-86-2									
13		cadmium { cadmium sulfide }			1	0.4	mg/kg	1.285	0.437	mg/kg	0.000034 %	✔	
		048-010-00-4	215-147-8	1306-23-6									
14		chromium in chromium(III) compounds {  chromium(III) oxide (worst case) }				19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
			215-160-9	1308-38-9									
15		chromium in chromium(VI) compounds { chromium(VI) oxide }				<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
		024-001-00-0	215-607-8	1333-82-0									
16		chrysene				4.8	mg/kg		4.08	mg/kg	0.000408 %	✔	
		601-048-00-0	205-923-4	218-01-9									
17		copper { dicopper oxide; copper (I) oxide }				30	mg/kg	1.126	28.71	mg/kg	0.00287 %	✔	
		029-002-00-X	215-270-7	1317-39-1									

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
18	cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %			<LOD
	006-007-00-5										
19	dibenz[a,h]anthracene				0.46 mg/kg		0.391 mg/kg	0.0000391 %	✓		
	601-041-00-2	200-181-8	53-70-3								
20	ethylbenzene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-023-00-4	202-849-4	100-41-4								
21	fluoranthene				11 mg/kg		9.35 mg/kg	0.000935 %	✓		
		205-912-4	206-44-0								
22	fluorene				0.96 mg/kg		0.816 mg/kg	0.0000816 %	✓		
		201-695-5	86-73-7								
23	indeno[123-cd]pyrene				2 mg/kg		1.7 mg/kg	0.00017 %	✓		
		205-893-2	193-39-5								
24	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	350 mg/kg		297.5 mg/kg	0.0298 %	✓		
	082-001-00-6										
25	mercury { mercury dichloride }				0.4 mg/kg	1.353	0.46 mg/kg	0.000046 %	✓		
	080-010-00-X	231-299-8	7487-94-7								
26	naphthalene				0.54 mg/kg		0.459 mg/kg	0.0000459 %	✓		
	601-052-00-2	202-049-5	91-20-3								
27	nickel { nickel dihydroxide }				23 mg/kg	1.579	30.879 mg/kg	0.00309 %	✓		
	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]								
28	pH				7.3 pH		7.3 pH	7.3 pH			
			PH								
29	phenanthrene				8 mg/kg		6.8 mg/kg	0.00068 %	✓		
		201-581-5	85-01-8								
30	pyrene				9.5 mg/kg		8.075 mg/kg	0.000807 %	✓		
		204-927-3	129-00-0								
31	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %			<LOD
	034-002-00-8										
32	toluene				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	601-021-00-3	203-625-9	108-88-3								
33	TPH (C6 to C40) petroleum group				93 mg/kg		79.05 mg/kg	0.00791 %	✓		
			TPH								
34	xylene				<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %			<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]								
35	zinc { zinc oxide }				230 mg/kg	1.245	243.342 mg/kg	0.0243 %	✓		
	030-013-00-7	215-222-5	1314-13-2								
36	asbestos				<0.001 mg/kg		<0.001 mg/kg	<0.0000001 %			<LOD
	650-013-00-6	-----	12001-28-4 132207-32-0 12172-73-5 77536-66-4 77536-68-6 77536-67-5 12001-29-5								
37	monohydric phenols				<1 mg/kg		<1 mg/kg	<0.0001 %			<LOD
			P1186								
38	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %			<LOD
	603-181-00-X	216-653-1	1634-04-4								
39	vanadium { divanadium pentaoxide; vanadium pentoxide }				25 mg/kg	1.785	37.935 mg/kg	0.00379 %	✓		
	023-001-00-8	215-239-8	1314-62-1								
Total:									0.0821 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous Property to non-hazardous for cumulative determinand results below the threshold of: 1000 mg/kg (0.1%)
because: Concentration is too low to be flammable.

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.00791%)

