APPENDIX G: SOIL CLASSIFICATION REPORT

Units 1 & 2
Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

Telephone: (0151) 545 2750
Fax: (0151) 548 7892
Email: enquiries@ccgeotechnical.com
www.ccgeotechnical.com

CC GEOTECHNICAL LTD
Consulting Geoenvironmental and Geotechnical Engineers

LABORATORY REPORT

CONTRACT NUMBER: CCG-C-24-15006

CONTRACT TITLE: HUDDERSFIELD MARKET PLACE

CLIENT: SANDERSON WATTS ASSOCIATES
100 Chapel Ln, Wigan WN3 4HG

DATE RECEIVED: 07/03/25
DATE COMMENCED: 07/03/25
DATE COMPLETED: 01/05/25
REPORT DATE: 08/05/25

Test Description	Qty
Determination of Moisture Content BS 1377-2:1990 (a)	20
Determination of Liquid & Plastic Limits BS 1377-2:1990 (a)	20

Notes: Observations and interpretations are not accredited by UKAS
All testing undertaken at laboratory permanent facilities
# denotes non-accredited test
a denotes UKAS accredited test
s denotes test undertaken by approved subcontractor
Test results only relate to the samples tested

Approved Signatories: Chris Bolan (Managing Director) – Daniel Kerfoot (Laboratory Manager)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH01	U	1.40	1.40	28	-	-	-	45	25	20	98	CI	Y	Brown slightly sandy silty CLAY. (BS1377Pt2:3.2,4.4,5)
BH01	U	2.30	2.30	21	-	-	-	37	19	18	94	CI	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH01	U	3.50	3.50	13	-	-	-	30	17	13	81	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 12.03.25

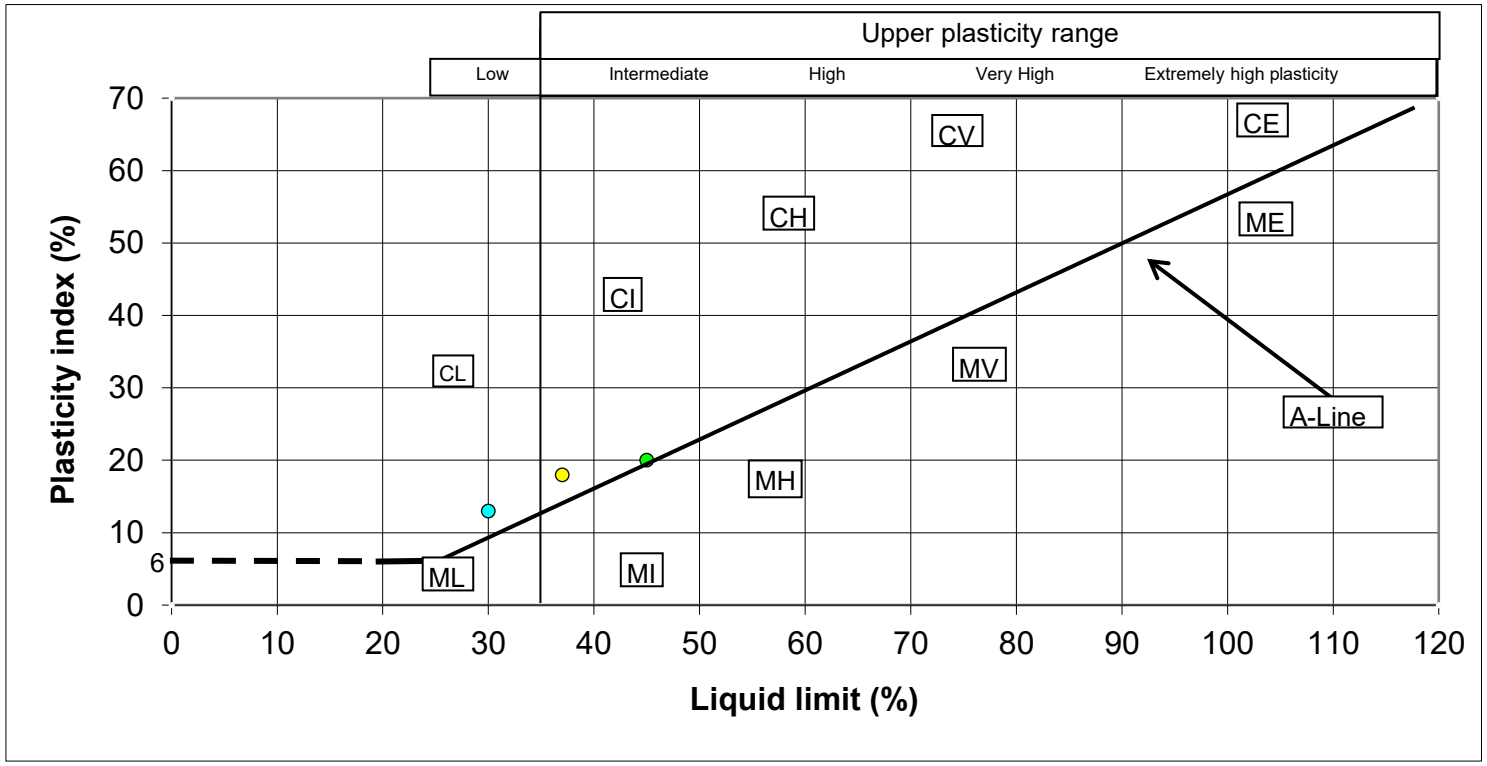
CLIENT: SANDERSON WATTS ASSOCIATES

UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH01	1.40	45.0	20.0
BH01	2.30	37.0	18.0
BH01	3.50	30.0	13.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH02	U	1.40	1.40	33	-	-	-	45	25	20	96	CI	Y	Greyish brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)
BH02	U	2.20	2.20	14	-	-	-	30	18	12	88	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH02	U	3.20	3.20	14	-	-	-	29	17	12	73	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 18.03.25

CLIENT: SANDERSON WATTS ASSOCIATES

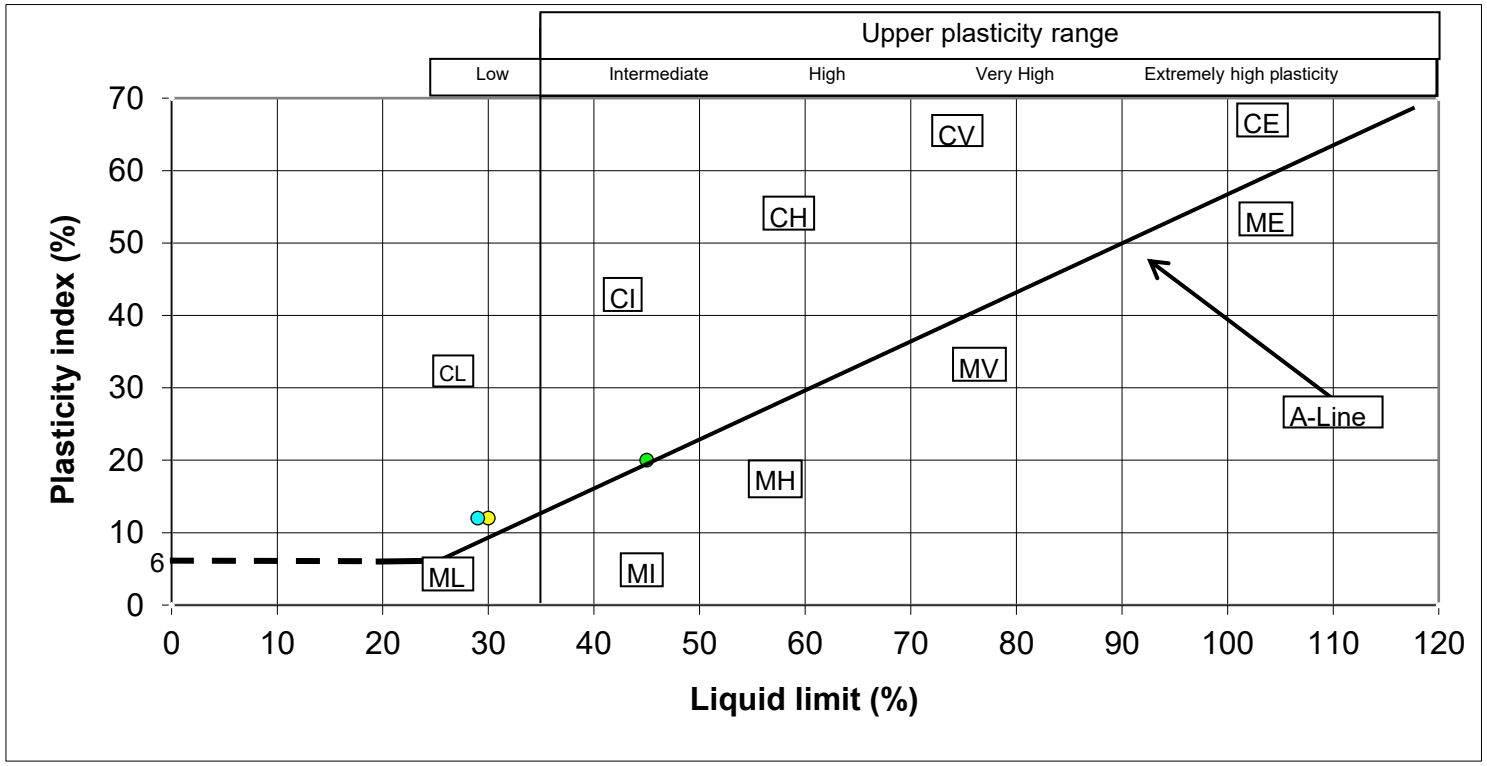
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH02	1.40	45.0	20.0
BH02	2.20	30.0	12.0
BH02	3.20	29.0	12.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH03	U	1.80	1.80	17	-	-	-	29	16	13	83	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)
BH03	U	3.40	3.40	15	-	-	-	32	18	14	94	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 17.03.25

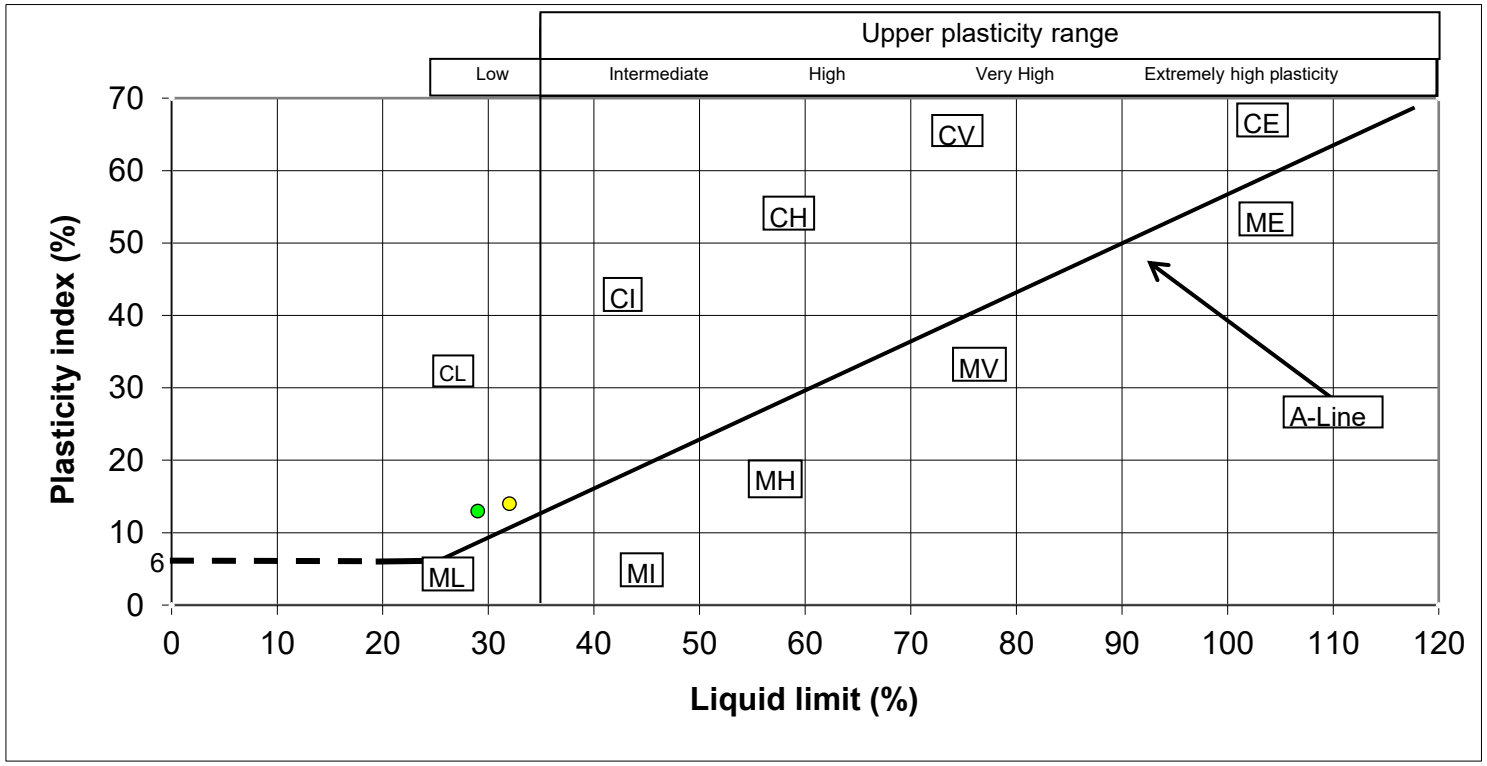
CLIENT: SANDERSON WATTS ASSOCIATES

UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH03	1.80	29.0	13.0
BH03	3.40	32.0	14.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH04	U	1.60	1.60	40	-	-	-	48	22	26	98	CI	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)
BH04	U	2.50	2.50	16	-	-	-	33	16	17	91	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 30.04.25

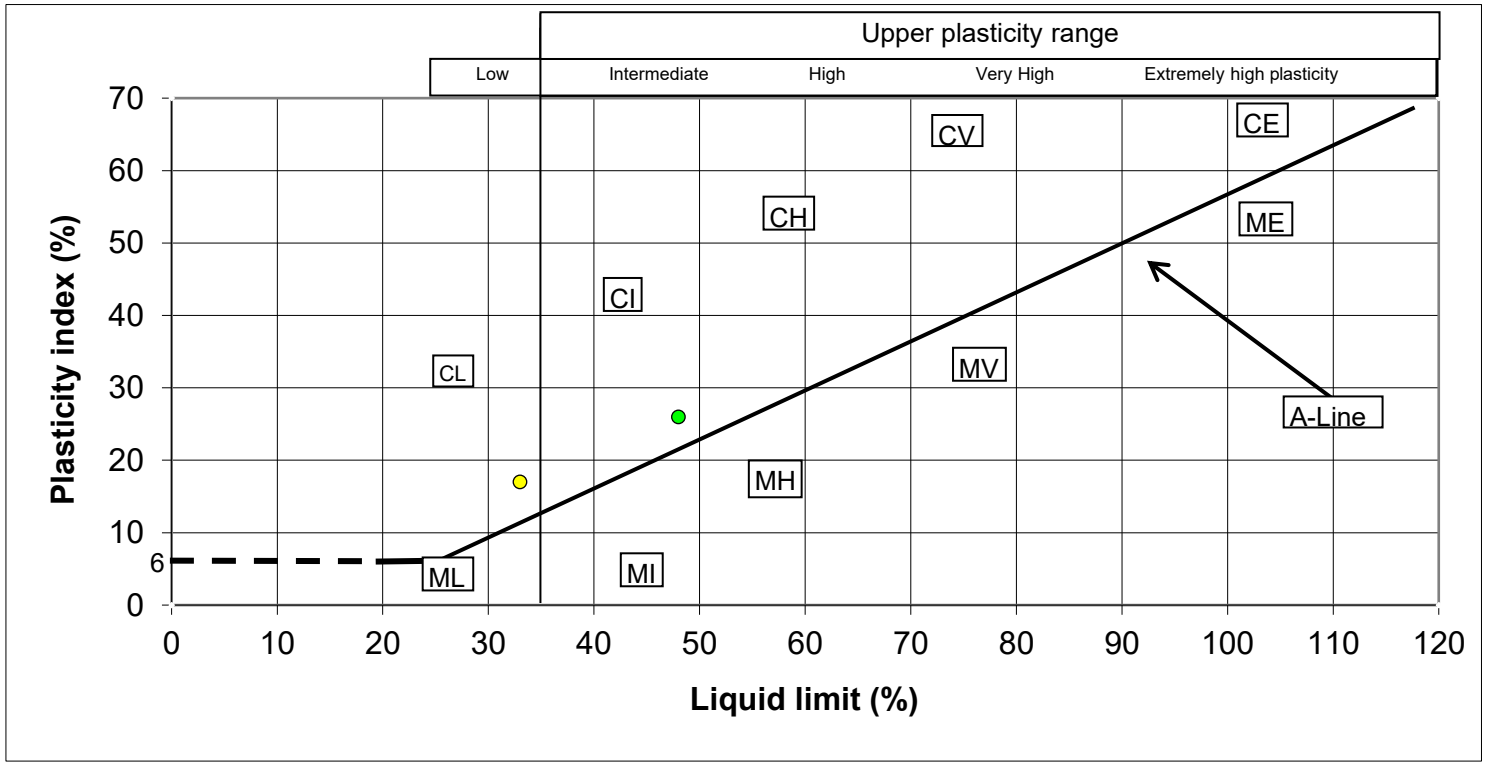
CLIENT: SANDERSON WATTS ASSOCIATES

UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH04	1.60	48.0	26.0
BH04	2.50	33.0	17.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	Shear Strength (kN/m^2)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH05	U	1.20	1.60	30	-	-	-	40	19	21	98	CI	Y	Light brownish grey slightly sandy slightly gravelly silty CLAY. Gravel is fine to medium subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)
BH05	U	1.80	2.50	18	-	-	-	32	16	16	97	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH05	U	2.50	2.50	15	-	-	-	27	14	13	95	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 30.04.25

CLIENT: SANDERSON WATTS ASSOCIATES

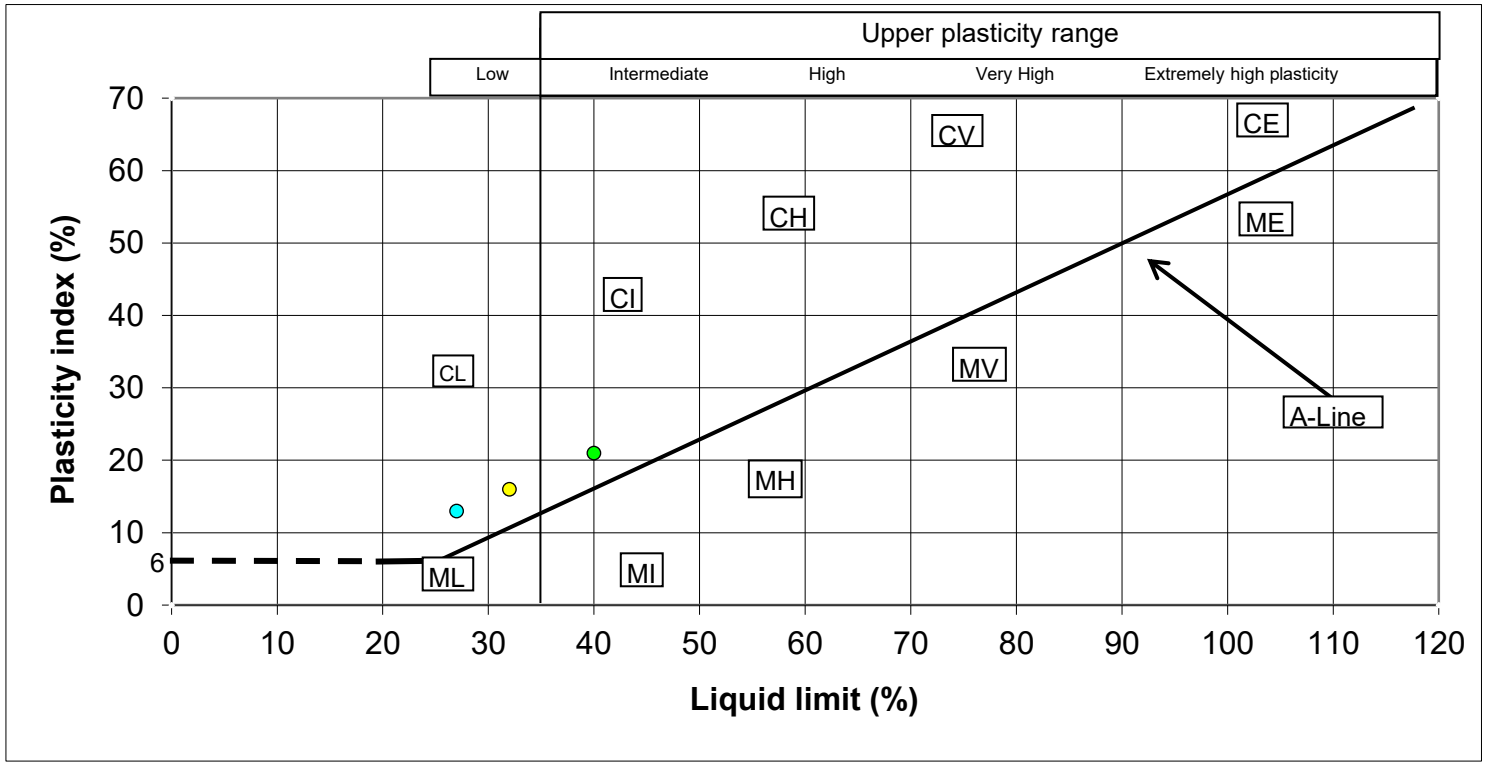
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH05	1.20	40.0	21.0
BH05	1.80	32.0	16.0
BH05	2.50	27.0	13.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH06	U	1.20	1.20	30	-	-	-	43	20	23	90	CI	Y	Light greyish brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone and mudstone. (BS1377Pt2:3.2,4.4,5)
BH06	U	2.50	2.50	15	-	-	-	31	16	15	87	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 30.04.25

CLIENT: SANDERSON WATTS ASSOCIATES

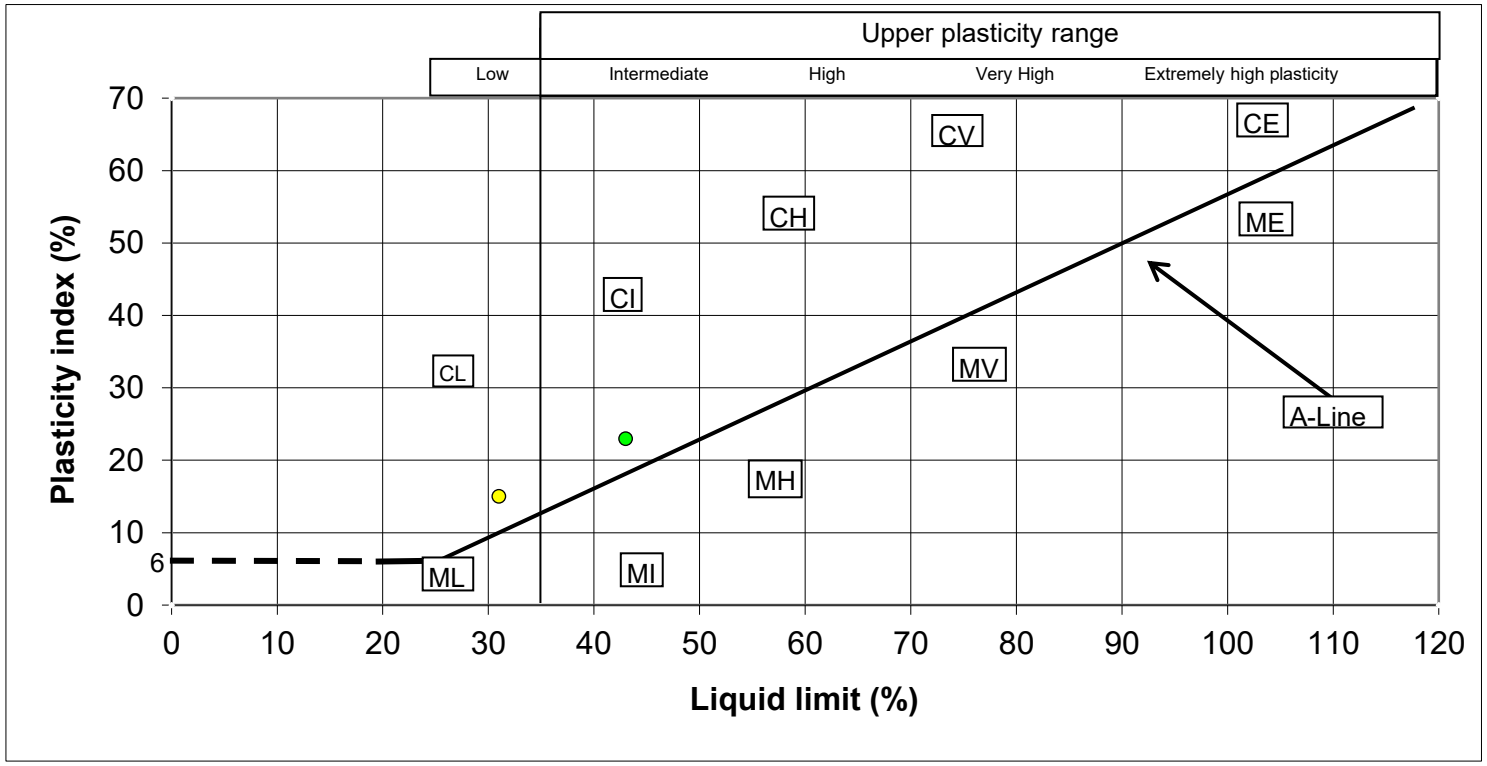
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH06	1.20	43.0	23.0
BH06	2.50	31.0	15.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH07	U	1.00	1.00	17	-	-	-	31	15	16	94	CL	Y	Dark brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH07	U	1.80	1.80	28	-	-	-	45	20	25	96	CI	Y	Light brownish grey slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH07	U	2.50	2.50	16	-	-	-	32	16	16	90	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 30.04.25

CLIENT: SANDERSON WATTS ASSOCIATES

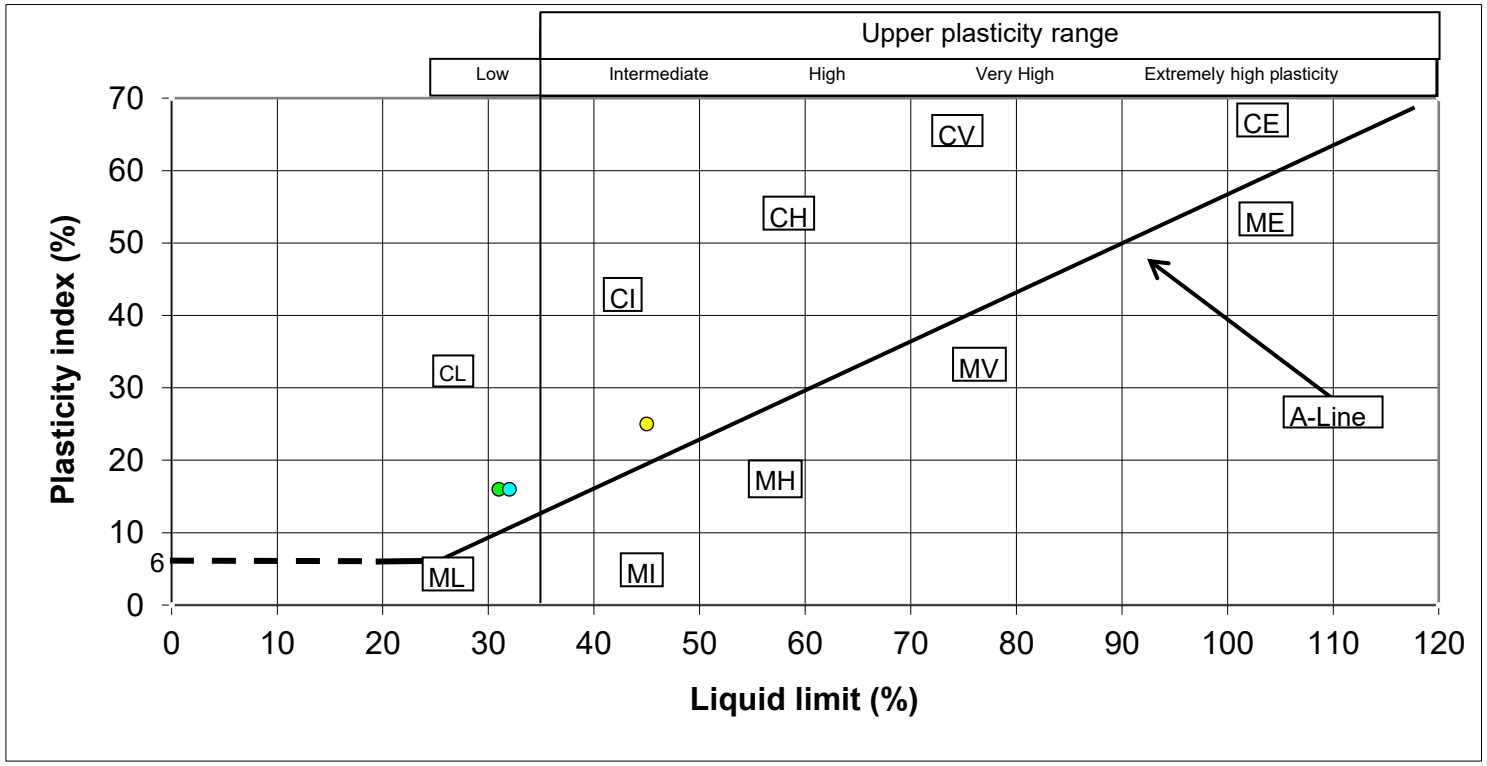
UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET

BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH07	1.00	31.0	16.0
BH07	1.80	45.0	25.0
BH07	2.50	32.0	16.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

SUMMARY OF LABORATORY SOIL TEST RESULTS

BH / TP / WS Number	Sample Type	Depth From (m)	Depth To (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Shear Strength (kN/m²)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 0.425mm (%)	Soil Classification	UKAS accredited test (Y/N)	Description / Test Method Samples described in accordance with BS EN ISO 14688-2 2004
BH09	U	1.70	1.70	31	-	-	-	40	19	21	94	CI	Y	Light brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)
BH09	U	2.50	2.50	14	-	-	-	31	16	15	85	CL	Y	Brown slightly sandy slightly gravelly silty CLAY. Gravel is fine to coarse subangular sandstone. (BS1377Pt2:3.2,4.4,5)

SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006) DATE: 30.04.25

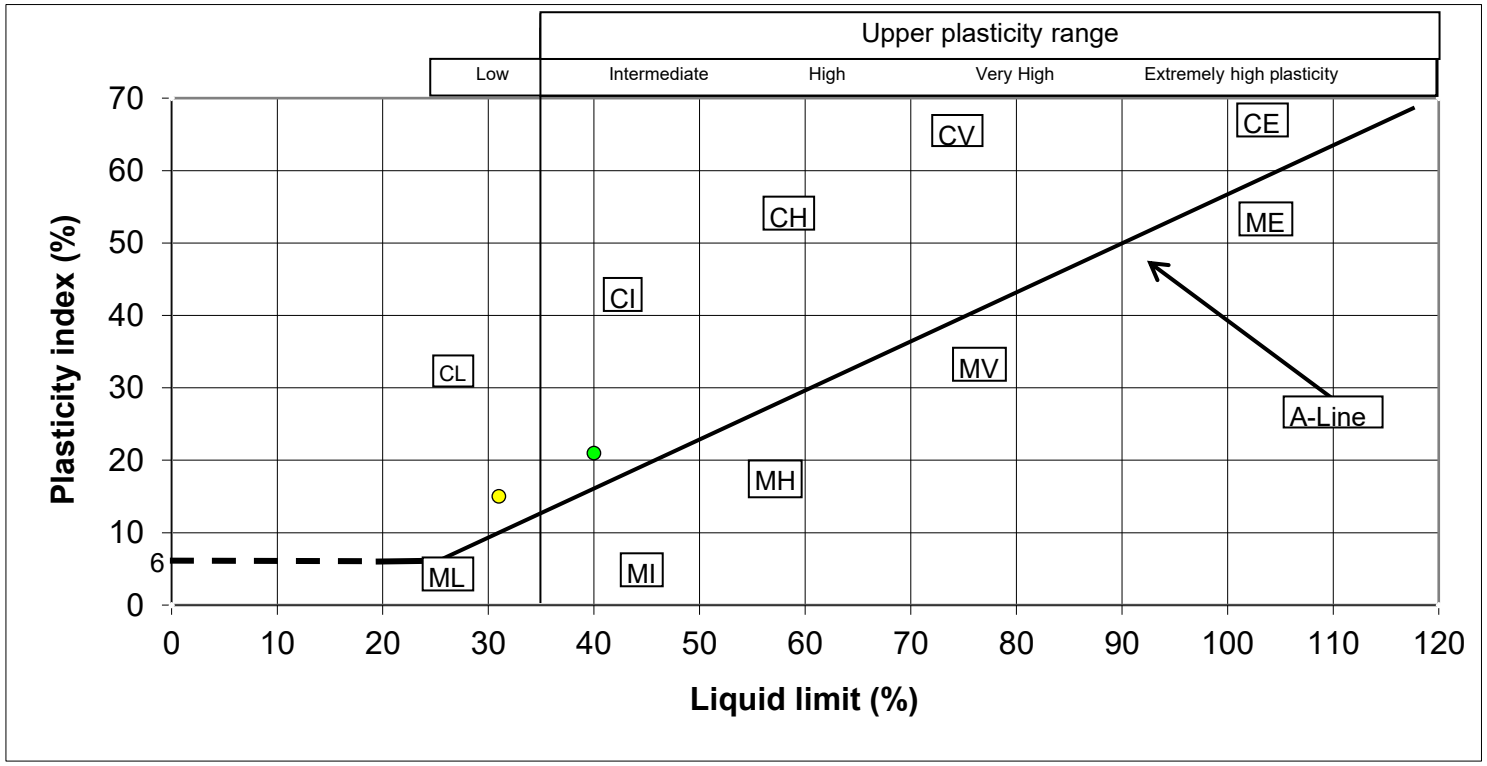
CLIENT: SANDERSON WATTS ASSOCIATES

UKAS TESTING 4514

Key:- BD = Bulk Disturbed; SD = Small Disturbed; U100 = Undisturbed 100mm; WS = Window Sample
CL = Low Plasticity; CI = Intermediate; CH = High; CV = Very high; CE = Extremely high; NP = Non-plastic
(* Denotes Hand Shear Vane test result)
Sample description not accredited by UKAS

ATTERBERG TEST RESULT SHEET
BS 1377:Part 2:1990:cl 4.4,5

SILT (M-SOIL), M plots below A-Line , CLAY,C, plots above A-Line, M and C may be combined as FINE SOIL, F.



BH	Sample Depth	Liquid limit	Plasticity index
BH09	1.70	40.0	21.0
BH09	2.50	31.0	15.0

UKAS TESTING
4514

APPROVED BY	DK

CLIENT: SANDERSON WATTS ASSOCIATES	SITE: HUDDERSFIELD MARKET PLACE (CCG-C-24-15006)

Huddersfield Open Market Place *'Soil Plasticity vs Desiccation'*

	a	b	c	d	e	f	g	h	i	j	k	l
Borehole	**Depth (mbgl)**	**% Retained on 425µm Sieve (=100-c)**	**% Passing 425µm Sieve**	**Plastic Limit (%)**	**Plasticity Index (Ip)/%**	**Liquid Limit (W_l)/%**	**Moisture Content (W)/%**	**Modified Plasticity Index (I'p/%) = (e*c/100)**	**Clay Classification**	**Climate Zone (NHBC Table 3b)**	***TRRL =(0.4*LL)**	****BRE Digest 412 Liquid Index (LI=(W-PL)/(LL-PL)**
BH01	1.4	2	98	25	20	45	28	19.6	CI	0.15 (150mm)	18.0	0.15
BH01	2.3	6	94	19	18	37	21	16.9	CI	0.15 (150mm)	14.8	0.11
BH01	3.5	19	81	17	13	30	13	10.5	CL	0.15 (150mm)	12.0	-0.31
BH02	1.4	4	96	25	20	45	33	19.2	CL	0.15 (150mm)	18.0	0.40
BH02	2.2	12	88	18	12	30	14	10.6	CL	0.15 (150mm)	12.0	-0.33
BH03	1.8	17	83	16	13	29	17	10.8	CL	0.15 (150mm)	11.6	0.08
BH03	3.4	6	94	18	14	32	15	13.2	CL	0.15 (150mm)	12.8	-0.21
BH04	1.6	2	98	22	26	48	40	25.5	CI	0.15 (150mm)	19.2	0.69
BH04	2.5	9	91	16	17	33	16	15.5	CL	0.15 (150mm)	13.2	0.00
BH05	1.2	2	98	19	21	40	30	20.6	CI	0.15 (150mm)	16.0	0.52
BH05	1.8	3	97	16	16	32	18	15.5	CL	0.15 (150mm)	12.8	0.13
BH06	1.2	10	90	20	23	43	30	20.7	CI	0.15 (150mm)	17.2	0.43
BH06	2.5	13	87	16	15	31	15	13.1	CL	0.15 (150mm)	12.4	-0.07
BH07	1.0	6	94	15	16	31	17	15.0	CL	0.15 (150mm)	12.4	0.13
BH07	1.8	4	96	20	25	45	28	24.0	CI	0.15 (150mm)	18.0	0.32
BH07	2.5	10	90	16	16	32	16	14.4	CL	0.15 (150mm)	12.8	0.00
BH09	1.7	6	94	19	21	40	31	19.7	CI	0.15 (150mm)	16.0	0.57
BH09	2.5	15	85	16	15	31	14	12.8	CL	0.15 (150mm)	12.4	-0.13

**Where W is less than the TRRL value then dessication is indicated*

***Where negitive liquid Index is calculated then desiccation is indicated*

NHBC: Table 1: Modified Plasticity Index Related to Volume Change Potential	
Modified Plasticty Index	**Volume Change Potential**
40% & greater	**High**
20% to less than 40%	**Medium**
10% to less than 20%	**Low**

APPENDIX H: SOIL – GROUNDWATER CONTAMINATION REPORT

CC Geotechnical
Unit 1-2 Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

t: 0151 545 2750

e: tony.gerrard@ccgeotechnical.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-011703

Project / Site name:	Huddersfield Market	Samples received on:	25/02/2025
Your job number:	CCG-C-24-15006	Samples instructed on/ Analysis started on:	10/03/2025
Your order number:	CCG-PO-15006	Analysis completed by:	15/03/2025
Report Issue Number:	1	Report issued on:	17/03/2025
Samples Analysed:	1 soil sample		

Signed:

Rachel Chappell
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-011703
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				475924
Sample Reference				WS1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				21/02/2025
Time Taken				0900
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	34.4
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.1	NONE	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SCA
Analysis completed	N/A	N/A	N/A	13/03/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.389
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	3000
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1510
Sulphide	mg/kg	1	MCERTS	5
Organic Matter (automated)	%	0.1	MCERTS	2.5

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.78
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.46
Fluorene	mg/kg	0.05	MCERTS	0.38
Phenanthrene	mg/kg	0.05	MCERTS	3.4
Anthracene	mg/kg	0.05	MCERTS	0.58
Fluoranthene	mg/kg	0.05	MCERTS	3
Pyrene	mg/kg	0.05	MCERTS	2.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5
Chrysene	mg/kg	0.05	MCERTS	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.5
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.66
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.56
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.69

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	19.8

Analytical Report Number: 25-011703
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				475924
Sample Reference				WS1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				21/02/2025
Time Taken				0900
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	51
Lead (aqua regia extractable)	mg/kg	1	MCERTS	180
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	54
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	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 EH_CU_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aliphatic >EC5 - EC40 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10
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	2.8
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	12
TPHCWG - Aromatic >EC35 - EC40 EH_CU_1D_AR	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC40 EH_CU+HS_1D_AR	mg/kg	10	NONE	15
TPH Total >EC5 - EC40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	15
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 : 25-011703
Project / Site name: Huddersfield Market

* 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 *
475924	WS1	None Supplied	0.5	Brown clay and sand with gravel and stones

Analytical Report Number : 25-011703
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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
Organic matter (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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	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
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
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

Analytical Report Number : 25-011703
Project / Site name: Huddersfield Market

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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 : 25-011703
Project / Site name: Huddersfield Market

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
WS1	N/A	S	475924	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS1	N/A	S	475924	c	Free cyanide in soil	L080-PL	c
WS1	N/A	S	475924	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS1	N/A	S	475924	c	Sulphide in soil	L010-PL	c
WS1	N/A	S	475924	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS1	N/A	S	475924	c	pH in soil (automated)	L099-PL	c

CC Geotechnical
Unit 1-2 Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

t: 0151 545 2750

e: tony.gerrard@ccgeotechnical.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-011704

Project / Site name:	Huddersfield Market	Samples received on:	25/02/2025
Your job number:	CCG-C-24-15006	Samples instructed on/ Analysis started on:	10/03/2025
Your order number:	CCG-PO-15006	Analysis completed by:	14/03/2025
Report Issue Number:	1	Report issued on:	14/03/2025
Samples Analysed:	10:1 WAC sample		

Signed:

Dominika Liana
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-011704
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				475925
Sample Reference				WS1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				21/02/2025
Time Taken				0900
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	34.4
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.1	NONE	0.8

General Inorganics

pH (L005B)	pH Units	N/A	MCERTS	9.3
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.5
Loss on Ignition @ 450°C	%	0.2	MCERTS	5.5
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	89

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.78
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.46
Fluorene	mg/kg	0.05	MCERTS	0.38
Phenanthrene	mg/kg	0.05	MCERTS	3.4
Anthracene	mg/kg	0.05	MCERTS	0.58
Fluoranthene	mg/kg	0.05	MCERTS	3
Pyrene	mg/kg	0.05	MCERTS	2.9
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5
Chrysene	mg/kg	0.05	MCERTS	1.9
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.5
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.66
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.56
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.19
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.69
Coronene	mg/kg	0.05	NONE	0.3

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	20.1

Petroleum Hydrocarbons

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

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

Analytical Report Number: 25-011704
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				475925
Sample Reference				WS1
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				21/02/2025
Time Taken				0900
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