Classification of sample: WS103-2-30102024-0.90

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS103-2-30102024-0.90	Chapter:
Moisture content:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
13% (wet weight correction)	Entry:
	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	acenaphthene	201-469-6	83-32-9		1.4	mg/kg		1.218	mg/kg	0.000122 %	✓	
2	acenaphthylene	205-917-1	208-96-8		2.2	mg/kg		1.914	mg/kg	0.000191 %	✓	
3	anthracene	204-371-1	120-12-7		5	mg/kg		4.35	mg/kg	0.000435 %	✓	
4	benzene	601-020-00-8	200-753-7	71-43-2	<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	7.2	mg/kg		6.264	mg/kg	0.000626 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	7.4	mg/kg		6.438	mg/kg	0.000644 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	7	mg/kg		6.09	mg/kg	0.000609 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		3.8	mg/kg		3.306	mg/kg	0.000331 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	3.3	mg/kg		2.871	mg/kg	0.000287 %	✓	
10	chrysene	601-048-00-0	205-923-4	218-01-9	6.4	mg/kg		5.568	mg/kg	0.000557 %	✓	
11	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.62	mg/kg		0.539	mg/kg	0.0000539 %	✓	
12	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
13	fluoranthene	205-912-4	206-44-0		21	mg/kg		18.27	mg/kg	0.00183 %	✓	
14	fluorene	201-695-5	86-73-7		2.4	mg/kg		2.088	mg/kg	0.000209 %	✓	
15	indeno[123-cd]pyrene	205-893-2	193-39-5		3.4	mg/kg		2.958	mg/kg	0.000296 %	✓	
16	naphthalene	601-052-00-2	202-049-5	91-20-3	0.7	mg/kg		0.609	mg/kg	0.0000609 %	✓	
17	pH		PH		8	pH		8	pH	8pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	phenanthrene	201-581-5	85-01-8		21 mg/kg		18.27 mg/kg	0.00183 %	✓	
19	pyrene	204-927-3	129-00-0		18 mg/kg		15.66 mg/kg	0.00157 %	✓	
20	toluene	601-021-00-3	203-625-9	108-88-3	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]	<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
22	polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3	<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
23	coronene	205-881-7	191-07-1		2 mg/kg		1.74 mg/kg	0.000174 %	✓	
Total:								0.00982 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
<LOD	Below limit of detection

WAC results for sample: WS103-2-30102024-0.90

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample FAILS the Inert (Inert waste landfill) criteria.

The sample PASSES the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	1.7	3	5	6
2	LOI (loss on ignition)	%	6.4	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.007	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	114	100	-	-
7	pH	pH	8	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	3.9	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0712	0.5	2	25
10	barium	mg/kg	0.298	20	100	300
11	cadmium	mg/kg	0.0015	0.04	1	5
12	chromium	mg/kg	0.014	0.5	10	70
13	copper	mg/kg	0.18	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.146	0.5	10	30
16	nickel	mg/kg	0.015	0.4	10	40
17	lead	mg/kg	0.061	0.5	10	50
18	antimony	mg/kg	<0.017	0.06	0.7	5
19	selenium	mg/kg	<0.04	0.1	0.5	7
20	zinc	mg/kg	0.11	4	50	200
21	chloride	mg/kg	700	800	15,000	25,000
22	fluoride	mg/kg	10	10	150	500
23	sulphate	mg/kg	190	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	115	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	2200	4,000	60,000	100,000

Key

	User supplied data
	Not applicable
	Inert WAC criteria fail

Classification of sample: WS105-ES1-30102024-0.20

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
WS105-ES1-30102024-0.20	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	acenaphthene	201-469-6	83-32-9		1.9 mg/kg		1.672 mg/kg	0.000167 %	✓	
2	acenaphthylene	205-917-1	208-96-8		0.09 mg/kg		0.0792 mg/kg	0.0000792 %	✓	
3	anthracene	204-371-1	120-12-7		2.5 mg/kg		2.2 mg/kg	0.00022 %	✓	
4	benzene	601-020-00-8	200-753-7	71-43-2	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
5	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	5.9 mg/kg		5.192 mg/kg	0.000519 %	✓	
6	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	6.5 mg/kg		5.72 mg/kg	0.000572 %	✓	
7	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	7.1 mg/kg		6.248 mg/kg	0.000625 %	✓	
8	benzo[ghi]perylene	205-883-8	191-24-2		3.1 mg/kg		2.728 mg/kg	0.000273 %	✓	
9	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	3 mg/kg		2.64 mg/kg	0.000264 %	✓	
10	chrysene	601-048-00-0	205-923-4	218-01-9	6.6 mg/kg		5.808 mg/kg	0.000581 %	✓	
11	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.54 mg/kg		0.475 mg/kg	0.0000475 %	✓	
12	ethylbenzene	601-023-00-4	202-849-4	100-41-4	<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
13	fluoranthene	205-912-4	206-44-0		15 mg/kg		13.2 mg/kg	0.00132 %	✓	
14	fluorene	201-695-5	86-73-7		1.4 mg/kg		1.232 mg/kg	0.000123 %	✓	
15	indeno[123-cd]pyrene	205-893-2	193-39-5		2.7 mg/kg		2.376 mg/kg	0.000238 %	✓	
16	naphthalene	601-052-00-2	202-049-5	91-20-3	0.9 mg/kg		0.792 mg/kg	0.0000792 %	✓	
17	pH		PH		8.3 pH		8.3 pH	8.3 pH		