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

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-011704						
					Client: CCGEO		
Location	Huddersfield Market						
Lab Reference (Sample Number)	475925				Landfill Waste Acceptance Criteria Limits		
Sampling Date	21/02/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	WS1						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	1.5				3%	5%	6%
Loss on Ignition (%) **	5.5				--	--	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)	20.1				100	--	--
pH (units)**	9.3				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	89				--	To be evaluated	To be evaluated
Eluate Analysis	10:1			10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
(BS EN 12457 - 2 preparation utilising end over end leaching procedure)	mg/l			mg/kg			
Arsenic *	0.00590			0.0590	0.5	2	25
Barium *	0.0133			0.133	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0095			0.095	0.5	10	70
Copper *	0.012			0.12	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.0138			0.138	0.5	10	30
Nickel *	< 0.00030			< 0.0030	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0021			0.021	4	50	200
Chloride *	11			110	800	15000	25000
Fluoride*	0.26			2.6	10	150	500
Sulphate *	89			890	1000	20000	50000
TDS*	170			1700	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.65			46.5	500	800	1000
Leach Test Information							
Stone Content (%)	34.4						
Sample Mass (kg)	0.8						
Dry Matter (%)	86						
Moisture (%)	14						

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.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

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 : 25-011704
Project / Site name: Huddersfield Market

* 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 *
475925	WS1	None Supplied	0.5	Brown clay and sand with gravel and stones

Analytical Report Number : 25-011704
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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

Analytical Report Number : 25-011704
Project / Site name: Huddersfield Market

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser	In-house based on MEWAM Method ISBN 0117516260	L082B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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 : 25-011704
Project / Site name: Huddersfield Market

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
WS1	N/A	S	475925	c	BTEX and/or Volatile organic compounds in soil	L073B	c
WS1	N/A	S	475925	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
WS1	N/A	S	475925	c	Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
WS1	N/A	S	475925	c	pH at 20°C in soil	L005B	c

CC Geotechnical
Unit 1-2 Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

t: 0151 545 2750

e: tony.gerrard@ccgeotechnical.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-012132

Project / Site name:	Huddersfield Market	Samples received on:	11/03/2025
Your job number:	CCG-C-24-15006	Samples instructed on/ Analysis started on:	11/03/2025
Your order number:	CCG-PO-15006	Analysis completed by:	21/03/2025
Report Issue Number:	1	Report issued on:	21/03/2025
Samples Analysed:	3 soil samples		

Signed:

Rachel Chappell
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-012132
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				478161	478162	478163
Sample Reference				TP01	TP12	TP16
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A
Depth (m)				0.50	0.50	0.60
Date Sampled				03/03/2025	26/02/2025	09/03/2025
Time Taken				0900	0900	0900
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	43	26.3
Moisture Content	%	0.01	NONE	15	13	14
Total mass of sample received	kg	0.1	NONE	0.5	0.7	0.7

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MMI	MMI	MMI
Analysis completed	N/A	N/A	N/A	14/03/2025	14/03/2025	14/03/2025

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.7	10.5	8.5
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.057	0.241	0.136
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	47	750	710
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	23.7	376	357
Sulphide	mg/kg	1	MCERTS	< 1.0	2.9	2.4
Organic Matter (automated)	%	0.1	MCERTS	3	2.3	3

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	8	0.7	2.2
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.12	0.29
Acenaphthene	mg/kg	0.05	MCERTS	4.6	0.43	2.6
Fluorene	mg/kg	0.05	MCERTS	3.4	0.3	1.9
Phenanthrene	mg/kg	0.05	MCERTS	20	3	16
Anthracene	mg/kg	0.05	MCERTS	4.3	0.59	3.1
Fluoranthene	mg/kg	0.05	MCERTS	20	5.6	17
Pyrene	mg/kg	0.05	MCERTS	19	5.7	17
Benzo(a)anthracene	mg/kg	0.05	MCERTS	10	3.2	8
Chrysene	mg/kg	0.05	MCERTS	11	3.4	9.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	8	4.7	9.3
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	4.8	2.1	2.8
Benzo(a)pyrene	mg/kg	0.05	MCERTS	7.9	3.6	7.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	4.1	2.3	3
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.3	0.54	0.8
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3	2.6	3.7

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	131	39	104

Analytical Report Number: 25-012132
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				478161	478162	478163
Sample Reference				TP01	TP12	TP16
Sample Number				None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A
Depth (m)				0.50	0.50	0.60
Date Sampled				03/03/2025	26/02/2025	09/03/2025
Time Taken				0900	0900	0900
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status			
Heavy Metals / Metalloids						
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.4	6.1	4.6
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	15	24
Boron (water soluble)	mg/kg	0.2	MCERTS	0.3	1.5	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1.5	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	25	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	56	330	58
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	1400	260
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	0.4
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2.9	2.9	3.8
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	25	28
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	280	98
Petroleum Hydrocarbons						
TPHCWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	4.3	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	58	< 8.0
TPHCWG - Aliphatic >EC35 - EC40 $_{EH\_CU\_1D\_AL}$	mg/kg	10	NONE	< 10	15	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	< 10	73	< 10
TPHCWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	4.2	< 1.0	2.3
TPHCWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	23	3.6	13
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	76	17	59
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	130	82	83
TPHCWG - Aromatic >EC35 - EC40 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	21	18	< 10
TPHCWG - Aromatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	250	120	160
TPH Total >EC5 - EC40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	260	190	160
VOCs						
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0

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

Analytical Report Number : 25-012132
Project / Site name: Huddersfield Market

* 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 *
478161	TP01	None Supplied	0.5	Brown clay and sand
478162	TP12	None Supplied	0.5	Brown gravelly sand with stones
478163	TP16	None Supplied	0.6	Brown sand with stones

Analytical Report Number : 25-012132
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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
Organic matter (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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	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
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
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

Analytical Report Number : 25-012132
Project / Site name: Huddersfield Market

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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 : 25-012132
Project / Site name: Huddersfield Market

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
TP01	N/A	S	478161	c	Sulphide in soil	L010-PL	c
TP12	N/A	S	478162	c	BTEX and/or Volatile organic compounds in soil	L073B	c
TP12	N/A	S	478162	c	Free cyanide in soil	L080-PL	c
TP12	N/A	S	478162	c	Speciated PAHs and/or Semi-volatile organic compounds in soil	L064B	c
TP12	N/A	S	478162	c	Sulphide in soil	L010-PL	c
TP12	N/A	S	478162	c	Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	L076B/L088-PL	c
TP12	N/A	S	478162	c	pH in soil (automated)	L099-PL	c

CC Geotechnical
Unit 1-2 Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

t: 0151 545 2750

e: tony.gerrard@ccgeotechnical.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-019181

Project / Site name:	Huddersfield Market	Samples received on:	15/04/2025
Your job number:	CCG-C-24-15006	Samples instructed on/ Analysis started on:	15/04/2025
Your order number:	CCG-PO-15006	Analysis completed by:	24/04/2025
Report Issue Number:	1	Report issued on:	25/04/2025
Samples Analysed:	6 soil samples		

Signed:

Rachel Chappell
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-019181
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514468	514469	514470	514471	514472
Sample Reference				BH04	BH05	BH06	BH07	BH09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
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	44.7	61.1	< 0.1	48.4	< 0.1
Moisture Content	%	0.01	NONE	5.5	11	14	3.5	12
Total mass of sample received	kg	0.1	NONE	1.6	1.4	0.9	1.4	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	Detected	Detected	Not-detected	Detected
Asbestos Analyst ID	N/A	N/A	N/A	MMI	MMI	MMI	MMI	MMI
Analysis completed	N/A	N/A	N/A	18/04/2025	18/04/2025	18/04/2025	18/04/2025	18/04/2025
Actinolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	Detected	Detected	Detected	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	< 0.001	< 0.001	0.002	-	0.002
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	Loose Fibres	Loose Fibres	-	Loose Fibres
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	8.8	8.7	9.3	9	9.2
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.062	0.061	0.094	0.085	0.043
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	62	62	250	46	120
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.1	31	127	22.9	58.6
Sulphide	mg/kg	1	MCERTS	26	15	15	3.4	1.9
Organic Matter (automated)	%	0.1	MCERTS	3.2	3.9	3.3	0.4	1.4
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	1.3	0.49	3.5	< 0.05	0.13
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.27	0.39	< 0.05	0.07
Acenaphthene	mg/kg	0.05	MCERTS	3.9	0.51	9.7	< 0.05	0.81
Fluorene	mg/kg	0.05	MCERTS	2.6	0.65	8.2	< 0.05	1.1
Phenanthrene	mg/kg	0.05	MCERTS	26	4.5	72	0.22	9
Anthracene	mg/kg	0.05	MCERTS	6.1	1.7	19	0.07	3.1
Fluoranthene	mg/kg	0.05	MCERTS	34	6.4	98	0.3	13
Pyrene	mg/kg	0.05	MCERTS	29	6	86	0.26	11
Benzo(a)anthracene	mg/kg	0.05	MCERTS	16	5.8	49	0.12	5.6
Chrysene	mg/kg	0.05	MCERTS	17	5.7	48	0.14	5.3
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	19	5.4	53	0.15	5.9
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	6.3	3	26	0.05	3.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	16	6	52	0.12	5.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7.6	2.2	24	< 0.05	2.4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.9	0.87	5.5	< 0.05	0.43
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	8	2.3	26	0.06	2.5
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	197	51.7	581	1.49	70.1

Analytical Report Number: 25-019181
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514468	514469	514470	514471	514472
Sample Reference				BH04	BH05	BH06	BH07	BH09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.50	0.50	0.50	0.50	0.50
Date Sampled				11/04/2025	11/04/2025	11/04/2025	11/04/2025	11/04/2025
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								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.3	1.9	2.4	< 1.0	2.4
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	14	14	1.9	9.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.6	1.1	0.5	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	2.4	< 0.2	0.4	0.3	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	15	17	4.6	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	42	36	140	8.4	36
Lead (aqua regia extractable)	mg/kg	1	MCERTS	97	83	110	4.9	65
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.4	1.5	1.4	0.34	1.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	12	17	16	2.8	24
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	63	120	22	75
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	14	< 2.0	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	10	< 8.0	34	< 8.0	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	130	< 8.0	97	< 8.0	20
TPHCWG - Aliphatic >EC35 - EC40 $_{EH\_CU\_1D\_AL}$	mg/kg	10	NONE	60	< 10	25	< 10	< 10
TPHCWG - Aliphatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	200	< 10	170	< 10	20
TPHCWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
TPHCWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.02	MCERTS	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
TPHCWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	1.7	1.3	4.2	< 1.0	< 1.0
TPHCWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	25	14	46	< 2.0	14
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	150	60	280	< 10	59
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	410	170	410	< 10	79
TPHCWG - Aromatic >EC35 - EC40 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	130	36	46	< 10	11
TPHCWG - Aromatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	720	280	790	< 10	160
TPH Total >EC5 - EC40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	920	280	960	< 10	180
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

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

Analytical Report Number: 25-019181
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514473
Sample Reference				BH10
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				11/04/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Stone Content	%	0.1	NONE	53
Moisture Content	%	0.01	NONE	4.5
Total mass of sample received	kg	0.1	NONE	1.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MMI
Analysis completed	N/A	N/A	N/A	18/04/2025
Actinolite detected	Type	N/A	ISO 17025	-
Amosite detected	Type	N/A	ISO 17025	-
Anthophyllite detected	Type	N/A	ISO 17025	-
Chrysotile detected	Type	N/A	ISO 17025	-
Crocidolite detected	Type	N/A	ISO 17025	-
Tremolite detected	Type	N/A	ISO 17025	-
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	9.8
Free Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO_4	%	0.005	MCERTS	0.103
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	81
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	40.5
Sulphide	mg/kg	1	MCERTS	9.4
Organic Matter (automated)	%	0.1	MCERTS	2

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.1
Fluorene	mg/kg	0.05	MCERTS	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.67
Anthracene	mg/kg	0.05	MCERTS	0.14
Fluoranthene	mg/kg	0.05	MCERTS	0.92
Pyrene	mg/kg	0.05	MCERTS	0.94
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.41
Chrysene	mg/kg	0.05	MCERTS	0.49
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.51
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.19
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.46
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.19
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.24

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	5.31

Analytical Report Number: 25-019181
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514473
Sample Reference				BH10
Sample Number				None Supplied
Water Matrix				N/A
Depth (m)				0.50
Date Sampled				11/04/2025
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.4
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	96
Copper (aqua regia extractable)	mg/kg	1	MCERTS	11
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	41
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	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	110
TPHCWG - Aliphatic >EC35 - EC40 $_{EH\_CU\_1D\_AL}$	mg/kg	10	NONE	51
TPHCWG - Aliphatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	160
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	2
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	20
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	290
TPHCWG - Aromatic >EC35 - EC40 $_{EH\_CU\_1D\_AR}$	mg/kg	10	NONE	360
TPHCWG - Aromatic >EC5 - EC40 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	670
TPH Total >EC5 - EC40 $_{EH\_CU+HS\_1D\_TOTAL}$	mg/kg	10	NONE	830
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

UKAS TESTING
4041

Analytical i2 Environmental Science

Analytical Report Number: 25-019181
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

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	Analysis completed	Analyst ID
514468	BH04	0.50	133	Loose Fibres	Chrysotile	< 0.001	< 0.001	18/04/2025	MMI
514469	BH05	0.50	148	Loose Fibres	Chrysotile	< 0.001	< 0.001	18/04/2025	MMI
514470	BH06	0.50	147	Loose Fibres	Chrysotile	0.002	0.002	18/04/2025	MMI
514472	BH09	0.50	142	Loose Fibres	Chrysotile	0.002	0.002	18/04/2025	MMI

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

Analytical Report Number : 25-019181
Project / Site name: Huddersfield Market

* 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 *
514468	BH04	None Supplied	0.5	Brown loam with gravel and stones
514469	BH05	None Supplied	0.5	Brown loam with gravel and stones
514470	BH06	None Supplied	0.5	Brown clay and loam with gravel
514471	BH07	None Supplied	0.5	Brown sand with gravel and stones
514472	BH09	None Supplied	0.5	Brown clay and loam with gravel
514473	BH10	None Supplied	0.5	Brown loam with gravel and stones

Analytical Report Number : 25-019181
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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
Organic matter (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
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode	In-house method	L010-PL	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
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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	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
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
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

Analytical Report Number : 25-019181
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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 in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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

CC Geotechnical
Unit 1-2 Deltic Place
Deltic Way
Knowsley Industrial Estate
Liverpool
L33 7BU

t: 0151 545 2750

e: tony.gerrard@ccgeotechnical.com

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

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 25-019184

Project / Site name:	Huddersfield Market	Samples received on:	15/04/2025
Your job number:	CCG-C-24-15006	Samples instructed on/ Analysis started on:	15/04/2025
Your order number:	CCG-PO-15006	Analysis completed by:	25/04/2025
Report Issue Number:	1	Report issued on:	25/04/2025
Samples Analysed:	4 10:1 WAC Samples		

Signed:

Rachel Chappell
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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-019184
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514490	514491	514492	514493
Sample Reference				BH04	BH05	BH07	BH10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.50	0.50	0.50	0.50
Date Sampled				11/04/2025	11/04/2025	11/04/2025	11/04/2025
Time Taken				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	44.7	61.1	48.4	53
Moisture Content	%	0.01	NONE	5.5	11	3.5	4.5
Total mass of sample received	kg	0.1	NONE	1.6	1.3	1.4	1.5
General Inorganics							
pH (L005B)	pH Units	N/A	MCERTS	8.3	7.7	8.1	8.8
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	1.9	2.3	0.2	1.1
Loss on Ignition @ 450°C	%	0.2	MCERTS	3.3	6.5	0.4	2
Acid Neutralisation Capacity	+/- mmol/kg	-9999	NONE	6.7	9.4	13	15
Speciated PAHs							
Naphthalene	mg/kg	0.05	MCERTS	1.3	0.49	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	0.27	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	3.9	0.51	< 0.05	0.1
Fluorene	mg/kg	0.05	MCERTS	2.6	0.65	< 0.05	0.06
Phenanthrene	mg/kg	0.05	MCERTS	26	4.5	0.22	0.67
Anthracene	mg/kg	0.05	MCERTS	6.1	1.7	0.07	0.14
Fluoranthene	mg/kg	0.05	MCERTS	34	6.4	0.3	0.92
Pyrene	mg/kg	0.05	MCERTS	29	6	0.26	0.94
Benzo(a)anthracene	mg/kg	0.05	MCERTS	16	5.8	0.12	0.41
Chrysene	mg/kg	0.05	MCERTS	17	5.7	0.14	0.49
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	19	5.4	0.15	0.51
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	6.3	3	0.05	0.19
Benzo(a)pyrene	mg/kg	0.05	MCERTS	16	6	0.12	0.46
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	7.6	2.2	< 0.05	0.19
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	1.9	0.87	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	8	2.3	0.06	0.24
Coronene	mg/kg	0.05	NONE	2.6	< 0.05	< 0.05	< 0.05
Total PAH							
Total WAC-17 PAHs	mg/kg	0.85	NONE	199	51.7	1.49	5.31
Petroleum Hydrocarbons							
Mineral Oil (EC10 - EC40) EH_CU_1D_AL	mg/kg	10	NONE	210	10	< 10	170

Analytical Report Number: 25-019184
Project / Site name: Huddersfield Market
Your Order No: CCG-PO-15006

Lab Sample Number				514490	514491	514492	514493
Sample Reference				BH04	BH05	BH07	BH10
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.50	0.50	0.50	0.50
Date Sampled				11/04/2025	11/04/2025	11/04/2025	11/04/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				
VOCs							
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	< 5.0
Total BTEX	µg/kg	10	MCERTS	< 10	< 10	< 10	< 10
PCBs by GC-MS							
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007	< 0.007	< 0.007

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

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-019184						
					Client: CCGEO		
Location	Huddersfield Market						
Lab Reference (Sample Number)	514490				Landfill Waste Acceptance Criteria Limits		
Sampling Date	11/04/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH04						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	1.9				3%	5%	6%
Loss on Ignition (%) **	3.3				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	210				500	--	--
Total PAH (WAC-17) (mg/kg)	199				100	--	--
pH (units)**	8.3				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	6.7				--	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 *	0.00642			0.0642	0.5	2	25
Barium *	0.0145			0.145	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0020			0.020	0.5	10	70
Copper *	0.0061			0.061	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000807			0.00807	0.5	10	30
Nickel *	0.0017			0.017	0.4	10	40
Lead *	0.0073			0.073	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 *	0.0054			0.054	4	50	200
Chloride *	1.0			10	800	15000	25000
Fluoride*	0.27			2.7	10	150	500
Sulphate *	1.6			16	1000	20000	50000
TDS*	37			370	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.25			32.5	500	800	1000
Leach Test Information							
Stone Content (%)	44.7						
Sample Mass (kg)	1.6						
Dry Matter (%)	95						
Moisture (%)	5.5						

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.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-019184						
					Client: CCGEO		
Location	Huddersfield Market						
Lab Reference (Sample Number)	514491				Landfill Waste Acceptance Criteria Limits		
Sampling Date	11/04/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH05						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	2.3				3%	5%	6%
Loss on Ignition (%) **	6.5				--	--	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)	51.7				100	--	--
pH (units)**	7.7				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	9.4				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00579			0.0579	0.5	2	25
Barium *	0.0121			0.121	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0019			0.019	0.5	10	70
Copper *	0.0049			0.049	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000716			0.00716	0.5	10	30
Nickel *	0.00081			0.0081	0.4	10	40
Lead *	0.0088			0.088	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 *	0.0035			0.035	4	50	200
Chloride *	2.7			27	800	15000	25000
Fluoride*	0.27			2.7	10	150	500
Sulphate *	3.7			37	1000	20000	50000
TDS*	45			450	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.30			33.0	500	800	1000
Leach Test Information							
Stone Content (%)	61.1						
Sample Mass (kg)	1.3						
Dry Matter (%)	89						
Moisture (%)	11						

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.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-019184						
					Client: CCGEO		
Location	Huddersfield Market						
Lab Reference (Sample Number)	514492				Landfill Waste Acceptance Criteria Limits		
Sampling Date	11/04/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH07						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	0.2				3%	5%	6%
Loss on Ignition (%) **	0.4				--	--	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)	1.49				100	--	--
pH (units)**	8.1				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	13				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.00361			0.0361	0.5	2	25
Barium *	0.0132			0.132	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0031			0.031	0.5	10	70
Copper *	0.0031			0.031	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.000561			0.00561	0.5	10	30
Nickel *	0.0015			0.015	0.4	10	40
Lead *	0.0015			0.015	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 *	0.0063			0.063	4	50	200
Chloride *	0.73			7.3	800	15000	25000
Fluoride*	0.25			2.5	10	150	500
Sulphate *	0.58			5.8	1000	20000	50000
TDS*	34			340	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.74			37.4	500	800	1000
Leach Test Information							
Stone Content (%)	48.4						
Sample Mass (kg)	1.4						
Dry Matter (%)	97						
Moisture (%)	3.5						

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.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Waste Acceptance Criteria Analytical Results

Report No:	25-019184						
					Client: CCGEO		
Location	Huddersfield Market						
Lab Reference (Sample Number)	514493				Landfill Waste Acceptance Criteria Limits		
Sampling Date	11/04/2025				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH10						
Depth (m)	0.50						
Solid Waste Analysis							
TOC (%)**	1.1				3%	5%	6%
Loss on Ignition (%) **	2.0				--	--	10%
BTEX (µg/kg) **	< 10				6000	--	--
Sum of PCBs (mg/kg) **	< 0.007				1	--	--
Mineral Oil (mg/kg) EH_1D_CU_AL	170				500	--	--
Total PAH (WAC-17) (mg/kg)	5.31				100	--	--
pH (units)**	8.8				--	>6	--
Acid Neutralisation Capacity (mmol / kg)	15				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	< 0.00100			< 0.0100	0.5	2	25
Barium *	0.0362			0.362	20	100	300
Cadmium *	< 0.000100			< 0.00100	0.04	1	5
Chromium *	0.0037			0.037	0.5	10	70
Copper *	0.0045			0.045	2	50	100
Mercury *	< 0.000500			< 0.00500	0.01	0.2	2
Molybdenum *	0.00198			0.0198	0.5	10	30
Nickel *	0.0012			0.012	0.4	10	40
Lead *	0.0049			0.049	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 *	0.0074			0.074	4	50	200
Chloride *	3.6			36	800	15000	25000
Fluoride*	0.23			2.3	10	150	500
Sulphate *	2.2			22	1000	20000	50000
TDS*	42			420	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	4.39			43.9	500	800	1000
Leach Test Information							
Stone Content (%)	53.0						
Sample Mass (kg)	1.5						
Dry Matter (%)	96						
Moisture (%)	4.5						

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.