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	phenanthrene	201-581-5	85-01-8		10 mg/kg		8.8 mg/kg	0.00088 %	✓	
19	pyrene	204-927-3	129-00-0		13 mg/kg		11.44 mg/kg	0.00114 %	✓	
20	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
21	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.013 mg/kg		<0.013 mg/kg	<0.0000013 %		<LOD
22	polychlorobiphenyls; PCB	602-039-00-4	215-648-1		<0.007 mg/kg		<0.007 mg/kg	<0.0000007 %		<LOD
23	coronene	205-881-7	191-07-1		1 mg/kg		0.88 mg/kg	0.000088 %	✓	
Total:								0.00715 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
<LOD	Below limit of detection

WAC results for sample: WS105-ES1-30102024-0.20

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample PASSES the Inert (Inert waste landfill) criteria.

The sample PASSES the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	1.3	3	5	6
2	LOI (loss on ignition)	%	3.9	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.007	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	86	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	81.5	100	-	-
7	pH	pH	8.3	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	23	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.01	0.5	2	25
10	barium	mg/kg	0.269	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.029	0.5	10	70
13	copper	mg/kg	0.11	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.0797	0.5	10	30
16	nickel	mg/kg	0.045	0.4	10	40
17	lead	mg/kg	<0.01	0.5	10	50
18	antimony	mg/kg	0.059	0.06	0.7	5
19	selenium	mg/kg	<0.04	0.1	0.5	7
20	zinc	mg/kg	0.074	4	50	200
21	chloride	mg/kg	38	800	15,000	25,000
22	fluoride	mg/kg	5.4	10	150	500
23	sulphate	mg/kg	220	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	88.5	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	770	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Appendix A: Classifier defined and non GB MCL determinands

• **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

• **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H302, Acute Tox. 1; H330, Acute Tox. 1; H310, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

• **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 17 Jul 2015

Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

• **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 23 Jul 2015

Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

• **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

• **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

• **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

• **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

• **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

• **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Carc. 2; H351

• **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6

Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium

www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

• **pH (CAS Number: PH)**

Description/Comments: Appendix C4

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: None.

• **phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)**

Description/Comments: Data from C&L Inventory Database

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 06 Aug 2015

Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

• **pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)**

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014

Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 21 Aug 2015

Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **TPH (C6 to C40) petroleum group (CAS Number: TPH)**

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013

Data source: WM3 1st Edition 2015

Data source date: 25 May 2015

Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

• **monohydric phenols (CAS Number: P1186)**

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)

Data source: CLP combined data

Data source date: 26 Mar 2019

Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , Aquatic Chronic 2; H411

• **polychlorobiphenyls; PCB (EC Number: 215-648-1, CAS Number: 1336-36-3)**

GB MCL index number: 602-039-00-4

Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

• **coronene (EC Number: 205-881-7, CAS Number: 191-07-1)**

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.

Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>

Data source date: 16 Jun 2014

Hazard Statements: STOT SE 2; H371

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on hazard statements

beryllium {beryllium oxide}

Worst case species based on hazard statements

boron {diboron trioxide}

Most reasonable worst case.

cadmium {cadmium sulfide}

Worst case species based on hazard statements

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case species based on hazard statements

chromium in chromium(VI) compounds {chromium(VI) oxide}

Worst case species based on hazard statements

copper {dicopper oxide; copper (I) oxide}

Most likely common species

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Worst case species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species based on hazard statements

mercury {mercury dichloride}

Worst case species based on hazard statements

nickel {nickel dihydroxide}

Worst case species based on hazard statements

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on hazard statements

zinc {zinc oxide}

Worst case species based on hazard statements

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species based on hazard statements.

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021

HazWasteOnline Classification Engine Version: 2024.304.6320.11573 (30 Oct 2024)

HazWasteOnline Database: 2024.304.6320.11573 (30 Oct 2024)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021