Where colour coding is used on this report, this is for guidance purposes only. This does not constitute a statement of conformity of pass or fail.

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 : 25-019184
Project / Site name: Huddersfield Market

* 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 *
514490	BH04	None Supplied	0.5	Brown loam with gravel and stones
514491	BH05	None Supplied	0.5	Brown loam with gravel and stones
514492	BH07	None Supplied	0.5	Brown sand with gravel and stones
514493	BH10	None Supplied	0.5	Brown loam with gravel and stones

Analytical Report Number : 25-019184
Project / Site name: Huddersfield Market

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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

Analytical Report Number : 25-019184
Project / Site name: Huddersfield Market

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

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

APPENDIX I: SOIL CONTAMINATION SUMMARY TABLES

SOIL ASSESSMENT CRITERIA FOR COMMERCIAL LAND USE

Contaminant	Assessment Criteria for Commercial at 1% SOM (mg/kg)	Assessment Criteria for Commercial at 2.5% SOM (mg/kg)	Assessment Criteria for Commercial at 6% SOM (mg/kg)
Metals			
Arsenic	640	640	640
Boron	240000	240000	240000
Cadmium	190	190	190
Chromium III	8600	8600	8600
Chromium VI	33	33	33
Copper	68000	68000	68000
*Lead	2300	2300	2300
Mercury	58	58	58
Nickel	980	980	980
Selenium	12000	12000	12000
Vanadium	9000	9000	9000
Zinc	730000	730000	730000
Non-Metals			
Phenol	440	690	1300
Polyaromatic Hydrocarbons (PAH)			
Acenaphthene	84000	97000	100000
Acenaphthylene	83000	97000	10000
Anthracene	520000	540000	540000
Benz[a[anthracene	170	170	180
Benzo[a]pyrene	35	35	36
Benzo[b]fluoranthene	44	44	45
Benzo[ghi]perylene	3900	4000	4000
Benzo[k]fluoranthene	1200	1200	1200
Chrysene	350	350	350
Dibenz[ah]anthracene	3.5	3.6	3.6
Fluoranthene	23000	23000	23000
Fluorene	63000	68000	71000
Indeno[123-cd]pyrene	500	510	510
Naphthalene	190	460	1100
Phenanthrene	22000	22000	22000
Pyrene	54000	54000	54000
Coal Tar [Bap as surrogate marker)	15	15	15
Petroleum Hydrocarbons			
Aliphatic EC 5-6	3200	5900	12000
Aliphatic EC >6-8	7800	17000	40000
Aliphatic EC>8-10	2000	4800	11000
Aliphatic EC>10-12	9700	23000	47000
Aliphatic EC>12-16	59000	82000	90000
Aliphatic EC>16-35	1600000	1700000	1800000
Aliphatic EC>35-44	1600000	1700000	1800000
Aromatic EC5-7 (Benzene)	26000	46000	86000
Aromatic EC>7-8 (Toluene)	56000	110000	180000
Aromatic EC>8-10	3500	8100	17000
Aromatic EC>10-12	16000	28000	34000
Aromatic EC>12-16	36000	37000	38000
Aromatic EC>16-21	28000	28000	28000
Aromatic EC>21-35	28000	28000	28000
Aromatic EC>35-44	28000	28000	28000
Aliphatic – Aromatic EC>44-70	28000	28000	28000
Other			
Asbestos Containing Materials (ACM)	No Detection	No Detection	No Detection

The above is based on criteria contained in publication LQM/CIEH S4UL`s for Human Health Risk Assessment (2015) (***CCG*** Licence No. S4UL3233), applicable to the "Commercial" land use scenario for soil organic matter (SOM) content of 1% - 6%.

*This document does not provide criteria for Lead, for which the results were compared to the C4SL published by DEFRA SP1010 Development of Category 4 Screening Levels.

CC GEOTECHNICAL LIMITED
Consulting Geotechnical and Geoenvironmental Engineers

METALS DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 25-15006
Site name: Hudersfield Open Market

Prepared by: TG
Authorised by: CB
Proposed land use: Commercial/Industrial
SOM % used: 2.5

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

Contaminants			Metals							
			Cadmium	Chromium III	Chromium VI	Copper	Lead	Mercury (elemental)	Nickel	Zinc
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.5	5.0	0.8	5.0	5.0	0.5	5.0	5.0
Human Health Risk Assessment (GAC)			190	8600	33	68000	2300	58	980	730000
Sample Location	Sample Depth (m)	Sample type								
BH01	0.5	Soil	< 0.2	19	< 1.8	51	180	**0.4**	19	54
BH04	0.50	Soil	**2.4**	15	< 1.8	42	97	**0.4**	12	140
BH05	0.50	Soil	< 0.2	15	< 1.8	36	83	< 0.3	17	63
BH06	0.50	Soil	0.4	17	< 1.8	140	110	< 0.3	16	120
BH07	0.50	Soil	0.3	4.6	< 1.8	8.4	4.9	< 0.3	2.8	22
BH09	0.50	Soil	0.3	24	< 1.8	36	65	< 0.3	24	75
BH10	0.50	Soil	0.3	**96**	< 1.8	11	17	< 0.3	6.8	41
TP01	0.50	Soil	< 0.2	23	< 1.8	56	150	**0.4**	22	120
TP12	0.50	Soil	1.5	25	< 1.8	**330**	**1400**	< 0.3	25	**280**
TP16	0.60	Soil	< 0.2	23	< 1.8	58	260	**0.4**	**28**	98
Human Health Risk Assessment (GAC)			190	8600	33	68000	2300	58	980	730000

CC GEOTECHNICAL LIMITED
Consulting Geotechnical and Geoenvironmental Engineers

SEMI-METALS, NON-METALS, INORGANICS AND OTHER DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 25-15006
Site name: Hudersfield Open Market

Prepared by: TG
Authorised by: CB
Proposed land use: Commercial/Industrial
SOM % used: 2.5

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			Semi/non-metals			Inorganics			Other	
Contaminants			**Arsenic**	**Boron**	**Selenium**	**Cyanide (free)**	**Sulphate (water soluble)**	**Sulphate (water soluble)**	**pH (units)**	**Soil Organic Matter %**
Units			mg/kg	mg/kg	mg/kg	mg/kg	g/l	mg/l	units	units
Limit of Detection			1.0	0.5	1.0	1.0	0.02	20.0	0.1	0.1
Human Health Risk Assessment (GAC)			640	240000	12000	120	NA	NA	NA	NA
Sample Location	Sample Depth (m)	Sample type								
BH01	0.5	Soil	17	0.7	< 1.0	< 1.0	n/t	1510	9.5	2.5
BH04	0.50	Soil	13	0.6	< 1.0	< 1.0	n/t	31.1	8.8	3.2
BH05	0.50	Soil	14	0.6	< 1.0	< 1.0	n/t	31	8.7	**3.9**
BH06	0.50	Soil	14	1.1	< 1.0	< 1.0	n/t	127	9.3	3.3
BH07	0.50	Soil	1.9	0.5	< 1.0	< 1.0	n/t	22.9	9	0.4
BH09	0.50	Soil	9.4	0.8	< 1.0	< 1.0	n/t	58.6	9.2	1.4
BH10	0.50	Soil	2.4	0.7	< 1.0	< 1.0	n/t	40.5	9.8	2
TP01	0.50	Soil	19	0.3	**1.1**	< 1.0	n/t	23.7	8.7	3
TP12	0.50	Soil	15	1.5	< 1.0	< 1.0	n/t	376	**10.5**	2.3
TP16	0.60	Soil	**24**	**1.7**	< 1.0	< 1.0	n/t	357	8.5	3
Human Health Risk Assessment (GAC)			640	240000	190	120	NA	NA	NA	NA

CC GEOTECHNICAL LIMITED
Consulting Geotechnical and Geoenvironmental Engineers

SPECIATED PAH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 25-15006
Site name: Hudersfield Open Market

Prepared by: TG
Authorised by: CB
Proposed land use: Commercial/Industrial
SOM % used: 2.5

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			PAH's														
Contaminants			Acenapthene	Acenapthylene	Anthracene	Benz[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[ghi]perylene	Benzo[k]fluoranthene	Chrysene	Dibenzo[ah]anthracene	fluoranthene	fluorene	Indeno[123-cd]pyrene	Napthalene	Pheanthrene	Pyrene	Total PAH's
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.4
Human Health Risk Assessment (GAC)			97000	97000	540000	170	35	44	4000	1200	350	3.6	23000	68000	510	460	22000	54000	NA
Sample Location	Sample Depth (m)	Sample type																	
BH01	0.5	Soil	0.46	< 0.05	0.58	1.5	1.3	1.5	0.69	0.66	1.9	0.19	3	0.38	0.56	0.78	3.4	2.9	19.8
BH04	0.50	Soil	3.9	< 0.05	6.1	16	16	19	8	6.3	17	1.9	34	2.6	7.6	1.3	26	29	197
BH05	0.50	Soil	0.51	0.27	1.7	5.8	6	5.4	2.3	3	5.7	0.87	6.4	0.65	2.2	0.49	4.5	6	51.7
BH06	0.50	Soil	**9.7**	**0.39**	**19**	**49**	**52**	**53**	**26**	**26**	**48**	**5.5**	**98**	**8.2**	**24**	3.5	**72**	**86**	**581**
BH07	0.50	Soil	< 0.05	< 0.05	0.07	0.12	0.12	0.15	0.06	0.05	0.14	< 0.05	0.3	< 0.05	< 0.05	< 0.05	0.22	0.26	1.49
BH09	0.50	Soil	0.81	0.07	3.1	5.6	5.9	5.9	2.5	3.1	5.3	0.43	13	1.1	2.4	0.13	9	11	70.1
BH10	0.50	Soil	0.1	< 0.05	0.14	0.41	0.46	0.51	0.24	0.19	0.49	< 0.05	0.92	0.06	0.19	< 0.05	0.67	0.94	5.31
TP01	0.50	Soil	4.6	< 0.05	4.3	10	7.9	8	3	4.8	11	1.3	20	3.4	4.1	**8**	20	19	131
TP12	0.50	Soil	0.43	0.12	0.59	3.2	3.6	4.7	2.6	2.1	3.4	0.54	5.6	0.3	2.3	0.7	3	5.7	39
TP16	0.60	Soil	2.6	0.29	3.1	8	7.2	9.3	3.7	2.8	9.3	0.8	17	1.9	3	2.2	16	17	104
Human Health Risk Assessment (GAC)			97000	97000	190	170	35	44	4000	1200	350	3.6	23000	68000	510	460	22000	54000	NA

CC GEOTECHNICAL LIMITED
Consulting Geotechnical and Geoenvironmental Engineers

SPECIATED TPH'S DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 25-15006
Site name: Hudersfield Open Market

Prepared by: TG
Authorised by: CB
Proposed land use: Commercial/Industrial
SOM % used: 2.5

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			Speciated TPH's														
			Aromatics							Aliphatics							
Contaminants			EC5-7	EC7-8	EC8-10	EC10-12	EC12-16	EC16-21	EC21-35	EC35-44	EC5-6	EC6-8	EC8-10	EC10-12	EC12-16	EC16-35	EC35-44	TOTAL TPH'S
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Limit of Detection			0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0	0.01	0.01	1.0	1.0	1.0	1.0	1.0	1.0
Human Health Risk Assessment (GAC)			46000	110000	8100	28000	37000	28000	28000	28000	5900	17000	4800	23000	82000	1700000	1700000	NA
Sample Location	Sample Depth (m)	Sample type																
BH01	0.5	Soil	< 0.010	< 0.010	< 0.020	< 1.0	2.8	< 10	12	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	<8	< 10	15
BH04	0.50	Soil	< 0.010	< 0.010	< 0.020	1.7	25	150	**410**	130	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	**140**	**60**	920
BH05	0.50	Soil	< 0.010	< 0.010	< 0.020	1.3	14	60	170	36	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	<8	< 10	280
BH06	0.50	Soil	< 0.010	< 0.010	< 0.020	**4.2**	**46**	**280**	**410**	46	< 0.010	< 0.010	< 0.010	< 1.0	**14**	131	25	**960**
BH07	0.50	Soil	< 0.010	< 0.010	< 0.020	< 1.0	< 2.0	< 10	< 10	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	<8	< 10	< 10
BH09	0.50	Soil	< 0.010	< 0.010	< 0.020	< 1.0	14	59	79	11	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	<8	< 10	180
BH10	0.50	Soil	< 0.010	< 0.010	< 0.020	< 1.0	2	20	290	**360**	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	110	51	830
TP01	0.50	Soil	< 0.010	< 0.010	< 0.020	**4.2**	23	76	130	21	< 0.010	< 0.010	< 0.010	< 1.0	4.3	n/t	< 10	260
TP12	0.50	Soil	< 0.010	< 0.010	< 0.020	< 1.0	3.6	17	82	18	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	58	15	190
TP16	0.60	Soil	< 0.010	< 0.010	< 0.020	2.3	13	59	83	< 10	< 0.010	< 0.010	< 0.010	< 1.0	< 2.0	<8	< 10	160
Human Health Risk Assessment (GAC)			46000	110000	190	28000	37000	28000	28000	28000	5900	17000	4800	23000	82000	1700000	1700000	NA

CC GEOTECHNICAL LIMITED
Consulting Geotechnical and Geoenvironmental Engineers

BTEX DATA SUMMARY AND RISK ASSESSMENT SHEET

Job number: 25-15006
Site name: Hudersfield Open Market

Prepared by: TG
Authorised by: CB
Proposed land use: Commercial/Industrial
SOM % used: 2.5

= Threshold exceeded
= Below Limit of detection
n/t = Not tested

			BTEX			
Contaminants			Benzene	Toluene	Ethylbenzene	Total Xylenes
Units			µg/kg	µg/kg	µg/kg	µg/kg
Limit of Detection			10	10	10	10
Human Health Risk Assessment (GAC)			47000	110000000	13000000	14000000
Sample Location	Sample Depth (m)	Sample type				
BH01	0.5	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH04	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH05	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH06	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH07	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH09	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
BH10	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
TP01	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
TP12	0.50	Soil	< 5.0	< 5.0	< 5.0	< 5.0
TP16	0.60	Soil	< 5.0	< 5.0	< 5.0	< 5.0
Human Health Risk Assessment (GAC)			47000	190	13000000	14000000

CC GEOTECHNICAL LIMITED

Consulting Geotechnical and Geoenvironmental Engineers

Job Number:	25-15006	Site Name:	Hudersfield Open Market
Prepared by:	TG	Approved by:	CB

Sample Location	Sample Depth (m)	Sample type	Sulphate (water soluble) (mg/l)	Sulphate (water soluble) (mg/l)	pH (units)	pH (units)
			Soil	Water	Soil	Water
BH01	0.5	Soil	1510	n/t	9.5	n/t
BH04	0.50	Soil	31.1	n/t	8.8	n/t
BH05	0.50	Soil	31	n/t	8.7	n/t
BH06	0.50	Soil	127	n/t	9.3	n/t
BH07	0.50	Soil	22.9	n/t	9	n/t
BH09	0.50	Soil	58.6	n/t	9.2	n/t
BH10	0.50	Soil	40.5	n/t	9.8	n/t
TP01	0.50	Soil	23.7	n/t	8.7	n/t
TP12	0.50	Soil	376	n/t	10.5	n/t
TP16	0.60	Soil	357	n/t	8.5	n/t
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Soil Concrete Specification Data Sheet	
Is the site Brownfield or Greenfield?	Brownfield
Is the water table Static or Mobile	Static
Highest water-soluble Sulphate results	1510
Lowest pH result	8.5
Design Sulphate Class	DS-3
ACEC Class	AC-2s
Intended Working Life	50 Years
Design Chemical Classification	DC-2

Water Concrete Specification Data Sheet	
Is the site Brownfield or Greenfield?	N/a
Is the water table Static or Mobile	N/a
Highest water-soluble Sulphate results	
Lowest pH result	
Design Sulphate Class	
ACEC Class	
Intended Working Life	N/a
Design Chemical Classification	

Conclusions
Based on the soil data, concrete should be specified to conform to the compositional requirements of DC-2 as defined in BRE Special Digest 1: 2005.
Based on the water data, concrete should be specified to conform to the compositional requirements of as defined in BRE Special Digest 1: 2005.

APPENDIX J: PRELIMINARY WASTE CLASSIFICATION REPORT

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:

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

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

JSHPQ-ZMWU2-WEUBL

Report is invalid if pages are removed.

Job name

HUDDESRFIELD MARKET

Description/Comments

Project

CCG-C-25-15006

Site

HUDDESRFIELD MARKET

Classified by

Name:
Michael Hartley
Date:
20 May 2025 11:12 GMT
Telephone:

Company:
CC Geotechnical Ltd
Units 1 & 2 Deltic Way
Knowsley Industrial Estate
Kirkby
L33 7BU

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	Date
Hazardous Waste Classification	06 Apr 2023

Next 3 year Refresher due by Apr 2026

Purpose of classification

2 - Material Characterisation

Address of the waste

BROOK STREET **Post Code** HD1 1RY

SIC for the process giving rise to the waste

41100 Development of building projects

Description of industry/producer giving rise to the waste

Redevelopment of land for commercial building

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

Ground Investigation

Description of the waste

Made ground granular soils

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results			Page
					Inert	SNRHW	Hazardous	
1	WS1	0.5	Non Hazardous		Pass	Pass	N/A	3
2	TP01	0.5	Non Hazardous		-	-	-	7
3	TP12	0.5	Non Hazardous		-	-	-	10
4	TP16	0.6	Non Hazardous		-	-	-	13
5	BH04	0.5	Non Hazardous		Fail	Pass	N/A	16
6	BH05	0.5	Non Hazardous		Pass	Pass	N/A	20
7	BH06	0.5	Non Hazardous		-	-	-	24
8	BH07	0.5	Non Hazardous		Pass	Pass	N/A	27
9	BH09	0.5	Non Hazardous		-	-	-	31
10	BH10	0.5	Non Hazardous		Pass	Pass	N/A	34

Related documents

#	Name	Description
1	15006 Combined.BATCH	i2 Analytical .batch file used to populate the Job
2	25-011703_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
3	25-011704_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
4	25-012132_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
5	25-019181_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
6	25-019184_HWOL.hwol	i2 Analytical .hwol file used to populate the Job
7	CCG SOIL A I2	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: Michael Hartley

Created date: 20 May 2025 11:12 GMT

Classification of sample: WS1

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

Sample details

Sample name:
WS1
Sample Depth:
0.5 m
Moisture content:
14%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		9.5 pH		9.5 pH	9.5 pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		0.78 mg/kg		0.671 mg/kg	0.0000671 %	✓	
4	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
5	acenaphthene		201-469-6	83-32-9		0.46 mg/kg		0.396 mg/kg	0.0000396 %	✓	
6	fluorene		201-695-5	86-73-7		0.38 mg/kg		0.327 mg/kg	0.0000327 %	✓	
7	phenanthrene		201-581-5	85-01-8		3.4 mg/kg		2.924 mg/kg	0.000292 %	✓	
8	anthracene		204-371-1	120-12-7		0.58 mg/kg		0.499 mg/kg	0.0000499 %	✓	
9	fluoranthene		205-912-4	206-44-0		3 mg/kg		2.58 mg/kg	0.000258 %	✓	
10	pyrene		204-927-3	129-00-0		2.9 mg/kg		2.494 mg/kg	0.000249 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5 mg/kg		1.29 mg/kg	0.000129 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		1.9 mg/kg		1.634 mg/kg	0.000163 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.5 mg/kg		1.29 mg/kg	0.000129 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.66 mg/kg		0.568 mg/kg	0.0000568 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.3 mg/kg		1.118 mg/kg	0.000112 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		indeno[123-cd]pyrene		205-893-2	193-39-5		0.56	mg/kg		0.482	mg/kg	0.0000482 %	✓	
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.19	mg/kg		0.163	mg/kg	0.0000163 %	✓	
18		benzo[ghi]perylene		205-883-8	191-24-2		0.69	mg/kg		0.593	mg/kg	0.0000593 %	✓	
19		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.7	mg/kg	1.197	2.78	mg/kg	0.000278 %	✓	
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	19.303	mg/kg	0.00193 %	✓	
21		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.7	mg/kg	3.22	1.938	mg/kg	0.000194 %	✓	
22		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
24		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		19	mg/kg	1.462	27.77	mg/kg	0.00278 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		51	mg/kg	1.126	49.381	mg/kg	0.00494 %	✓	
26		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	180	mg/kg		154.8	mg/kg	0.0155 %	✓	
27		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.353	0.466	mg/kg	0.0000466 %	✓	
28		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.2	mg/kg	1.5	2.838	mg/kg	0.000284 %	✓	
29		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		19	mg/kg	2.637	43.083	mg/kg	0.00431 %	✓	
30		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
31		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		54	mg/kg	1.968	91.412	mg/kg	0.00914 %	✓	
32		TPH (C6 to C40) petroleum group			TPH		15	mg/kg		12.9	mg/kg	0.00129 %	✓	
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		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]		<0.026	mg/kg		<0.026	mg/kg	<0.0000026 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
39		coronene		205-881-7	191-07-1		0.3	mg/kg		0.258	mg/kg	0.0000258 %	✓	
											Total:	0.0424 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.00129%)

WAC results for sample: WS1

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)	%	1.5	3	5	6
2	LOI (loss on ignition)	%	5.5	-	-	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	20.1	100	-	-
7	pH	pH	9.3	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	89	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.059	0.5	2	25
10	barium	mg/kg	0.133	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.095	0.5	10	70
13	copper	mg/kg	0.12	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.138	0.5	10	30
16	nickel	mg/kg	<0.003	0.4	10	40
17	lead	mg/kg	<0.01	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	0.021	4	50	200
21	chloride	mg/kg	110	800	15,000	25,000
22	fluoride	mg/kg	2.6	10	150	500
23	sulphate	mg/kg	890	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	46.5	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	1700	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: TP01

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

Sample details

Sample name:
TP01
Sample Depth:
0.5 m
Moisture content:
15%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
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	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.7 pH		8.7 pH	8.7 pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		8 mg/kg		6.8 mg/kg	0.00068 %	✓	
4	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
5	acenaphthene		201-469-6	83-32-9		4.6 mg/kg		3.91 mg/kg	0.000391 %	✓	
6	fluorene		201-695-5	86-73-7		3.4 mg/kg		2.89 mg/kg	0.000289 %	✓	
7	phenanthrene		201-581-5	85-01-8		20 mg/kg		17 mg/kg	0.0017 %	✓	
8	anthracene		204-371-1	120-12-7		4.3 mg/kg		3.655 mg/kg	0.000366 %	✓	
9	fluoranthene		205-912-4	206-44-0		20 mg/kg		17 mg/kg	0.0017 %	✓	
10	pyrene		204-927-3	129-00-0		19 mg/kg		16.15 mg/kg	0.00161 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		10 mg/kg		8.5 mg/kg	0.00085 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		11 mg/kg		9.35 mg/kg	0.000935 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		8 mg/kg		6.8 mg/kg	0.00068 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		4.8 mg/kg		4.08 mg/kg	0.000408 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		7.9 mg/kg		6.715 mg/kg	0.000672 %	✓	

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
16	indeno[123-cd]pyrene		205-893-2	193-39-5		4.1 mg/kg		3.485 mg/kg	0.000349 %	✓	
17	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.3 mg/kg		1.105 mg/kg	0.000111 %	✓	
18	benzo[ghi]perylene		205-883-8	191-24-2		3 mg/kg		2.55 mg/kg	0.000255 %	✓	
19	antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		3.4 mg/kg	1.197	3.46 mg/kg	0.000346 %	✓	
20	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19 mg/kg	1.32	21.323 mg/kg	0.00213 %	✓	
21	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.3 mg/kg	3.22	0.821 mg/kg	0.0000821 %	✓	
22	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2 mg/kg	1.142	<0.228 mg/kg	<0.0000228 %		<**LOD**
23	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8 mg/kg	1.923	<3.462 mg/kg	<0.000346 %		<**LOD**
24	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	33.616 mg/kg	0.00336 %		
25	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		56 mg/kg	1.126	53.592 mg/kg	0.00536 %	✓	
26	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	150 mg/kg		127.5 mg/kg	0.0127 %	✓	
27	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4 mg/kg	1.353	0.46 mg/kg	0.000046 %	✓	
28	molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9 mg/kg	1.5	3.698 mg/kg	0.00037 %	✓	
29	nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		22 mg/kg	2.637	49.306 mg/kg	0.00493 %	✓	
30	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.1 mg/kg	1.405	1.314 mg/kg	0.000131 %	✓	
31	zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		120 mg/kg	1.968	200.776 mg/kg	0.0201 %	✓	
32	TPH (C6 to C40) petroleum group			TPH		260 mg/kg		221 mg/kg	0.0221 %	✓	
33	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
34	benzene	601-020-00-8	200-753-7	71-43-2		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
35	toluene	601-021-00-3	203-625-9	108-88-3		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
36	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
37	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**
								Total:	0.0827 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0221%)

Classification of sample: TP12

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

Sample details

Sample name:
TP12
Sample Depth:
0.5 m
Moisture content:
13%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
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	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		10.5 pH		10.5 pH	10.5 pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		0.7 mg/kg		0.609 mg/kg	0.0000609 %	✓	
4	acenaphthylene		205-917-1	208-96-8		0.12 mg/kg		0.104 mg/kg	0.0000104 %	✓	
5	acenaphthene		201-469-6	83-32-9		0.43 mg/kg		0.374 mg/kg	0.0000374 %	✓	
6	fluorene		201-695-5	86-73-7		0.3 mg/kg		0.261 mg/kg	0.0000261 %	✓	
7	phenanthrene		201-581-5	85-01-8		3 mg/kg		2.61 mg/kg	0.000261 %	✓	
8	anthracene		204-371-1	120-12-7		0.59 mg/kg		0.513 mg/kg	0.0000513 %	✓	
9	fluoranthene		205-912-4	206-44-0		5.6 mg/kg		4.872 mg/kg	0.000487 %	✓	
10	pyrene		204-927-3	129-00-0		5.7 mg/kg		4.959 mg/kg	0.000496 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		3.2 mg/kg		2.784 mg/kg	0.000278 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		3.4 mg/kg		2.958 mg/kg	0.000296 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		4.7 mg/kg		4.089 mg/kg	0.000409 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.1 mg/kg		1.827 mg/kg	0.000183 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		3.6 mg/kg		3.132 mg/kg	0.000313 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		indeno[123-cd]pyrene		205-893-2	193-39-5		2.3	mg/kg		2.001	mg/kg	0.0002 %	✓	
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.54	mg/kg		0.47	mg/kg	0.000047 %	✓	
18		benzo[ghi]perylene		205-883-8	191-24-2		2.6	mg/kg		2.262	mg/kg	0.000226 %	✓	
19		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		6.1	mg/kg	1.197	6.353	mg/kg	0.000635 %	✓	
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15	mg/kg	1.32	17.23	mg/kg	0.00172 %	✓	
21		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		1.5	mg/kg	3.22	4.202	mg/kg	0.00042 %	✓	
22		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1.5	mg/kg	1.142	1.491	mg/kg	0.000149 %	✓	
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
24		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		330	mg/kg	1.126	323.243	mg/kg	0.0323 %	✓	
26		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	1400	mg/kg		1218	mg/kg	0.122 %	✓	
27		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
28		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2.9	mg/kg	1.5	3.785	mg/kg	0.000378 %	✓	
29		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		25	mg/kg	2.637	57.348	mg/kg	0.00573 %	✓	
30		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
31		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		280	mg/kg	1.968	479.501	mg/kg	0.048 %	✓	
32		TPH (C6 to C40) petroleum group			TPH		190	mg/kg		165.3	mg/kg	0.0165 %	✓	
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
37		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**
											Total:	0.235 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0165%)

Classification of sample: TP16

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

Sample details

Sample name:
TP16
Sample Depth:
0.6 m
Moisture content:
14%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		8.5 pH		8.5 pH	8.5 pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		**<LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		2.2 mg/kg		1.892 mg/kg	0.000189 %	✓	
4	acenaphthylene		205-917-1	208-96-8		0.29 mg/kg		0.249 mg/kg	0.0000249 %	✓	
5	acenaphthene		201-469-6	83-32-9		2.6 mg/kg		2.236 mg/kg	0.000224 %	✓	
6	fluorene		201-695-5	86-73-7		1.9 mg/kg		1.634 mg/kg	0.000163 %	✓	
7	phenanthrene		201-581-5	85-01-8		16 mg/kg		13.76 mg/kg	0.00138 %	✓	
8	anthracene		204-371-1	120-12-7		3.1 mg/kg		2.666 mg/kg	0.000267 %	✓	
9	fluoranthene		205-912-4	206-44-0		17 mg/kg		14.62 mg/kg	0.00146 %	✓	
10	pyrene		204-927-3	129-00-0		17 mg/kg		14.62 mg/kg	0.00146 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		8 mg/kg		6.88 mg/kg	0.000688 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		9.3 mg/kg		7.998 mg/kg	0.0008 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		9.3 mg/kg		7.998 mg/kg	0.0008 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.8 mg/kg		2.408 mg/kg	0.000241 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		7.2 mg/kg		6.192 mg/kg	0.000619 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		indeno[123-cd]pyrene		205-893-2	193-39-5		3	mg/kg		2.58	mg/kg	0.000258 %	✓	
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.8	mg/kg		0.688	mg/kg	0.0000688 %	✓	
18		benzo[ghi]perylene		205-883-8	191-24-2		3.7	mg/kg		3.182	mg/kg	0.000318 %	✓	
19		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		4.6	mg/kg	1.197	4.736	mg/kg	0.000474 %	✓	
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		24	mg/kg	1.32	27.252	mg/kg	0.00273 %	✓	
21		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		1.7	mg/kg	3.22	4.707	mg/kg	0.000471 %	✓	
22		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
24		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23	mg/kg	1.462	33.616	mg/kg	0.00336 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		58	mg/kg	1.126	56.159	mg/kg	0.00562 %	✓	
26		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	260	mg/kg		223.6	mg/kg	0.0224 %	✓	
27		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.353	0.466	mg/kg	0.0000466 %	✓	
28		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		3.8	mg/kg	1.5	4.903	mg/kg	0.00049 %	✓	
29		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		28	mg/kg	2.637	63.491	mg/kg	0.00635 %	✓	
30		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
31		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		98	mg/kg	1.968	165.896	mg/kg	0.0166 %	✓	
32		TPH (C6 to C40) petroleum group			TPH		160	mg/kg		137.6	mg/kg	0.0138 %	✓	
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		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
											Total:	0.0812 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0138%)

Classification of sample: BH04

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

Sample details

Sample name:
BH04
Sample Depth:
0.5 m
Moisture content:
5.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 5.5% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	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		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
2		pH			PH		8.8 pH		8.8 pH	8.8 pH		
3		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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		1.3 mg/kg		1.229 mg/kg	0.000123 %	✓	
5		acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
6		acenaphthene		201-469-6	83-32-9		3.9 mg/kg		3.686 mg/kg	0.000369 %	✓	
7		fluorene		201-695-5	86-73-7		2.6 mg/kg		2.457 mg/kg	0.000246 %	✓	
8		phenanthrene		201-581-5	85-01-8		26 mg/kg		24.57 mg/kg	0.00246 %	✓	
9		anthracene		204-371-1	120-12-7		6.1 mg/kg		5.764 mg/kg	0.000576 %	✓	
10		fluoranthene		205-912-4	206-44-0		34 mg/kg		32.13 mg/kg	0.00321 %	✓	
11		pyrene		204-927-3	129-00-0		29 mg/kg		27.405 mg/kg	0.00274 %	✓	
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		16 mg/kg		15.12 mg/kg	0.00151 %	✓	
13		chrysene	601-048-00-0	205-923-4	218-01-9		17 mg/kg		16.065 mg/kg	0.00161 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		19	mg/kg		17.955	mg/kg	0.0018 %	✓	
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		6.3	mg/kg		5.954	mg/kg	0.000595 %	✓	
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		16	mg/kg		15.12	mg/kg	0.00151 %	✓	
17		indeno[123-cd]pyrene		205-893-2	193-39-5		7.6	mg/kg		7.182	mg/kg	0.000718 %	✓	
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.9	mg/kg		1.795	mg/kg	0.00018 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		8	mg/kg		7.56	mg/kg	0.000756 %	✓	
20		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.3	mg/kg	1.197	2.602	mg/kg	0.00026 %	✓	
21		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	16.22	mg/kg	0.00162 %	✓	
22		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.6	mg/kg	3.22	1.826	mg/kg	0.000183 %	✓	
23		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.4	mg/kg	1.142	2.591	mg/kg	0.000259 %	✓	
24		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
25		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 %		
26		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		42	mg/kg	1.126	44.687	mg/kg	0.00447 %	✓	
27		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	97	mg/kg		91.665	mg/kg	0.00917 %	✓	
28		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.4	mg/kg	1.353	0.512	mg/kg	0.0000512 %	✓	
29		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.4	mg/kg	1.5	1.985	mg/kg	0.000198 %	✓	
30		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		12	mg/kg	2.637	29.9	mg/kg	0.00299 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		140	mg/kg	1.968	260.419	mg/kg	0.026 %	✓	
33		TPH (C6 to C40) petroleum group			TPH		920	mg/kg		869.4	mg/kg	0.0869 %	✓	
34		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
38		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]		<0.026	mg/kg		<0.026	mg/kg	<0.0000026 %		<LOD
39		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD

#		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							
40		coronene				2.6 mg/kg		2.457 mg/kg	0.000246 %	✓	
			205-881-7	191-07-1							
								Total:	0.153 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0869%)

WAC results for sample: BH04

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)	%	1.9	3	5	6
2	LOI (loss on ignition)	%	3.3	-	-	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	210	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	199	100	-	-
7	pH	pH	8.3	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	6.7	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0642	0.5	2	25
10	barium	mg/kg	0.145	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.02	0.5	10	70
13	copper	mg/kg	0.061	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.008	0.5	10	30
16	nickel	mg/kg	0.017	0.4	10	40
17	lead	mg/kg	0.073	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	0.054	4	50	200
21	chloride	mg/kg	10	800	15,000	25,000
22	fluoride	mg/kg	2.7	10	150	500
23	sulphate	mg/kg	16	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	32.5	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	370	4,000	60,000	100,000

Key

	User supplied data
	Not applicable
	Inert WAC criteria fail

Classification of sample: BH05

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

Sample details

Sample name:
BH05
Sample Depth:
0.5 m
Moisture content:
11%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 11% Wet Weight Moisture Correction applied (MC)

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	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		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
2		pH			PH		8.7 pH		8.7 pH	8.7 pH		
3		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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		0.49 mg/kg		0.436 mg/kg	0.0000436 %	✓	
5		acenaphthylene		205-917-1	208-96-8		0.27 mg/kg		0.24 mg/kg	0.000024 %	✓	
6		acenaphthene		201-469-6	83-32-9		0.51 mg/kg		0.454 mg/kg	0.0000454 %	✓	
7		fluorene		201-695-5	86-73-7		0.65 mg/kg		0.579 mg/kg	0.0000579 %	✓	
8		phenanthrene		201-581-5	85-01-8		4.5 mg/kg		4.005 mg/kg	0.0004 %	✓	
9		anthracene		204-371-1	120-12-7		1.7 mg/kg		1.513 mg/kg	0.000151 %	✓	
10		fluoranthene		205-912-4	206-44-0		6.4 mg/kg		5.696 mg/kg	0.00057 %	✓	
11		pyrene		204-927-3	129-00-0		6 mg/kg		5.34 mg/kg	0.000534 %	✓	
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		5.8 mg/kg		5.162 mg/kg	0.000516 %	✓	
13		chrysene	601-048-00-0	205-923-4	218-01-9		5.7 mg/kg		5.073 mg/kg	0.000507 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		5.4	mg/kg		4.806	mg/kg	0.000481 %	✓	
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		3	mg/kg		2.67	mg/kg	0.000267 %	✓	
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		6	mg/kg		5.34	mg/kg	0.000534 %	✓	
17		indeno[123-cd]pyrene		205-893-2	193-39-5		2.2	mg/kg		1.958	mg/kg	0.000196 %	✓	
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.87	mg/kg		0.774	mg/kg	0.0000774 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		2.3	mg/kg		2.047	mg/kg	0.000205 %	✓	
20		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.9	mg/kg	1.197	2.024	mg/kg	0.000202 %	✓	
21		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	16.451	mg/kg	0.00165 %	✓	
22		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.6	mg/kg	3.22	1.719	mg/kg	0.000172 %	✓	
23		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		<0.2	mg/kg	1.142	<0.228	mg/kg	<0.0000228 %		<LOD
24		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
25		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 %		
26		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36	mg/kg	1.126	36.073	mg/kg	0.00361 %	✓	
27		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	83	mg/kg		73.87	mg/kg	0.00739 %	✓	
28		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
29		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.5	mg/kg	1.5	2.003	mg/kg	0.0002 %	✓	
30		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		17	mg/kg	2.637	39.893	mg/kg	0.00399 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		63	mg/kg	1.968	110.368	mg/kg	0.011 %	✓	
33		TPH (C6 to C40) petroleum group			TPH		280	mg/kg		249.2	mg/kg	0.0249 %	✓	
34		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
38		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]		<0.026	mg/kg		<0.026	mg/kg	<0.0000026 %		<LOD
39		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD

#		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							
40		coronene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
			205-881-7	191-07-1							
								Total:	0.06 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0249%)

WAC results for sample: BH05

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)	%	2.3	3	5	6
2	LOI (loss on ignition)	%	6.5	-	-	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	51.7	100	-	-
7	pH	pH	7.7	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	9.4	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0579	0.5	2	25
10	barium	mg/kg	0.121	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.019	0.5	10	70
13	copper	mg/kg	0.049	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.0071	0.5	10	30
16	nickel	mg/kg	0.0081	0.4	10	40
17	lead	mg/kg	0.088	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	0.035	4	50	200
21	chloride	mg/kg	27	800	15,000	25,000
22	fluoride	mg/kg	2.7	10	150	500
23	sulphate	mg/kg	37	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	33	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	450	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: BH06

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

Sample details

Sample name:
BH06
Sample Depth:
0.5 m
Moisture content:
14%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	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		20 mg/kg		17.2 mg/kg	0.00172 %	✓	
2		pH			PH		9.3 pH		9.3 pH	9.3 pH		
3		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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		3.5 mg/kg		3.01 mg/kg	0.000301 %	✓	
5		acenaphthylene		205-917-1	208-96-8		0.39 mg/kg		0.335 mg/kg	0.0000335 %	✓	
6		acenaphthene		201-469-6	83-32-9		9.7 mg/kg		8.342 mg/kg	0.000834 %	✓	
7		fluorene		201-695-5	86-73-7		8.2 mg/kg		7.052 mg/kg	0.000705 %	✓	
8		phenanthrene		201-581-5	85-01-8		72 mg/kg		61.92 mg/kg	0.00619 %	✓	
9		anthracene		204-371-1	120-12-7		19 mg/kg		16.34 mg/kg	0.00163 %	✓	
10		fluoranthene		205-912-4	206-44-0		98 mg/kg		84.28 mg/kg	0.00843 %	✓	
11		pyrene		204-927-3	129-00-0		86 mg/kg		73.96 mg/kg	0.0074 %	✓	
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		49 mg/kg		42.14 mg/kg	0.00421 %	✓	
13		chrysene	601-048-00-0	205-923-4	218-01-9		48 mg/kg		41.28 mg/kg	0.00413 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		53	mg/kg		45.58	mg/kg	0.00456 %	✓	
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		26	mg/kg		22.36	mg/kg	0.00224 %	✓	
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		52	mg/kg		44.72	mg/kg	0.00447 %	✓	
17		indeno[123-cd]pyrene		205-893-2	193-39-5		24	mg/kg		20.64	mg/kg	0.00206 %	✓	
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		5.5	mg/kg		4.73	mg/kg	0.000473 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		26	mg/kg		22.36	mg/kg	0.00224 %	✓	
20		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4	mg/kg	1.197	2.471	mg/kg	0.000247 %	✓	
21		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14	mg/kg	1.32	15.897	mg/kg	0.00159 %	✓	
22		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		1.1	mg/kg	3.22	3.046	mg/kg	0.000305 %	✓	
23		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.4	mg/kg	1.142	0.393	mg/kg	0.0000393 %	✓	
24		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
25		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17	mg/kg	1.462	24.846	mg/kg	0.00248 %		
26		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		140	mg/kg	1.126	135.557	mg/kg	0.0136 %	✓	
27		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	110	mg/kg		94.6	mg/kg	0.00946 %	✓	
28		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
29		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.4	mg/kg	1.5	1.806	mg/kg	0.000181 %	✓	
30		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		16	mg/kg	2.637	36.281	mg/kg	0.00363 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		120	mg/kg	1.968	203.138	mg/kg	0.0203 %	✓	
33		TPH (C6 to C40) petroleum group			TPH		960	mg/kg		825.6	mg/kg	0.0826 %	✓	
34		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
38		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
											Total:	0.186 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0826%)