GB MCL List v2.0 - version 2.0 of 20th October 2023

GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

GB MCL List v5.0 - version 5.0 of 26th June 2024

WAC data



i2 Analytical

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Waste Acceptance Criteria Analytical Results							
Report No:	24-052722						
					Client: HYDROCK		
Location	North Manchester General Hospital						
Lab Reference (Sample Number)	373535				Landfill Waste Acceptance Criteria		
Sampling Date	30/10/2024				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS105 ES1						
Depth (m)	0.20						
Solid Waste Analysis							
TOC (%)**	1.3				3%	5%	6%
Loss on Ignition (%) **	3.9				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	86				500	--	--
Total PAH (WAC-17) (mg/kg)	81.5				100	--	--
pH (units)**	8.3				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	23				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.00100			< 0.0100	0.5	2	25
Barium *	0.0269			0.269	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0029			0.029	0.5	10	70
Copper *	0.011			0.11	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00797			0.0797	0.5	10	30
Nickel *	0.0045			0.045	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	0.0059			0.059	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0074			0.074	4	50	200
Chloride *	3.8			38	800	15000	25000
Fluoride*	0.54			5.4	10	150	500
Sulphate *	22			220	1000	20000	50000
TDS*	77			770	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	8.85			88.5	500	800	1000
Leach Test Information							
Stone Content (%)	36.2						
Sample Mass (kg)	0.3						
Dry Matter (%)	88						
Moisture (%)	12						
Results are expressed on a dry weight basis, after correction for moisture content where applicable.					* = UKAS accredited (liquid eluate analysis only)		
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation					** = MCERTS accredited		

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.



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Waste Acceptance Criteria Analytical Results							
Report No:	24-052405						
					Client: HYDROCK		
Location	North Manchester General Hospital						
Lab Reference (Sample Number)	371845				Landfill Waste Acceptance Criteria		
Sampling Date	30/10/2024				Inert Waste Landfill	Stable Non- reactive HAZARDOUS waste in non- hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS103 2						
Depth (m)	0.90						
Solid Waste Analysis							
TOC (%)**	1.7				3%	5%	6%
Loss on Ignition (%) **	6.4				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH 1D CU AL	< 10				500	--	--
Total PAH (WAC-17) (mg/kg)	114				100	--	--
pH (units)**	8.0				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	3.9				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg	using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00712			0.0712	0.5	2	25
Barium *	0.0298			0.298	20	100	300
Cadmium *	0.000154			0.00154	0.04	1	5
Chromium *	0.0014			0.014	0.5	10	70
Copper *	0.018			0.18	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.0146			0.146	0.5	10	30
Nickel *	0.0015			0.015	0.4	10	40
Lead *	0.0061			0.061	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.011			0.11	4	50	200
Chloride *	70			700	800	15000	25000
Fluoride*	1.0			10	10	150	500
Sulphate *	19			190	1000	20000	50000
TDS*	220			2200	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	11.5			115	500	800	1000
Leach Test Information							
Stone Content (%)	37.8						
Sample Mass (kg)	0.3						
Dry Matter (%)	87						
Moisture (%)	13						
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 discrepancies with current legislation				* = UKAS accredited (liquid eluate analysis only)			
				** = MCERTS accredited			

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.

Appendix J Geotechnical risk register

Geotechnical Hazard Identification – Following Ground Investigation

The preliminary Geotechnical Risk Register following Ground Investigation is set out in Table J.3.

The probability and impact of a hazard have been judged on a qualitative scale as set out in Table J.2. The degree of risk (R) is determined by combining an assessment of the probability (P) of the hazard occurring with an assessment of the impact (I) of the hazard and associated mitigation it will require if it occurs ($R = P \times I$).

Table J.2: Qualitative assessment of hazards and risks

P = Probability		I = Impact		R = Risk Rating (P x I)	
1	Very unlikely (VU)	1	Very Low	1 – 4	None / negligible
2	Unlikely (U)	2	Low	5 – 9	Minor
3	Plausible (P)	3	Medium	10 – 14	Moderate
4	Likely (Lk)	4	High	15 – 19	Substantial
5	Very Likely (VLk)	5	Very High	20 – 25	Severe

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Uncontrolled Made Ground (variable strength and compressibility).	There is Made Ground due to historical construction activity at the site up to 2.6m thick.	Office/welfare building.	Bearing capacity failure, settlement (total and differential).	3	4	12	Design foundations to found below Made Ground on the Glaciofluvial Sheet Deposits or on natural deposits which has been improved.
			Floor slab failure.	3	4	12	
		Roads and Pavements.	Settlement (total and differential) of roads and pavements.	3	2	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (differential), causing damage to services.	1	2	2	Not anticipated to impact on services.
		Construction staff, vehicles	Trafficking of the site in temporary conditions.	2	3	6	The surface covering of the site is asphalt hardstanding. It is anticipated that this cover will remain during any construction works.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Soft / loose ground (low strength and high settlement potential).	The shallow deposits consist of loose Made Ground and Glaciofluvial Sheet Deposits, which consist of gravel and sand.	and plant operators.	Overturning of plant during construction.				
		Office/welfare building.	Foundation bearing capacity failure, settlement (total and differential).	2	4	8	Design foundations to found below any Made Ground.
			Floor slab failure.	2	4	8	
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	2	3	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace soft soils.
		Services.	Settlement (differential), causing damage to services.	1	3	3	Ground levels are remaining at approximately current levels. Settlements are not anticipated to be significant. No additional design requirements envisaged.
Shrinkage / swelling of the clay fraction of soils under the influence of vegetation.	Clay deposits encountered at 13.1m bgl underling the site as such, the potential for shrink swell behaviour is negligible.	Foundations.	Shrinkage or heave of soils and associated damage to foundations.	1	3	3	Foundations are not to be founded in cohesive deposits.
		Floor slabs.	Floor slab failure.	1	4	4	Clay deposits are at a depth to not influence the concrete slab.
Variable lateral and vertical changes in ground conditions.	The Made Ground soils are consistently a loose gravel.	Office/welfare building.	Foundation bearing capacity failure, settlement (total and differential).	2	4	8	Design foundations to found below Made Ground.Design foundations to found below any loose relative density sand and gravel or soft clay,or improve the Glaciofluvial Sheet Deposits prior to founding.
			Floor slab failure.	2	4	8	

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
	The shallow soils comprise Glaciofluvial Sheet Deposits, which vary vertically between clay, sand and silty sand with a loose to medium dense relative density.	Roads and Pavements.	Settlement (total and differential), of roads and pavements.	2	3	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace unsuitable soils.
		Services.	Settlement (differential), causing damage to services.	2	3	6	Settlements are not anticipated to be significant with regard to services. No additional design requirements envisaged.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	1	3	3	The surface covering of the site is asphalt hardstanding. It is anticipated that this cover will remain during any construction works.
Sulfates present in the soils.	The ground investigation has proven that there is the potential for expansive sulfate bearing soils to be present.	Attack of buried concrete.	Damage to concrete and reduction in strength.	4	4	16	Classify concrete in accordance with BRE SD1 and design concrete accordingly.
Adverse chemical ground conditions, (e.g. expansive slag).	No adverse chemical ground conditions encountered on site.	Concrete below ground.	Damage to concrete and reduction in strength.	1	4	4	No adverse ground conditions were encountered in the ground investigation.
Obstructions.	No obstructions encountered during the investigation. Existing services including a gas main present on site.	Construction staff, vehicles and plant operators.	Risk of collapse of excavation as obstructions are pulled out.	1	3	3	Obstructions are unlikely to be encountered.
		Roads and Pavements.	Hard spots in externals and roads / pavements.	1	2	2	