Classification of sample: BH07

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

Sample details

Sample name:
BH07
Sample Depth:
0.5 m
Moisture content:
3.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 3.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		9 pH		9 pH	9pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
4	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
5	acenaphthene		201-469-6	83-32-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
6	fluorene		201-695-5	86-73-7		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
7	phenanthrene		201-581-5	85-01-8		0.22 mg/kg		0.212 mg/kg	0.0000212 %	✓	
8	anthracene		204-371-1	120-12-7		0.07 mg/kg		0.0676 mg/kg	0.00000676 %	✓	
9	fluoranthene		205-912-4	206-44-0		0.3 mg/kg		0.29 mg/kg	0.000029 %	✓	
10	pyrene		204-927-3	129-00-0		0.26 mg/kg		0.251 mg/kg	0.0000251 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.12 mg/kg		0.116 mg/kg	0.0000116 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		0.14 mg/kg		0.135 mg/kg	0.0000135 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.15 mg/kg		0.145 mg/kg	0.0000145 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.05 mg/kg		0.0483 mg/kg	0.00000483 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.12 mg/kg		0.116 mg/kg	0.0000116 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
18		benzo[ghi]perylene		205-883-8	191-24-2		0.06	mg/kg		0.0579	mg/kg	0.00000579 %	✓	
19		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		<1	mg/kg	1.197	<1.197	mg/kg	<0.00012 %		<LOD
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		1.9	mg/kg	1.32	2.421	mg/kg	0.000242 %	✓	
21		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.5	mg/kg	3.22	1.554	mg/kg	0.000155 %	✓	
22		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.331	mg/kg	0.0000331 %	✓	
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
24		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		4.6	mg/kg	1.462	6.723	mg/kg	0.000672 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		8.4	mg/kg	1.126	9.126	mg/kg	0.000913 %	✓	
26		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	4.9	mg/kg		4.729	mg/kg	0.000473 %	✓	
27		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
28		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		0.34	mg/kg	1.5	0.492	mg/kg	0.0000492 %	✓	
29		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		2.8	mg/kg	2.637	7.124	mg/kg	0.000712 %	✓	
30		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
31		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		22	mg/kg	1.968	41.789	mg/kg	0.00418 %	✓	
32		TPH (C6 to C40) petroleum group			TPH		<10	mg/kg		<10	mg/kg	<0.001 %		<LOD
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		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]		<0.026	mg/kg		<0.026	mg/kg	<0.0000026 %		<LOD
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<LOD
39		coronene		205-881-7	191-07-1		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
											Total:	0.00757 %		

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 Deteminand - 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

WAC results for sample: BH07

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)	%	0.2	3	5	6
2	LOI (loss on ignition)	%	0.4	-	-	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	1.49	100	-	-
7	pH	pH	8.1	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	13	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.0361	0.5	2	25
10	barium	mg/kg	0.132	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.031	0.5	10	70
13	copper	mg/kg	0.031	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.0056	0.5	10	30
16	nickel	mg/kg	0.015	0.4	10	40
17	lead	mg/kg	0.015	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	0.063	4	50	200
21	chloride	mg/kg	7.3	800	15,000	25,000
22	fluoride	mg/kg	2.5	10	150	500
23	sulphate	mg/kg	5.8	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	37.4	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	340	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: BH09

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

Sample details

Sample name:
BH09
Sample Depth:
0.5 m
Moisture content:
12%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

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

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1		asbestos	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		20 mg/kg		17.6 mg/kg	0.00176 %	✓	
2		pH			PH		9.2 pH		9.2 pH	9.2 pH		
3		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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
4		naphthalene	601-052-00-2	202-049-5	91-20-3		0.13 mg/kg		0.114 mg/kg	0.0000114 %	✓	
5		acenaphthylene		205-917-1	208-96-8		0.07 mg/kg		0.0616 mg/kg	0.00000616 %	✓	
6		acenaphthene		201-469-6	83-32-9		0.81 mg/kg		0.713 mg/kg	0.0000713 %	✓	
7		fluorene		201-695-5	86-73-7		1.1 mg/kg		0.968 mg/kg	0.0000968 %	✓	
8		phenanthrene		201-581-5	85-01-8		9 mg/kg		7.92 mg/kg	0.000792 %	✓	
9		anthracene		204-371-1	120-12-7		3.1 mg/kg		2.728 mg/kg	0.000273 %	✓	
10		fluoranthene		205-912-4	206-44-0		13 mg/kg		11.44 mg/kg	0.00114 %	✓	
11		pyrene		204-927-3	129-00-0		11 mg/kg		9.68 mg/kg	0.000968 %	✓	
12		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		5.6 mg/kg		4.928 mg/kg	0.000493 %	✓	
13		chrysene	601-048-00-0	205-923-4	218-01-9		5.3 mg/kg		4.664 mg/kg	0.000466 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
14		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		5.9	mg/kg		5.192	mg/kg	0.000519 %	✓	
15		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		3.1	mg/kg		2.728	mg/kg	0.000273 %	✓	
16		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		5.9	mg/kg		5.192	mg/kg	0.000519 %	✓	
17		indeno[123-cd]pyrene		205-893-2	193-39-5		2.4	mg/kg		2.112	mg/kg	0.000211 %	✓	
18		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.43	mg/kg		0.378	mg/kg	0.0000378 %	✓	
19		benzo[ghi]perylene		205-883-8	191-24-2		2.5	mg/kg		2.2	mg/kg	0.00022 %	✓	
20		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		2.4	mg/kg	1.197	2.528	mg/kg	0.000253 %	✓	
21		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9.4	mg/kg	1.32	10.922	mg/kg	0.00109 %	✓	
22		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.8	mg/kg	3.22	2.267	mg/kg	0.000227 %	✓	
23		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.302	mg/kg	0.0000302 %	✓	
24		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<LOD
25		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	35.077	mg/kg	0.00351 %		
26		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		36	mg/kg	1.126	35.668	mg/kg	0.00357 %	✓	
27		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	65	mg/kg		57.2	mg/kg	0.00572 %	✓	
28		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<LOD
29		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		1.7	mg/kg	1.5	2.244	mg/kg	0.000224 %	✓	
30		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		24	mg/kg	2.637	55.687	mg/kg	0.00557 %	✓	
31		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
32		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		75	mg/kg	1.968	129.914	mg/kg	0.013 %	✓	
33		TPH (C6 to C40) petroleum group			TPH		180	mg/kg		158.4	mg/kg	0.0158 %	✓	
34		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
35		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
36		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
37		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
38		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
											Total:	0.0569 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0158%)

Classification of sample: BH10

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

Sample details

Sample name:
BH10
Sample Depth:
0.5 m
Moisture content:
4.5%
(wet weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 4.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	pH			PH		9.8 pH		9.8 pH	9.8 pH		
2	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 }	006-007-00-5				<1 mg/kg	1.884	<1.884 mg/kg	<0.000188 %		<**LOD**
3	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
4	acenaphthylene		205-917-1	208-96-8		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<**LOD**
5	acenaphthene		201-469-6	83-32-9		0.1 mg/kg		0.0955 mg/kg	0.00000955 %	✓	
6	fluorene		201-695-5	86-73-7		0.06 mg/kg		0.0573 mg/kg	0.00000573 %	✓	
7	phenanthrene		201-581-5	85-01-8		0.67 mg/kg		0.64 mg/kg	0.000064 %	✓	
8	anthracene		204-371-1	120-12-7		0.14 mg/kg		0.134 mg/kg	0.0000134 %	✓	
9	fluoranthene		205-912-4	206-44-0		0.92 mg/kg		0.879 mg/kg	0.0000879 %	✓	
10	pyrene		204-927-3	129-00-0		0.94 mg/kg		0.898 mg/kg	0.0000898 %	✓	
11	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.41 mg/kg		0.392 mg/kg	0.0000392 %	✓	
12	chrysene	601-048-00-0	205-923-4	218-01-9		0.49 mg/kg		0.468 mg/kg	0.0000468 %	✓	
13	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.51 mg/kg		0.487 mg/kg	0.0000487 %	✓	
14	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.19 mg/kg		0.181 mg/kg	0.0000181 %	✓	
15	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.46 mg/kg		0.439 mg/kg	0.0000439 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		indeno[123-cd]pyrene		205-893-2	193-39-5		0.19	mg/kg		0.181	mg/kg	0.0000181 %	✓	
17		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
18		benzo[ghi]perylene		205-883-8	191-24-2		0.24	mg/kg		0.229	mg/kg	0.0000229 %	✓	
19		antimony { antimony trioxide }	051-005-00-X	215-175-0	1309-64-4		1.7	mg/kg	1.197	1.943	mg/kg	0.000194 %	✓	
20		arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		2.4	mg/kg	1.32	3.026	mg/kg	0.000303 %	✓	
21		boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		0.7	mg/kg	3.22	2.152	mg/kg	0.000215 %	✓	
22		cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.3	mg/kg	1.142	0.327	mg/kg	0.0000327 %	✓	
23		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<1.8	mg/kg	1.923	<3.462	mg/kg	<0.000346 %		<**LOD**
24		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		96	mg/kg	1.462	140.309	mg/kg	0.014 %		
25		copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11	mg/kg	1.126	11.827	mg/kg	0.00118 %	✓	
26		lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17	mg/kg		16.235	mg/kg	0.00162 %	✓	
27		mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.3	mg/kg	1.353	<0.406	mg/kg	<0.0000406 %		<**LOD**
28		molybdenum { molybdenum(VI) oxide }	042-001-00-9	215-204-7	1313-27-5		2	mg/kg	1.5	2.865	mg/kg	0.000287 %	✓	
29		nickel { nickel sulfate }	028-009-00-5	232-104-9	7786-81-4		6.8	mg/kg	2.637	17.123	mg/kg	0.00171 %	✓	
30		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1	mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<**LOD**
31		zinc { trizinc bis(orthophosphate) }	030-011-00-6	231-944-3	7779-90-0		41	mg/kg	1.968	77.073	mg/kg	0.00771 %	✓	
32		TPH (C6 to C40) petroleum group			TPH		830	mg/kg		792.65	mg/kg	0.0793 %	✓	
33		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
34		benzene	601-020-00-8	200-753-7	71-43-2		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
35		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
36		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
37		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]		<0.026	mg/kg		<0.026	mg/kg	<0.0000026 %		<**LOD**
38		polychlorobiphenyls; PCB	602-039-00-4	215-648-1	1336-36-3		<0.007	mg/kg		<0.007	mg/kg	<0.0000007 %		<**LOD**
39		coronene		205-881-7	191-07-1		<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<**LOD**
											Total:	0.107 %		

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 Deteminand - 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: Insufficient concentration to be considered flammable risk. No liquid free phase.

Hazard Statements hit:

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

Because of determinand:

TPH (C6 to C40) petroleum group (conc.: 0.0793%)

WAC results for sample: BH10

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)	%	1.1	3	5	6
2	LOI (loss on ignition)	%	2	-	-	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	170	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	5.31	100	-	-
7	pH	pH	8.8	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	15	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	<0.01	0.5	2	25
10	barium	mg/kg	0.362	20	100	300
11	cadmium	mg/kg	<0.001	0.04	1	5
12	chromium	mg/kg	0.037	0.5	10	70
13	copper	mg/kg	0.045	2	50	100
14	mercury	mg/kg	<0.005	0.01	0.2	2
15	molybdenum	mg/kg	0.0198	0.5	10	30
16	nickel	mg/kg	0.012	0.4	10	40
17	lead	mg/kg	0.049	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	0.074	4	50	200
21	chloride	mg/kg	36	800	15,000	25,000
22	fluoride	mg/kg	2.3	10	150	500
23	sulphate	mg/kg	22	1,000	20,000	50,000
24	phenol index	mg/kg	<0.1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	43.9	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	420	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Appendix A: Classifier defined and non GB MCL determinands

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide]

antimony {antimony trioxide}

Worst case CLP species based on hazard statements/molecular weight and low solubility. Industrial sources include: flame retardants in electrical apparatus, textiles and coatings

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history

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

Worst case CLP species based on hazard statements/molecular weight. Industrial sources include: production stainless steel, electroplating, wood preservation, anti-corrosion agents or coatings, pigments

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

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected.

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

Insufficient concentration of chromium(VI) to be present. Low Solubility

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight

molybdenum {molybdenum(VI) oxide}

Worst case CLP species based on hazard statements/molecular weight

nickel {nickel sulfate}

Insufficient concentration of chromium(VI) to be present. Low Solubility

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

Harmonised group entry used as most reasonable case. Pigment cadmium sulphoselenide not likely to be present in this soil. No evidence for the other CLP entries: sodium selenite, nickel II selenite and nickel selenide, to be present in this soil.

zinc {trizinc bis(orthophosphate)}

Insufficient concentration of chromium(VI) to be present. Low Solubility

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2025.127.6614.12023 (07 May 2025)
HazWasteOnline Database: 2025.127.6614.12023 (07 May 2025)

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
GB MCL List v6.0 - version 6.0 of 15th February 2025

APPENDIX K: CURRENT GUIDANCE & LEGISLATIONS

CURRENT CONTAMINATED LAND LEGISLATION / GUIDANCE & ENVIRONMENTAL RISK ASSESSMENT METHODOLOGY

LEGISLATION OVERVIEW

This report includes hazard identification and risk assessment in line with the risk-based methods referred to in relevant UK legislation and guidance. Government environmental policy is based upon a "suitable for use approach". When considering the current use of land, Part IIA of the Environment Protection Act 1990 (EPA 1990) provides the regulatory regime, which was introduced by Section 57 of the Environment Act 1995, which came into force in England on 1 April 2000. The main objective of introducing the Part IIA regime is to provide an improved system for the identification and remediation of land where contamination is causing unacceptable risks to human health or the wider environment given the current use and circumstances of the land.

Part IIA provides a statutory definition of contaminated land under Section 78A(2) as:

"any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reason of substances in, on, or under the land, that:

(a) Significant harm is being caused or there is a significant possibility of such harm being caused;
or
(b) Pollution of controlled waters is being, or is likely to be, caused."

Part IIA provides a statutory definition of the pollution of controlled waters under Section 78A(9) as:

"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter".

In order to assist in establishing if there is a "significant possibility of significant harm" there must be a "significant pollutant linkage" for potential harm to exist. That means there must be a source(s) of contamination, sensitive receptors present and a connection or pathway between the two. This combination of source-pathway-receptor is termed a "pollutant linkage or SPR linkage."

Part IIA of The Environmental Protection Act 1990 is supported by a substantial quantity of guidance and other Regulations, especially DEFRA Circular 01/2006 Contaminated Land (this replaces DETR Circular 02/2000). Part IIA defines the duties of Local Authorities in dealing with it. With the exception of situations of very high pollution risk, Part IIA places contaminated land responsibility on thee planning and redevelopment process. In situations where there is very high pollution risk direct action from the Local Authority is usually necessary. Planning Policy Statement 23 (PPS23) provides guidance on the planning process and requires that sites which have been developed shall not be capable of being determined "contaminated land" under Part IIA.

The criteria for assessing levels of pollutants and hence determining whether a site represents a hazard are based on a range of techniques, models and guidance. Within this context it is relevant to note that Government objectives are:

(a) to identify and remove unacceptable risks to human health and the environment;
(b) to seek to bring damaged land back into beneficial use;
(c) to seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the "suitable for use" approach to remediation of contaminated land. The "suitable for use" approach focuses on the risks caused by land contamination. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Risks therefore should be assessed on a site-by-site basis.

The "suitable for use" approach then consists of three elements:

(a) ensuring that land is suitable for its current use - in other words, identifying any land where contamination is causing unacceptable risks to human health and the environment, assessed on the basis of the current use and circumstances of the land, and returning such land to a condition where such risks no longer arise; the contaminated land regime provides the regulatory mechanisms to achieve this;

(b) ensuring that land is made suitable for any new use, as planning permission is given for that new use - in other words, assessing the potential risks from contamination, on the basis of the proposed future use and circumstances, before official permission is given for the development and, where necessary to avoid unacceptable risks to human health and the environment, remediating the land before the new use commences; this is the role of the town and country planning and building control regimes; and

(c) limiting requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to the current use or future use of the land for which planning permission is being sought - in other words, recognising that the risks from contaminated land can be satisfactory assessed only in the context of specific uses of the land (whether current or proposed), and that any attempt to guess what might be needed at some time in the future for other uses is likely to result either in premature work (thereby running the risk of distorting social, economic and environmental priorities) or in unnecessary work (thereby wasting resources).

The mere presence of pollutants does not therefore necessarily warrant action, and consideration must be given to the scale of risk involved for the current and proposed end use of the site.

RISK ASSESSMENT METHODOLOGY

Current practice recommends that the determination of potential liabilities that could arise from land contamination be carried out using the process of risk assessment, whereby "risk" is defined as:

"(a) The probability, or frequency, or occurrence of a defined hazard; and
(b) The magnitude (including the seriousness) of the consequences."

The UK's approach to the assessment of environmental risk is set out in by the Department of the Environment (2000) publication "A Guide to Risk Assessment and Risk Management for Environmental Protection." This established an iterative, systematic staged process which comprises:

(a) Hazard identification
(b) Hazard assessment
(c) Risk estimation
(d) Risk evaluation
(e) Risk Assessment

At each stage during the investigation process the above steps are repeated as more detailed information becomes available for the site.

Land contamination risk management' (LCRM) (2020)), a document published by the Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency (EA) outlines a tiered approach to the assessment of risks posed by contaminated land, as summarised hereunder:

Tier 1: Preliminary Risk Assessment

A Preliminary Risk Assessment is usually undertaken as part of a desk study, outlines potential risks posed by potential contamination to all receptors by defining plausible "pollution linkages" and developing a preliminary conceptual model (PCM). The purpose of this model is to define all possible complete pollution linkages, where the requisite source – pathway – target elements are present, and these elements being defined as:

- a contaminant (source) is a hazardous substance or agent, present at levels that have the potential to cause harm or damage a receptor
- a pathway is the means by or through which a contaminant comes into contact with, or otherwise affects, the receptor
- a receptor (target) is an entity (human being, aquatic environment, flora and fauna etc) that is vulnerable to the adverse effects of the contaminant

This relationship is termed a "pollution linkage". It should be recognised that for a health or environmental risk to exist, all three elements of the relationship or linkage must be present, i.e.

- if there is no contaminant, or contaminant present at levels below those considered to be harmful or damaging to a receptor, then there can be no adverse effect on a receptor
- if there is no receptor present that can be adversely affected by a contaminant, no harm or damage can arise
- even where both a contaminant and a receptor are present, no harm or damage will occur if there is no pathway by or through which a linkage between the two can be established

The absence of one or more of each component (source, pathway, receptor) would prevent a pollutant linkage being established and there would be no significant environmental risk.

The PCM is subject to continual refinement as additional data becomes available. As part of a Phase I Investigation (Desk Study and site walk over) a PCM is formed. Based on the PCM, potential pollutant linkages can be assessed. If the PCM and hazard assessment indicate that a pollution linkage is not of significance then no further assessment or action is required due to this linkage. For each significant and possible linkage a risk assessment is carried out. The linkages which potentially pose significant risks may require a variety of responses ranging from immediate remedial action or risk management or, more commonly, further investigation and risk assessment. This next stage is usually termed a Phase II Main Site Investigation and should provide additional data to allow refinement of the PCM and assess the level of risk from each pollutant linkage. Risk assessment will usually include Tier 2 Generic Quantitative Risk Assessment and / or, if necessary, a Tier 3 Detailed Quantitative Risk Assessment.

Tier 2: Generic Quantitative Risk Assessment (GQRA)

GQRA requires an intrusive investigation in order to characterise the site assisting in the re-assessment of the source-pathway receptor linkage. The conceptual model should be refined accordingly.

Upon completion of an intrusive investigation it must be decided whether Generic Assessment Criteria (GAC) are suitable for assessing the risk posed by observed contaminantion at the site. If GAC are deemed unacceptable for risk assessment purposes or cannot be developed, a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is required.

If GQRA reveals that unnacceptable risks are not present then no further action is required. If GQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is is deemed not suitable not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope nature of further risk assessment must be decided – it is possible that a Tier 3 DQRA will be undertaken in this scenario.

Where the Environment Agency have published an SGV for a contaminant, this will be used in the GQRA. For contaminants where an SGV has not been published and an S4UL has been published by LQM/CIEH S4UL`s, then this S4UL will be used.

Where an SGV or an S4UL is not available, and a DEFRA C4SL is available, then this C4SL will be used. In house derived GAC's will only be used for contaminants where there is no SGV or LQM S4UL or DEFRA C4SL.

Tier 3: Detailed Quantitative Risk Assessment (DQRA)
DQRA is used when pollutant linkages require further assessment. DQRA is often undertaken for pollutant linkages where GAC are unavailable or inappropriate for or more conservative than the actual circumstances of the site. Site specific data is used to create Site Specific Assessment Criteria (SSAC) and enable a more accurate assessment of the risks. Further investigation may or may not be required to formulate SSAC depending on the site specific conditions and information alrerady obtained.

If DQRA reveals that unnacceptable risks are not present then no further action is required. If DQRA identifies a possibility of risk, a decision must be made whether further work is required or necessary for the purposes of risk assessment. If further risk assessment is is deemed not suitable not required an Options Appraisal should be undertaken. If further risk assessment is required, the scope and nature of further risk assessment must be decided at this point.

NOTE: A Tier 1 Preliminary Risk Assessment is undertaken as part of a Desk Study Report and a Preliminary Conceptual Model is devloped for all pollutant linkages. However, the methodologies for assessing the risks to human health, risks to controlled waters and risk posed by ground gas using quantative techniques vary considerably, therefore GQRA and DQRA for human health, controlled waters and ground gas must be undertaken seperately. The risk assessment methodologies where quantative assessment is used for risks to human health, risks to controlled waters and risks posed by ground gas, if relevant, are described hereunder.