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Existing below ground structures to remain (on, or off-site tunnels, foundations, basements, and adjacent sub-structures).	No existing structures to remain on site.	Office/welfare building.	Foundation bearing capacity failure, settlement (differential).	1	4	4	No existing below ground structures to remain on site.
Shallow groundwater.	Monitoring after the ground investigations has proven a deep groundwater table	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	2	2	4	Shallow groundwater is unlikely to impact the site.
		Slopes and Retaining.	Serviceability issues.	3	2	6	
Changing groundwater conditions.	Monitoring after the ground investigations has shown that the groundwater on site is deep.	Construction staff, vehicles and plant operators.	Difficulty with excavation. Limit state failure, excessive deformation, trafficking of site plant, inability to place and compact fill.	1	2	2	Changing groundwater conditions are unlikely to impact the site.
		Slopes and Retaining.	Serviceability issues.	2	2	4	
Subject to risk from flooding.	Flooding is not anticipated to be a hazard to this site.	Office/welfare building.	Damage to building, roads and services.	2	4	8	The site is not at risk of flooding.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
Loose Made Ground, leading to difficulty with excavation and collapse of side walls.	The ground investigation has indicated that there is a potential for loose soils and Made Ground to be present at the site.	Construction staff, vehicles and plant operators.	Ground failure, instability of plant and machinery.	3	4	12	Contractor to appoint competent Temporary Works Designer to design temporary works, in accordance with BS 5975:2008+A1:2011. Temporary Works Design to include recommendations for inspection of excavations. No person entry to unsupported excavations.
			Risk of collapse of excavation.	4	3	12	
Slope stability issues – General Slopes.	The site is on sloping ground and the proposed development requires slopes to be formed as part of the cut to fill.	Office/welfare building.	Serviceability issues.	4	4	16	A separate geotechnical assessment of the slope stability should be undertaken independent of this report.
		Roads and Pavements.	Serviceability issues.	4	3	12	
Slope stability issues – retaining walls.	The site is on sloping ground and the proposed development requires retaining walls to be constructed.	Office/welfare building.	Serviceability issues.	3	4	12	No significant retaining walls are currently proposed; however, any that are specified should be designed in accordance with EC7. Low height retaining walls (up to 0.5m height) may be required to accommodate levels differences across the site. These will need design by the structural engineer or by the appointed design and build Contractor. Adequate drainage to be designed behind the structure, or for water seepage through the face of the wall. Lateral earth pressure parameters to be characterised during investigation and design. Engineered fill requirements to be defined at outline design stage.
		Pavement construction and long-term durability highways and external areas.	Serviceability issues.	3	3	6	
Earthworks – Settlement (due to placement of fill on soft / loose ground / Deep Made Ground).	The ground conditions at the site include up to 2.6m of loose Made Ground. A limited amount of cut and fill earthworks have	Office/welfare building.	Foundation bearing capacity failure, settlement (total and differential).	2	4	8	Design foundations to found below the Made Ground.
			Floor slab failure.	2	4	8	
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	2	3	6	Settlements are not anticipated to be significant with regard to roads and pavements.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
	been proposed to form the site levels.						Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate.
		Services.	Settlement (differential), causing damage to services.	2	3	6	Settlements are not anticipated to be significant with regard to services. Detailed design works are required to assess the impact and design mitigation measures.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	2	3	6	Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Earthworks – poor bearing capacity and / or settlement of new fill.	A limited amount of cut and fill earthworks have been proposed to form the site levels.	Office/welfare building.	Foundation bearing capacity failure, settlement (total and differential).	2	4	8	Design foundations to found below the Made Ground, within competent strata, or reengineered fill.
			Floor slab failure.	2	4	8	
		Roads and Pavements.	Settlement (total and differential).	2	3	6	Earthworks are anticipated to be limited. any earthworks proposed are to be designed in accordance with 1) Manual of Contract Documents for Highway Works (MCHW), Volume 1; 2) Specification for Highway Works (SHW) Series 600; 3) 6031:2009, Code of practice for earthworks; and 4) BS 8000-1, workmanship on building sites. Site testing to be undertaken to confirm the works are in accordance with the design. A suitable watching brief and independent verification.
		Services.	Settlement (differential), causing damage to services.	2	3	6	
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	2	3	6	
Earthworks – Unsuitability of site won material	A limited amount of cut and fill earthworks have	Earthworks control, inability to place and compact fill.	Service limit state failure, excessive and intolerable total and differential settlement.	2	3	6	Should earthworks be required, supplementary earthworks testing and an earthworks specification will be necessary to ensure the appropriate management and reuse of the existing soils.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
to be reused as fill.	been proposed to form the site levels.	Project Budgets - Insufficient fill to complete earthworks.	Additional Costs, due to importation of fill or having to modify designs.	2	2	4	
Mining.	Although located within an area at risk from mining the risk to the site is considered to be low.	Office/welfare building.	Reduction of lateral support potentially affecting stability of the structure.	1	5	5	Mining is not a risk to the site.
			Floor slab failure.	1	5	5	
		Roads and Pavements.	Serviceability affected.	1	3	3	
		Services.	Damage to services. Leaking drainage causing inundation and further collapse.	1	3	3	
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	1	3	3	
Problematic soils (silts and rewetting etc.).		Office/welfare building.	Foundation bearing capacity failure, settlement (total and differential).	2	4	8	Design foundations to found below any problematic soils or reengineered Glaciofluvial Sheet Deposits.
			Floor slab failure.	2	4	8	
		Roads and Pavements.	Settlement (total and differential), of roads and pavements.	2	3	6	Design roads and pavements using suitable geotechnical parameters and increase the sub-base and use geo-grids as appropriate. If anticipated settlements are significant, and cannot be mitigated by design, over-excavate and replace soft soils or undertake ground improvement.

Hazard	Comments	Who is at Risk	Consequence	Risk Before Mitigation			Actions Required
				P	I	R	
		Services.	Settlement (differential), causing damage to services.	2	3	6	Ground levels are remaining at approximately current levels. Settlements are not anticipated to be significant. No additional design requirements envisaged.
		Construction staff, vehicles and plant operators.	Trafficking of the site in temporary conditions. Overturning of plant during construction.	2	3	6	Where soft spots encountered, over-excavate and replace with suitable fill. Design working platform to suit the ground conditions. Site inspection and watching brief by Contractor to review working platform frequently and regularly.
Unforeseen ground conditions - risk associated with limited data.	Ground investigation has been undertaken. Ground conditions are only defined at exploratory hole locations.	All aspects of the development		3	4	12	Designers to be contacted if conditions encountered are different to those identified during investigation. Regular inspections of excavations and earthworks for evidence of stability.

Whilst the probability and impact of the hazard occurring can be reduced to a minimum by geotechnical design, the impact cannot be reduced below very low. The risk register will need to be up-dated, as necessary, to reflect design, additional information, data and experience as it is gained through the construction process.

Impacts of the design with regard to health and Safety considerations will need to be included by the designer at design stage.

Appendix K Plausible source-pathway-receptor contaminant linkages

Summary of potential contaminant linkages

Table K.2 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in LCRM (2023) and additional risk assessment is required.