BACKGROUND INFROMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO HUMAN HEALTH

Background
In March 2002, the Department for Environment, Food and Rural Affairs (DEFRA) and the EA published the Contaminated Land Exposure Assessment (CLEA) Model and a series of related reports. These were designed to provide a scientifically based framework for the assessment of chronic risks to human health from contaminated land. These reports (CLR7-10) together with associated "SGV" documents have since been withdrawn (August 2008) and the following documents have been published as revised guidance to the CLEA assessment:

- Environment Agency : 2008: Updated Technical Background to the CLEA model Science Report SC050021/SR3
- Environment Agency : 2008: Human Health Toxicological Assessment of Contaminants in Soil SC050021/SR2

Additional guidance on statistical assessment replacing CLR 7 is provided in:

- CL:AIRE :2008 Guidance on Comparing Data With a Critical Concentration

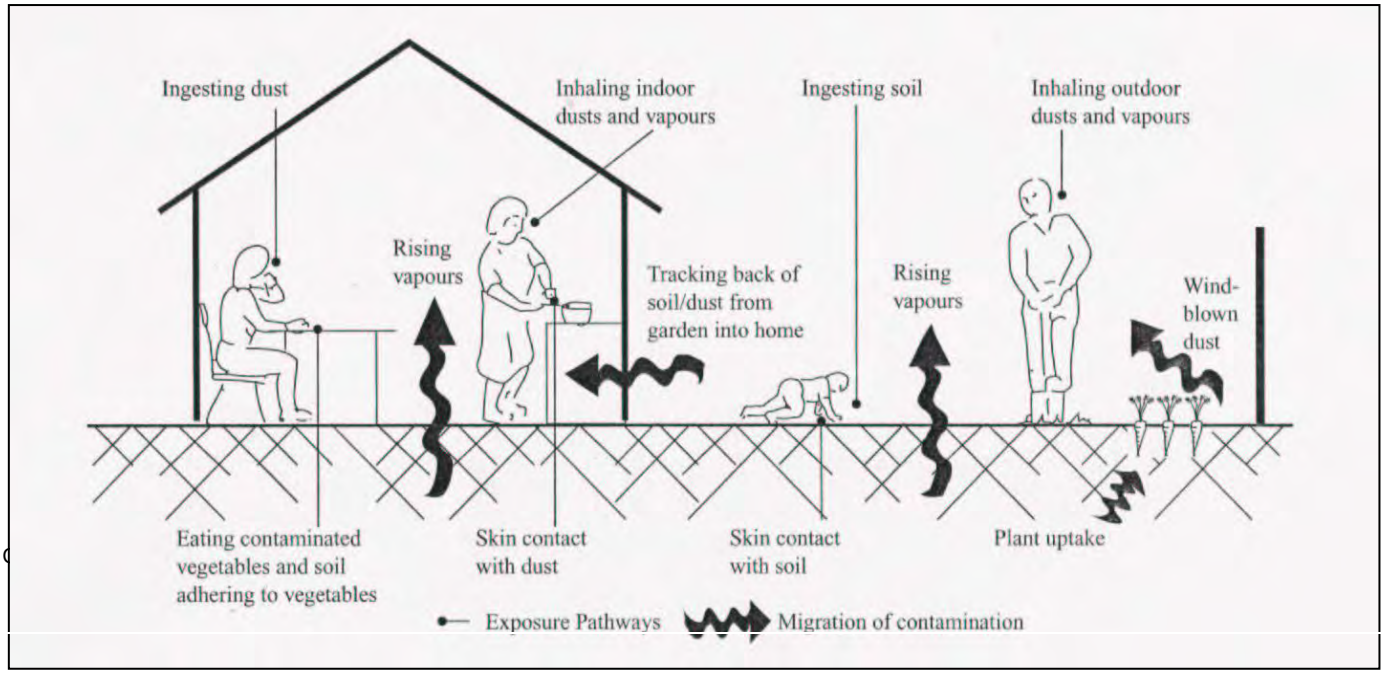
Other guidance/software used in spatial / statistical assessment is provided in:

- USEPA 2006: Data Quality Assessment: Statistical Methods for Practitioners
- Spatial Analysis and Decision Assistance (SADA) – The University of Tennessee

A different approach to the statistical appraisal of data is required depending on whether the assessment of risk is to assess whether land is Contaminated Land in accordance with regulations, or whether the assessment is to determine whether the site is suitable for new development in according with Planning guidance. This is discussed further in CL:AIRE :2008 "Guidance on Comparing Data With a Critical Concentration".

A program for the derivation of GAC`s based on the above guidance is provided by the Environment Agency and is entitled "CLEA Software Version 1.06".

The CLEA model has been developed to calculate an estimated tolerable daily soil intake (TDSI) for site users given a set 'default' exposure pathways. Ten human exposure pathways are covered in the CLEA model as presented below:



(

Ingestion

- ingestion of outdoor soil
- ingestion of indoor dust
- ingestion of home grown produce
- ingestion of soil attached to home grown produce

Dermal Contact

- dermal contact with outdoor soil
- dermal contact with indoor dust

Inhalation

- inhalation of outdoor dust
- inhalation of indoor dust
- inhalation of outdoor soil vapour
- inhalation of indoor soil vapour

It should be noted that there are other potential exposure pathways on some sites not included in the CLEA model e.g. certain organic compounds can pass through plastic water pipes into drinking water supply.

Where contaminated water is present at a depth less than 2mbgl and there is a potential risk of inhalation of vapours (only when volatile compounds are present) the risk from inhalation of vapours from soil water will be assessed using a UK compliant version of BP Risc v4.02.

The presence and/or significance of each of the above exposure pathways are dependent on the type of land use being considered and the nature of the contaminant under scrutiny. Accordingly, the CLEA model considers for principle 'default' land use types and makes a series of 'default' assumptions with regard to human exposure frequency, duration and critical human target groups for each land use considered:

- residential
- allotments
- commercial / industrial land use

The above land use categories defined in the CLEA are detailed below:

Residential: This generic scenario assumes a typical residential property consisting of a two-storey house built on a ground-bearing slab with a private garden consisting of lawn, flowerbeds, and a small fruit and vegetable patch. The occupants are assumed to be parents with young children, who make regular use of the garden area.

Allotments: This generic scenario assumes a plot of open space (about 250 m2), commonly made available by the local authority to tenants to grow fruit and vegetables for their own consumption. There are usually several plots to a site and the overall site area may cover more than a hectare. The tenants are assumed to be parents or grandparents and that young children make occasional accompanied visits to the plot.

Commercial/Industrial: There are many different kinds of workplace and work-related activities. This generic scenario assumes a typical commercial or light industrial property consisting of a threestorey building at which employees spend most time indoors and are involved in officebased or relatively light physical work.

Human Health Risk Assessment Methodolgy

Assessment of risk for the protection of human health is undertaken using the methodology as outlined previously, and summarised hereunder:

- Tier 1 Preliminary Risk Assessmnent
- Tier 2 Generic Quantitative Risk Assessment
- Tier 3 Detailed Quantitative Risk Assessment

The Tier 1 Preliminary Risk Assessment is undertaken as part of the desk study report and includes the development of a Preliminary Conceptuel Model. Tier 2 and Tier 3 Quantitative Risk Assessments are undertaken in order to develop and refine the Preliminary Conceptual Model aiding a more detailed assessment of the risk posed by contaminants revelaed by site investigation and soil / soil water chemical analyses.

The methods used by *CC GEOTECHNICAL LTD* to derive assessment criteria, to statistically analyse chemical data and to compare chemical data to the derived assessment criteria are discussed herunder.

Derivation of Generic Assessment Criteria (GAC) and Site Specific Assessment Criteria (SSAC)

GAC`s are derived on the basis of the proposed land use and the associated applicable exposure pathways. It should be noted that there are difficulties in establishing soil concentrations of contaminants beyond which risks from exposure to these contaminants would be 'unacceptable' and the GAC value does not necessarily equate to the level for "significant possibility of significant harm" as defined in Part IIA of The Environmental Protection Act (1990) to determine whether land is "contaminated." This ultimately requires detailed 'toxicological' information of the health effects of individual contaminants and also a scientific judgement on what constitutes an 'unacceptable' risk. The primary purpose of the CLEA derived GAC's are as 'minimal risk thresholds' for the assessment of human health risks in relation to land use.

Minimal risk thresholds calculated using generic input parameters for each of the above land uses are termed Generic Assessment Criteria (GAC) and are used for Generic Quanatative Risk Assessment (GQRA). However, further assessment may be required taking into consideration site specific factors such as the way the land is used, the soil type, the building

characteristics and the exact nature of the receptor, to determine whether there is a significant possibility of risk to human health to site users. Such an assessment is known as a Detailed Quantitative Risk Assessment (DQRA) and the resultant threshold concentrations are known as Site Specific Assessment Criteria (SSAC). Such assessments should be conducted with the agreement of the local authority (or the Environment Agency) since it is the authority that determines whether land is Contaminated Land or whether Planning Permission for a new development may be granted.

For the purposes of this report, assessment criteria have been derived in accordance with current guidance based on the conceptual model for the proposed land use using the CLEA v1.06 software. These criteria are not intended to indicate whether the site may be contaminated land nor do they replace any published soil guideline values. However, the values are intended to provide guidance for the local authority on whether the site may be considered uncontaminated. If, based on the site's proposed future use, the site would be considered by the local authority to be uncontaminated and therefore, on the basis of soil concentrations, fit for purpose, then no further risk assessment based on soil concentrations and the risk to human health would be necessary. However, should these criteria be exceeded or the conceptual site model vary from the model used in the risk assessment to derive these values then the risk assessment should be updated accordingly.

For contaminants routinely analysed where inhalation is a significant pathway (naphthalene, phenanthrene, Aromatic EC5-EC7, Aromatic EC7-EC8, Aromatic EC8-EC10, Aromatci EC10-EC12, Aromatic EC12-EC16, Aliphatic EC5-EC6, Aliphatic EC8_EC10, Aliphatic EC10-EC12, Aliphatic EC12-EC16), plots of the GAC as a function of Soil Organic Matter (SOM) are used to determine if they pose a potential risk to human health, which are presented hereunder. Where there is an exceedance further assessment may be undertaken.

Statistical Assessment of Soil Contamination Data & Comparison of Contamination Data to Threshold Values

In any site investigation only a small fraction of the soil on the site is analysed. Therefore the mean derived from the contamination data for a contaminant may not be the same as the true mean for the contaminant distribution on the site. To improve the reliability of any assessment a statistical analyses is undertaken in line with the CL:AIRE document "Guidance on Comparing Soil Contamination Data with a Critical Concentration".

Statistical assessment of soil data is undertaken using programs based on the guidance in the CL:AIRE document or the USEPA software ProUCL v4.0.

Where the number of results in a dataset is less than four, a statistical assessment is not undertaken, and the assessment is performed by comparison of the maximum value(s) with a Health Criteria Value (HCV), such as Generic Assessement Criteria value(s).

For the Planning situation, the regulator needs to check whether the concentration of contaminants is low compared to the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is lower than the HCV.

For the Part IIA scenario the regulator needs to determine whether the concentration of contaminants is greater than the HCV. This decision is based on whether there is at least a 95% confidence level that the true mean of the dataset is higher than the HCV. However, the regulator may proceed with determination if there is just a 51% probability, "on the balance of probabilities".

The Outlier Test used in the statistical assessment may not be able identify separate populations if numerous populations are present. Inorder to ensure that this is not the case a spatial assessment of the data will be undertaken using SADA.

If the screening levels are exceeded then more sophisticated quantitative risk assessment or remedial action may be undertaken. The benefits of undertaking a quantitative risk assessment must be weighed against the likelihood that it will bring about cost savings in the proposed remediation.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED TO CONTROLLED WATER

Definition of Controlled Waters

The term 'controlled waters' is defined in Section 104 of the Water Resources Act 1991 as:

"Territorial Waters…which extend seawards for three miles…, coastal waters…, inland freshwaters, waters in any relevant lake or pond or of so much of any relevant river or watercourse as is above the freshwater limit, and ground waters, that is to say, any waters contained in underground strata."

Note that the definition of groundwater under the Water Resources Act 1991 includes all water within underground strata (including soil / pore water in the unsaturated zone). The definition of groundwater under the Groundwater Directive however is limited to water in the saturated zone. For the purposes of Part IIA of the Environmental Protection Act 1990, the Environment Agency recommends that the groundwater within the saturated zone only is considered as the receptor (rather than soil / pore water).

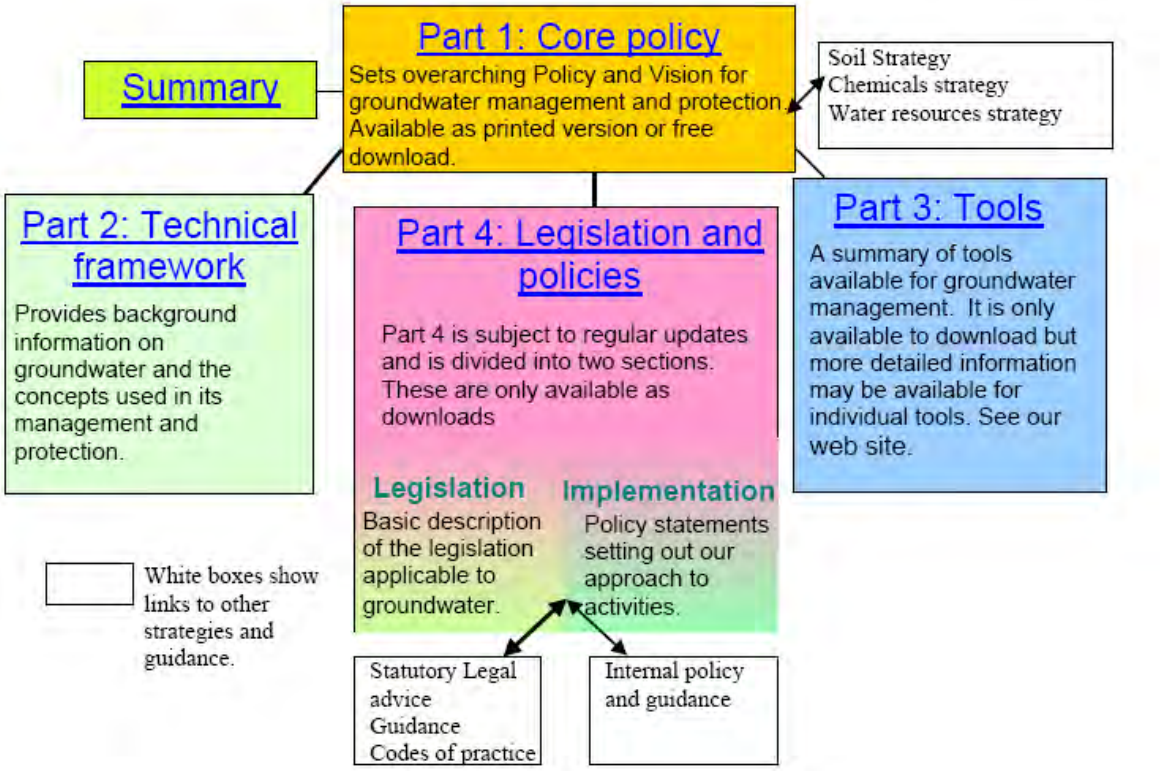
Environment Agency Guidance

Legislation and guidance surrounding the protection of controlled waters in the UK is abundant and can be complex. The Environment Agency's overall position on groundwater is *"To protect and manage groundwater resources for present and future generation in ways that are appropriate for the risks that we identify"* (Groundwater Protection : Policy and Practice GP3, 2006). In brief, the core objectives of the existing legislation serve to enforce this position.

In 1992, the National Rivers Authority published their Policy and Practice for the Protection of Groundwater (PPPG), this document was influential as it provided a focus for key developments such as Source Protection Zones (SPZs) and

Groundwater Vulnerability Maps. The Policy was then revised in 1998, since which there have been substantial changes in legislation, driven by Europe. Key European Directives relating to groundwater include the Groundwater Directive (80/68/EEC) and the Water Framework Directive (2000/60/EC). Aspects of these directives are controlled by primary UK legislation such as the Water Resources Act 1991. Further to legislative changes, gaps identified in the 1998 PPPG required addressing. These changes are reflected in the forthcoming Environment Agency Policy document entitled *Groundwater Protection : Policy and Practice (GP3)*, a draft version of which was available for public consultation (Parts 1 to 3) ending July 2006 with Part 4 issued in March 2008. Part 4 includes a section on key groundwater legislation and the Environment Agency's interpretation of it.

The following gives a breakdown of the structure of the document (taken from the Environment Agency GP3 draft consultation document, 2006)



Controlled Water Risk Assessment Methodology

The risk posed to controlled water is assessed by *CC GEOTECHNICAL* in accordance with current guidance as outlined hereunder.

In order for a developer of a potentially contaminated site to fulfil their obligations under the legislation, a site assessment would be required to be undertaken in order to identify any potential risks to controlled waters and to derive suitable clean-up criteria if necessary to ensure the protection of controlled waters. The general approach for Groundwater Protection is detailed further in Part 3 of GP3.

When assessing groundwater impact the Environment Agency advocate the application of their framework methodology "Remedial Targets Methodology – Hydrogeological Risk Assessment for Land Contamination" Environment Agency (2006). The methodology has four levels of assessment as described below:

- Level 1 considers whether contaminant concentrations in "pore water" in contaminated soil are sufficient to impact on the receptor, ignoring dilution, dispersion and attenuation along the pathway. The "pore water" concentration is determined from:

  i) measured "pore water" concentrations or perched water quality
  ii) soil leaching tests
  iii) theoretical calculations based on soil/water partitioning equations

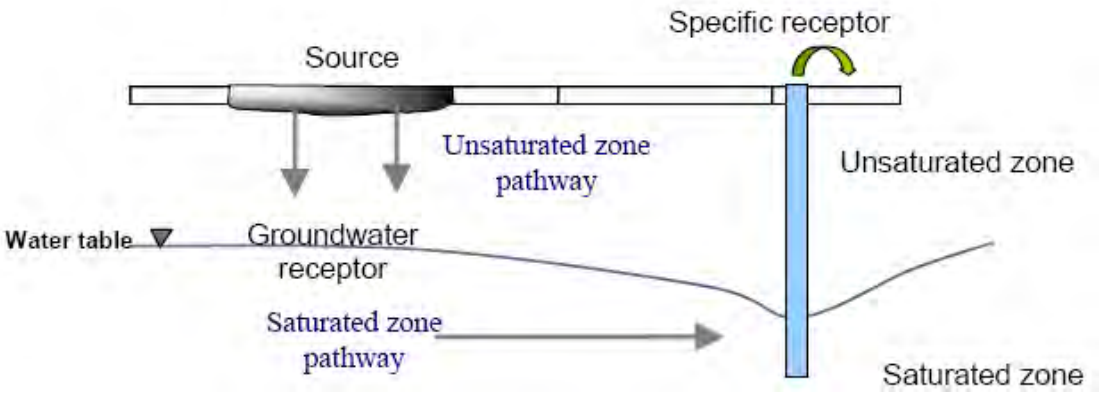
- Level 2 considers dilution by the receiving groundwater or surface water body and whether this is sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as the target concentration multiplied by a dilution factor (DF).

- Levels 3 and 4 consider whether natural attenuation (including dispersion, retardation and degradation) of the contaminant as it moves through the unsaturated and saturated zones to the receptor are sufficient to reduce contaminant concentrations to acceptable levels. The remedial target is defined as target concentration multiplied by a dilution factor (DF) and attenuation factor (AF). In Level 3 simple analytical models are used to calculate the significance of attenuation. The Environment Agency has released a "Remedial targets worksheet v3.1" to carry out basic calculations using a conservative approach up to Level 3 using basic principles assuming a simple migration of contaminants from the

source zone into the aquifer receptor. Level 4 assessment uses more sophisticated numerical models, and allows for the introduction of additional geological horizons and is used mainly to determine whether soil contaminants will reach their target within a specified timeframe. Use of such software should only be used once agreement has been obtained from the Environment Agency.

Three main stages apply to any risk assessment of controlled waters, these are:

1. Risk Screening (Tier 1 Preliminary Risk Assessment): The understanding of the Conceptual Site Model (CSM) is the key to assessing any site. Using a robust CSM, potential pathways or receptors may be screened out from any further assessment at an early stage. For example if the pathway through the unsaturated zone is blocked by the presence of a significant thickness of low permeability clay. A greater understanding of the CSM is achieved with each tier of risk assessment. An example of a basic CSM is given below (taken from the Environment Agency GP3 draft consultation document, 2006):



2. Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Level 1): When undertaking the Generic Hydrogeological Risk Assessment (EA Remedial Targets Methodology Tier 1), comparison of chemical analytical results is made with screening criteria. Published values of screening criteria with which chemical test results can be compared are published in the following guidance:

   - Water Supply (Water Quality) Regulations 2000
   - The Private Water Supplies Regulations 1991
   - Environmental Quality Standards for surface waters based on The EC Dangerous Substnaces Directive (76/464/EEC and Daughter Directives)
   - The Surface Waters(Abstraction for Drinking Water Classification) Reguslations 1996
   - World Health Organisation Drinking Water Standards 2004

   Should the Level 1 assessment indicate threshold levels to be exceeded, then there are three alternative ways in which to proceed:

   - To devise suitable remedial solutions
   - To carry out more investigation, sampling and analysis
   - To conduct a site specific Detailed Quantitative Risk Assessment (DQRA) to determine determine if the materials are suitable for thair proposed use, or devise site specific clean-up level

3. Detailed Quantitative Risk Assessment (EA Remedial Targets Methodology Levels 2 to 4): The decision to carry out a DQRA will be dependant on the extent and implications of the initial qualitative and generic assessment. The scope of any such assessment will be accurately defined by the outcomes of the previous levels of assessment. The conceptual model will be sufficiently refined by this stage that only certain contaminants of concern, certain pathways and certain receptors will require further assessment, the remainder having been screened out.

   Additional site specific data is normally required for this stage of assessment, as explained above, more processes that are capable of affecting contaminant concentrations are considered (such as dilution and attenuation).

   Remediation criteria, if derived, will therefore be specific to each site and will be based on a detailed assessment of the potential impact at the identified receptor or *compliance point*. A greater level of confidence can be placed on the predicted impact on the compliance point following a DQRA.