Source – Pathway – Receptor Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but modified to add a 'no linkage' category and to remove low/moderate risk (See Table K.1).

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

Table K.1: Consequence versus probability assessment.

		Consequence			
Probability		Severe	Medium	Mild	Minor
	High Likelihood	Very high risk	High risk	Moderate risk	Low risk
	Likely	High risk	Moderate risk	Low risk	Very low risk
	Low Likelihood	Moderate risk	Low risk	Low risk	Very low risk
	Unlikely	Low risk	Very low risk	Very low risk	Very low risk
	No Linkage	No risk			

Table K.2: Exposure model – final source-pathway-receptor contaminant linkages

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments	
Made Ground, associated with historical construction of the existing car park and imported fill to form a level site at the top of the slope, possibly including elevated concentrations of metals, metalloids, asbestos fibres, Asbestos Containing Materials and PAH (S01).	Ingestion, skin contact, inhalation of dust and outdoor air by people (P01).	People (neighbours, site end users) (R01).	Low likelihood	Medium	Low	There is Made Ground below the entire site, however, all contaminants are below the GACs for the proposed end use of the site and as such no source is likely to be present.	Contact with these materials is unlikely due to the surface covering for the entire site being asphalt hardstanding.
	Migration of contaminant via leachate or dissolved phase migration through the unsaturated zone in the Made Ground and Glaciofluvial Sheet Deposits (P04).	Groundwater: Secondary A aquifer within the Glaciofluvial Sheet Deposits and Principal aquifer status of the Chester Formation (R03).	Low likelihood	Medium	Low		Elevated concentrations of cadmium, cobalt, copper, manganese, nickel, sodium and zinc are present within the groundwater in the Glaciofluvial Sheet Deposits. These contaminants are likely from an off-site source and unlikely to impact the site. The presence of hardstanding across the site will prevent infiltration that could lead to leaching, and the proposed redevelopment maintains hardstanding cover across the site
	Surface water via base flow from groundwater (P05).	Surface water: River Irk, 250m east (R04).	Low likelihood	Medium	Low		The cohesive Glacial Till deposits underlying the Glaciofluvial Sheet Deposits are likely to limit both downwards migration of groundwater to the principal aquifer below and base flow towards the River Irk.
	Direct contact (P06)	Water supply pipes (R05)	Likely	Medium	Moderate	Screening against UKWIR thresholds indicates that should any water pipelines be laid at depths within the shallow Made Ground, barrier pipe is likely to be required due to the presence of organic contaminants (Total VOCs). Because the requirements from individual water companies can vary, confirmation of pipeline requirements should be sought from the relevant water supply company at the earliest opportunity. Further testing of Made Ground and natural soils may be required to complete a formal water pipe risk assessment.	

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
Ground gases (carbon dioxide and methane) from organic materials in the Made Ground (S02).	Ground gas ingress via permeable soils and/or construction gaps (P02).	People (neighbours, site end users) (R01).	Unlikely	Medium to severe	Very low to Low	There is Made Ground underlying the entire site, considered a very low risk gas source. Gas monitoring at the site is ongoing however the results from the first three rounds indicate elevated concentration of carbon dioxide in both the Made Ground and natural deposits. However, as these are likely attributed to microbial respiration within the Glaciofluvial Sheet Deposits with negligible flow rates recorded it is unlikely to pose a risk to the site/development. Characteristic Situation 1 conditions are provisionally concluded, though updated conclusions will be available following completion of the gas monitoring commission.
		Development end use (office building/parking) (R02).				
Continued on next page...						
Petroleum hydrocarbons potentially associated	Ingestion, skin contact, inhalation of	People (neighbours, site end users) (R01).	Low likelihood	Medium	Low	The entire site is covered by hardstanding and will remain covered, limiting any contact with the Made Ground.

Sources	Possible Pathways	Receptors	Probability	Consequence	Risk Level	Comments
with uncontrolled spillages and poor condition of the existing hardstanding (S03).	dust and outdoor air by people (P01).					
	Petroleum hydrocarbon vapour ingress via permeable soils and/or construction gaps (P03).	People (neighbours, site end users) (R01).	Low likelihood	Medium	Low	Petroleum hydrocarbon odours were noted at CP101 in the shallow Made Ground, but they were not encountered in high enough concentrations that would indicate the presence of a free-phase hydrocarbon source which could produce vapours.
	Migration of contaminant via leachate or dissolved phase migration through the unsaturated zone in the Made Ground and Glaciofluvial Sheet Deposits (P04).	Groundwater: Secondary A aquifer within the Glaciofluvial Sheet Deposits and Principal aquifer status of the Chester Formation (R03).	Low likelihood	Medium	Low	Groundwater within the Glaciofluvial Sheet Deposits are likely in hydraulic continuity with the River Irk. Petroleum hydrocarbon concentrations are below the GACs for the proposed end use of the site and as such no significant source is likely to be present. The presence of good-condition hardstanding across the site will prevent infiltration that could lead to leaching, and the proposed redevelopment maintains hardstanding cover across the site. The cohesive Glacial Till deposits underlying the Glaciofluvial Sheet Deposits are likely to limit both downwards migration of groundwater to the principal aquifer below and base flow towards the River Irk.
	Surface water via base flow from groundwater (P05).	Surface water: River Irk, 250m east (R04).	Low likelihood	Medium	Low	
	Direct contact (P06)	Water supply pipes (R05)	Likely	Medium	Moderate	Petroleum hydrocarbon odours were noted at CP101 in the shallow Made Ground, and screening against UKWIR thresholds shows an exceedance at CP101 0.3m bgl for C10-EC16 aliphatic and aromatic hydrocarbons. Because the requirements from individual water companies can vary, confirmation of pipeline requirements should be sought from the relevant water supply company at the earliest opportunity. Further testing of Made Ground and natural soils may be required to complete a formal water pipe risk assessment. Petroleum hydrocarbons were not encountered in high enough concentrations to exceed the thresholds for potable water supply, or PVC-U/PP/PE pipework (200 mg/kg).

Appendix L Climate Change Considerations for C-S-M

Table X.1 summarises the considerations that have been made in relation the possible implications of predicted climate change. These considerations have been made with reference to prevailing guidance on climate change and land contamination (SoBRA (2022), CL:AIRE (2022), Environment Agency (2010)), and climate change information published by the Met Office and the Environment Agency.

Table X.1: Possible CSM considerations related to climate change.

Climate change type	Potential climate change induced effect	Possible considerations on CSM
Increase in frequency and severity of extreme rainfall events	Temporary increasing in groundwater levels	As the groundwater at the site is not shallow increased groundwater levels are unlikely to impact on groundwater flooding. Temporary increases in groundwater level could impact the ground gas regime at the site as rising groundwater could change the relative pressure and increase gas migration.
	Increased surface run-off	Site is covered in hardstanding with associated surface water drainage. Surface water run-off will impact drainage network (in terms of volume of water) but is not expected to impact underlying ground conditions. Furthermore, the site is at the top of a slope, any increase in surface water will not impact the site.
	Land-based erosion	Not anticipated to impact the site.
	River flooding	Not anticipated to impact the site.
Increase in frequency and severity of extreme cold and hot weather events	Soil freezing	Could cause failure of surface water drainage network (requiring repair) due to freeze/thaw action but not evident that this would cause a significant change to identified contaminant linkages.
	Soil desiccation/shrinkage	Relatively granular nature of superficial deposits does not suggest a risk from shrinkage-related subsidence.
	Land fires	Not relevant to current nature and location of site.
	Temporary drop in water (GW and/or SW) levels due to increased water abstraction demand	Underlying Principal aquifer does not have any licenced abstractions registered within 1km of the site. Impact of a drop in water levels in the aquifers not expected to adversely affect identified contaminant linkages.
	Temporary drop in water levels (GW and/or SW) due to lower rainfall.	Not anticipated to impact the site.
Long-term sea level rise	Coastal erosion	Not anticipated to impact the site.
	Saline intrusion and marine inundation	RCP8.5 predicts a sea level rise of 0.7m by 2100. An increase in sea level could result in an increase in tidally influenced groundwater fluctuation and changes in groundwater flow patterns. The predicted rise in sea level could increase the potential for saline intrusion within the sandstone aquifer.

Long-term increase in rainfall	Increase in groundwater levels	The site is located within a river catchment that eFLAG predicts will see an increase of 2.7mm per day in groundwater recharge in winter months.
Long-term decrease in rainfall	Decrease in groundwater levels	See comment above for temporary decrease in groundwater levels above. Whilst it is expected that there will be an increase in winter rainfall it is also expected that there will be a reduction in summer rainfall such that there will be a long-term increase in the expected seasonal fluctuation in shallow groundwater depth. This is unlikely to adversely affect identified contaminant linkages.
Long-term change in seasonal temperatures	Change in soil temperature	Worst-case (RCP8.5) prediction for average summer temperatures in 2060-2080 in this area is 6-7 degrees Celsius. Soil temperature at depth below the site (considering the surface cover of buildings and concrete hardstanding) is not expected to rise by this amount and may see a much smaller rise in average temperature as a result of seasonal variation in temperature. A small increase in average soil temperature is not expected to have a significant effect on contaminant fate and transport.