BACKGROUND INFORMATION, CURRENT GUIDANCE AND RISK ASSESSMENT METHODOLOGY FOR RISKS POSED BY GROUND GAS

Background

Origin of Ground and Landfill Gases

When carrying out a ground gas risk assessment, the origin or source of the gases is important as potential risks will vary depending on the source. This Appendix relates to the risk of the two main ground gases of concern; methane and carbon dioxide, and does not apply to other ground gases (e.g. radon or vapours from hydrocarbon spills). Methane and carbon dioxide are major constituents of landfill gas but can also occur from a variety of anthropogenic and natural sources, as summarised in Table 5 below:

Gas	Source	Comments
Landfill Gas	Anaerobic decomposition of degradable waste within landfill sites. Typically 60% methane and 40% carbon dioxide during methanogenic phase.	Composition varies over time, particularly in early stages. Contains a range of minor constituents (particularly carbon monoxide and hydrogen sulphide).
Landfill Associated Gases	- Anaerobic degradation of leachate external to the site; - Degassing of dissolved gases in groundwater; - Evolution of gases following interaction between leachate and groundwater	Can result in secondary (external) production of methane or carbon dioxide.
Made Ground	Anaerobic degradation of organic components	Very variable depending on source
Sewer Gas, Cess Pits	Anaerobic degradation of organic components of sewage producing methane and carbon dioxide.	Often characterised by hydrogen sulphide odour.
Mains Gas	Leakage from underground pipework or storage tanks. Mainly methane but often contains higher alkanes.	An odouriser is added to permit detection of leaks. Typically 90% CH_4, but 1 to 27% C_2-C_4 alkanes, May also contain other trace gases e.g. CO, helium and CO_2 (from degradation of CH_4 in the ground).
Other Anthropogenic Sources	- Degradation of leaked or spilled hydrocarbons or other industrial chemicals; - Anaerobic degradation of organic contaminants in groundwaters (e.g. silage liquor); - Reactions between monitoring well construction components and environment; - Burial grounds/cemeteries.	Hydrocarbon spillages often have an 'oily' odour. Fuel spillages common – Petrol or Diesel and can contain a wide range of VOC's. Can degrade to produce methane / carbon dioxide.
Alluvium / Marsh / Peat Gas	Anaerobic microbial degradation of organic material (usually waterlogged vegetation / peat). Often associated with the presence of alluvial deposits or dredgings.	
Geogenic Gas	Natural seepages of carbon dioxide and hydrocarbon gases derived from geologic sources such as coal seams and deep oil / gas source formations. Can be present in solution in groundwaters.	Methane most common but can contain carbon dioxide and higher alkanes.
Mine Gases	Various types. Most common is "fire damp" with high methane, produced by the desorption of gas trapped in coal. "Black damp" (Stythe gas) with high carbon dioxide and denser than air. "White damp" is high in carbon monoxide.	Methane most common. Can contain higher alkanes, carbon dioxide and carbon monoxide. Often low in oxygen.
Natural Shallow Ground Gas	Various types - high carbon dioxide formed by subsurface aerobic activity leading to depleted oxygen and elevated carbon dioxide; - chemical degradation of rocks (e.g. carbonates) producing carbon dioxide; - carbon dioxide production in root zone of soils by plants.	Gases can be emitted from ground under falling barometric pressure conditions.

Table 5. Potential Sources of Ground Gases

This Appendix does not provide guidance for the assessment of risk when other gases are present due to 'Other Sources' from the above table (particularly organic compounds such as BTEX and VOC's or for the risk from radon or hydrogen sulphide).

To determine the origin of the gas a range of factors must be considered together, including;

1. Proximity of likely sources
2. Ground conditions (geology, hydrogeology, anthropogenic pathways etc)
3. Properties of gases present including:
   - Chemical composition
   - Physical properties
   - Ratios of components e.g. methane : carbon dioxide
4. Timeframe of activities such as infilling periods, capping works, installation of gas control systems etc

Identification of the originating source may be problematic given that there may be more than one source present and trace gas analysis may be required. Identification of the sources of the gases encountered during monitoring is usually carried out through a process of eliminating the most unlikely potential sources (given the site setting) and selecting those which are most likely.

Hazards Associated with Presence of Methane

Methane gas is combustible and potentially explosive. When the concentration of methane in air is between the limits of 5.0%v/v and 15.0%v/v an explosive mixture is formed. The Lower Explosive Limit (LEL) of methane is 5.0%v/v, which is equivalent to 100% LEL. The 15.0%v/v limit is known as the Upper Explosive Limit (UEL), but concentrations above this level cannot be assumed to represent safe concentrations. Further, the LEL and UEL will vary (up and down) depending upon the proportion of other gases (including oxygen). However, the fact that methane is a colourless, odourless gas means that there

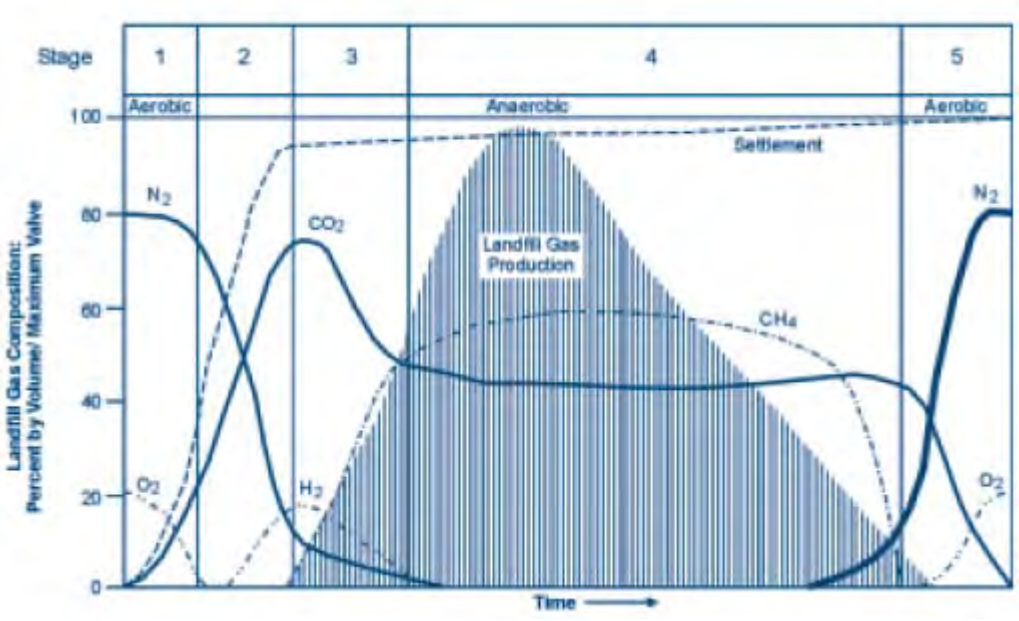
is no simple indicator of the presence of the gas until such a time as explosive limits are reached and an incident occurs. Methane is lighter than air and has a low toxicity. However, at high concentrations it can result in asphyxiation due to oxygen displacement.

Hazards Associated with Presence of Carbon Dioxide

Carbon dioxide is a colourless, odourless gas, which, although non-flammable, is both toxic and an asphyxiant. As carbon dioxide is denser than air, it will collect in low points and depressions. The UK Health & Safety Executive (HSE) has published information relating to concentrations of carbon dioxide that humans may be exposed to, which uses concentrations contained in the Control of Substances Hazardous to Health Regulations 2002 (as amended). These are the Long Term Occupational Exposure Limit (LTOEL, 8 hour period) and the Short Term Occupational Exposure Limit (STOEL, 15 minute period), which are 0.5% and 1.5% carbon dioxide, respectively.

Parameters Influencing the Rate of Ground Gas Production

The figure below is taken from EA guidance document LFTGN 03 illustrates typical ground gas generation curves from biodegradable materials:



The production of methane and carbon dioxide at a landfill site may be expected to be considerable and ongoing. Concentrations of methane will eventually decrease, followed by concentrations of carbon dioxide, but the duration and rate of gas production can vary markedly between sites. Five distinct phases of gas production occur during the process which are, in order of event as marked above, as follows:

1. An aerobic phase involving oxygen depletion and temperature increase through aerobic respiration;
2. The establishment of anaerobic conditions and the evolution of carbon dioxide and hydrogen through acidogenic activity;
3. Commencement of methanogenic activity; the establishment of populations of methanogenic bacteria;
4. A phase of stable methanogenic activity, which may go on for many tens of years;
5. A phase of decreasing methanogenic activity, representing depletion of the organic material and a return to aerobic conditions.

The time scale for the return to the normal ground gas concentrations will be highly variable, depending upon the types and quantities of materials present. In addition, the optimum parameters influencing the rate of decomposition and ground gas production within the ground at a site are as follows:

- High water content with adequate rainfall and water infiltration to provide moisture content between approximately 20 to 26%;
- Conditions that either are or are very close to anaerobic;
- High proportion of biodegradable materials;
- A pH between 6.5 and 8.5, ideally verging slightly on the acidic between pH 6 to 7;
- Temperature between 25°C and 55°C;
- The ratio of the biochemical and chemical oxygen demands (BOD:COD);
- High permeability;
- Small particle size, as finer subsurface materials possess a greater surface area to provide a growing 'face' for the micro-organisms but high fines levels reduces permeability and reduces decomposition rate.

For this reason, it is vital that sources of methane and carbon dioxide are identified prior to the commencement of any work on a construction site, and that the ground gas regime is characterised at the worst temporal conditions a site may experience. From this, a risk assessment is carried out to identify the risk at the site from ground gases so that suitable protection measures can be designed and incorporated into a development to prevent a dangerous build-up of gas occurring.

Factors Influencing the Migration and Behaviour of Ground Gases

CD37d

There are many factors that influence the migration of ground gases which can effect the risk from a gassing source:

- driving force − pressure differential along a pathway, diffusion and dissolved in solution;
- meteorological conditions − short term and seasonal conditions including atmospheric pressure changes (e.g. rapidly falling pressure causes gas to expand increasing emission rates), rainfall, frozen ground and thawing, temperature;
- geological and groundwater conditions − these can have the over riding influence on the direction/pathways and quantity of migrating gas;
- anthropogenic influences − man-made pathways include mine shafts, service runs/drains, foundation piles, underground voids/pits/basements, foundation/building design/construction

Current Guidance
Previous versions of Building Regulations Approved Document C provided statutory guidance stating that consideration should be given to appropriate action and / or specific solutions in situations where methane concentration exceeded 1%v/v or carbon dioxide concentrations exceeded 5%v/v. The latest Building Regulations Approved Document C (DoE 2004) no longer endorses this approach and recommends the use of a risk based approach to interpreting a gas monitoring survey. This is in line with current EA guidance for landfill gas (LFTGN 03, 2004) which recommends the use of a structured risk based approach similar to that outlined in CLR 11. On this basis, recent guidance has been produced in 2006 and 2007 with the aim of providing up to date advice in relation to residential and commercial development. The guidance does not address issues associated with gas derived from landfills, for this refer to *"Guidance on the Management of Landfill Gas"* (Environment Agency 2004) for an overview.

Recent guidance relevant to gas assessments for residential and commercial development includes;

- Wilson *et al.* (CIRIA C665, December 2007) ***"Assessing Risks Posed by Hazardous Ground Gases for Buildings."***
  This document provides up to date advice on all aspects of ground gas risk assessment such as investigation, monitoring programmes, data collection and interpretation. The guidance presents separate methodologies for the characterisation of:
  - All development types except low rise housing with gardens (Situation A)
  - Low rise housing with gardens (Situation B)

- Boyle and Witherington (NHBC / RSK Group, Report 10627-R01(04) January 2007) ***"Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present."***
  This document presents the "Traffic Lights System" detailed below and is relevant only for low rise properties (e.g. bungalows and town houses) that have a ventilated sub-floor void (i.e. Situation B as described in CIRIA C665).

- British Standard (BS 8485 2015 +A1 2019) ***"****Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings****"***
  This document provides an overview of gas characterisation and assessment. The Standard is intended to be used by designers of gas protection measures and regulators involved in the assessment of design solutions.

Further guidance, Wilson and Card (CIEH) ***"Ground Gas Handbook for Designers and Regulators"*** providing practical guidance on ground gas assesments and the design and evaluation of protection measures, is expected to be published in March 2009.

Each of these documents continues to highlight the importance of, and give further guidance towards, carrying out a tiered risk-based decision-making process in accord with government policy on dealing with contamination from historic or natural sources and highlight the importance of the Conceptual Model in site characterisation.

Ground Gas Risk Assessment Methodology
Assessment of risk posed by ground gas is undertaken using the methodology as outlined previously, and summarised hereunder:

- Tier 1 Preliminary Risk Assessmnent
- Tier 2 Generic Quantitative Risk Assessment
- Tier 3 Detailed Quantitative Risk Assessment

The methodology used in each of the above assessments with concern to ground gas is discussed hereunder.

<u>Tier 1 Preliminary Risk Assessment</u>
All potential sources of methane and carbon dioxide are identified in the Preliminary Conceptual Model and the generation potential determined. The background information discussed earlier is referred to in order to determine the potential for a source to generate ground gas.

CIRIA C665 provides idealised monitoring frequency / period dependant upon generation potential of gas source and sensitivity of the proposed land use as below:

Idealised Frequency and Period of Monitoring (after Table 5.5a and 5.5b, CIRIA C665)

		Generation Potential of Source				
		Very Low	Low	Moderate	High	Very High
Sensitivity of Development	Low (Commercial)	4/1	6/2	6/3	12/6	12/12
	Moderate (Flats)	6/2	6/3	9/6	12/12	24/24
	High (Residential with Gardens)	6/3	9/6	12/6	24/12	24/24

Notes
1. First number is the number of readings and the second is the minimum period in months (e.g. 6/2 − six sets of readings over two months).
2. At least two sets of readings must be at low (preferably under 1,000 mb) and falling pressure.

The monitoring programme is decided using the above table prior to the intrusive site investigation. However, if the intrusive investigation reveals that a the potential source is better or worse than anticipated the monitoring programme should be modified accordingly. For example, if the made ground contains no evidence of organic material and comprises entirely granular brick fill, the potential for that made ground to generate ground gas is reduced considerably.

Tier 2 Generic Quantitative Risk Assessment
Generic Quantitiative Risk Assessment is undertaken upon completion of the required gas monitoring period.

All three current guidance documents propose that both ground gas concentrations and flow rates are used to calculate the limiting gas well gas volume flow rates for methane and carbon dioxide, based on the ground gas conditions monitored for during the worse-case temporal conditions. This limiting gas well volume flow rate is termed the Gas Screening Value (GSV, note that this was termed borehole gas volume flow), and is calculated as follows:

$$GSV\ (l/hr) = \frac{[\text{gas well gas concentration } (\%v/v)] \times [\text{gas well flow rate } (l/hr)]}{100}$$

GSV's are compared to typical max concentrations and limiting gas screening values derived for either Situation A - All development except low rise housing with gardens, or Situation B low rise housing with gardens (NHBC Traffic Light System). Table 8.5 from CIRIA C665 is used for comparison of gas screening values for "Situation A Developments" and is presented hereunder:

Characteristic Situation (CIRIA R149)	Comparable Partners in Technology gas Regime (see Box 8.2)	Risk Classification	Gas Screening Value (CH_4 or CO_2) (l/hr)[1]	Additional Factors	Typical Source of Generation
1	A	Very low risk	<0.07	Typically methane ≤ 1% and/or carbon dioxide ≤ 5%. Otherwise consider increase to Situation 2	Natural soils with low organic content "Typical" made ground
2	B	Low risk	<0.7	Borehole air flow rate not to exceed 70l/hr. Otherwise consider increase to characteristic Situation 3	Natural soil, high peat/organic content. "Typical" made ground
3	C	Moderate risk	<3.5		Old landfill, inert waste, mineworking flooded
4	D	Moderate to high risk	<15	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking susceptible to flooding, completed landfill (WMP 26B criteria)
5	E	High risk	<70		Mineworking unflooded inactive with shallow workings near surface
6	F	Very high risk	>70		Recent landfill site

Table 8.5 from CIRIA C665 Modified Wilson and Card Classification

Table 8.7 is used for comparison of gas screening values for "Situation B Developments" and is presented herunder:

Traffic Light	Methane[1]		Carbon Dioxide[2]	
	Typical max concentration[3] (% by volume)	Gas screening value[2,4] (litres/hour)	Typical max concentration[3] (% by volume)	Gas screening value[2,4] (litres/hour)
Green				
Amber 1	1	0.13	5	0.78
Amber 2	5	0.63	10	1.60
Red	20	1.60	30	3.10

Notes:
1. The worst-case ground gas regime identified on the site, either methane or carbon dioxide, at the worst-case temporal conditions that the site may be expected to encounter will be the decoder as to what Traffic Light is allocated;
2. Borehole Gas Volume Flow Rate, in litres per hour as defined in Wilson and Card (1999), is the borehole flow rate multiplied by the concentration in the air stream of the particular gas being considered;
3. The Typical Maximum Concentration can be exceeded in certain circumstances should the Conceptual Site Model indicate it is safe to do so;
4. The Gas Screening Value thresholds should not generally be exceeded without the completion of a detailed ground gas risk assessment taking into account site-specific conditions.

Table 8.7 from CIRIA C665 - NHBC Traffic light system for 150 mm void

Dependant on the outcome of the assessment of risk posed by ground gas it is determined whether gas protection measures are required for the proposed development, and or whether a detailed quantitative risk assessment is required for the site.

Selection & Design of Protective Measures
Table 8.6 and Box 8.4 of CIRIA C665 contain information on the detailed design of protection measures and were initially intended for the purposes of determining then level of protection measures a development requires. These tables and related text include some useful information on the design of gas protection measures, however BS84845:2007, which supersedes the guidance included within CIRIA C665, is used for selection of gas protection measures.

BS8485:2015 +A1 2019 uses a scoring system dependant on the Characteristic Situation / NHBC Traffic Light and proposed end use of the site. The scoring system is summarised in BS8485:2015 + A1 2019 Table 2 as presented hereunder:

Characteristic gas situation, CS	NHBC traffic light	Required gas protection			
		Non-managed property e.g. private housing	Public building (a)	Commercial buildings	Industrial buildings (b)
1	*Green*	0	0	0	0
2	*Amber 1*	3	3	2	1 (c)
3	*Amber 2*	4	3	2	2
4	*Red*	6 (d)	5(d)	4	3
5			6(e)	5	4
6				7	6

NOTE Traffic light indications are taken from NHBC Report no.:10627-RO1 (04) and are mainly applicable to low-rise residential housing[1]. These are for comparative purposes but the boundaries between the traffic light indications and CS values do not coincide.

a) Public buildings include, for example, managed apartments, schools and hospitals.
b) Industrial buildings are generally open and well ventilated. However, areas such as office pods might require a separate assessment and may be classified as commercial buildings and require a different scope of gas protection to the main building.
c) Maximum methane concentration 20% otherwise consider and increase to CS3.
d) Residential building on higher traffic light/CS sites is not recommended unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.
e) Consideration of issues such as ease of evacuation and how false alarms will be handled are needed when completing the design specification of any gas protection scheme

[1] The NHBC guidance and CIRIA C665 guidance refers to low rise housing (which is up to three storeys without lifts) that is constructed with a 150mm ventilated sub-floor void.

BS8485:2015 A1 +2019 Table 2 Required gas protection by characteristic gas situation and type of building

Once a score is assigned, a combination of protection systems / elements is chosen from BS8485:2015 +A1 2019 Table 3 shown below:

PROTECTION ELEMENT/SYSTEM		SCORE	COMMENTS
a) Venting/dilution (See Annex A BS8485)			
Passive sub floor ventilation (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)[A]	Very good performance	2.5	*Ventilation performance in accordance with Annex A (BS8485)*
	Good performance	1	*If passive ventilation is poor this is generally unacceptable and some form of active system will be required.*
Subfloor ventilation with active abstraction/pressurization (venting layer can be a clear void or formed using gravel, geocomposites, polystyrene void formers, etc.)[A]		2.5	*There have to be robust management systems in place to ensure the continued maintenance of any ventilation system. Active ventilation can always be designed to meet good performance.*
Ventilated car park (basement or undercroft)		4	*Mechanically assisted systems come in two forms: extraction and positive pressurization.*
b) Barriers			
Floor slabs			
Block and beam floor slab		0	*It is good practice to install ventilation in all foundation systems to effect pressure relief as a minimum. Breaches in floor slabs such as joints have to be effectively sealed against gas ingress in order to maintain these performances.*
Reinforced concrete ground bearing slab		0.5	
Reinforced concrete ground bearing foundation raft with limited service penetrations that are cast into slab		1.5	
Reinforced concrete cast in situ suspended floor slab with minimal service penetrations and water bars around all slab penetrations and at joints		1.5	
Fully tanked basement		2	
c) Membranes			
Taped and sealed membrane to reasonable levels of workmanship/in line with current good practice with validation [B,C]		0.5	*The performance of membranes is heavily dependent on the quality of design of the installation, resistance to damage after installation, and the integrity of joints.*
Proprietary gas resistant membrane to reasonable levels of workmanship /in line with good practice under independent inspection (CQA)[B,C]		1	
Proprietary gas resistant membrane installed to reasonable levels of workmanship/in line with current good practice under CQA with integrity testing and independent validation		2	
d) Monitoring and detection (not applicable to non-managed property, or in isolation)			
Intermittent monitoring using hand held equipment		0.5	*Where fitted, permanent monitoring systems ought to be installed in the underfloor venting/dilution system in the first instance but can also be provided within the occupied space as a fail safe.*
Permanent monitoring and alarm system [A]	Installed in the underfloor venting/dilution system	2	
	Installed in the building	1	
e) Pathway Intervention			
Pathway intervention		-	*This can consist of site protection measures for off-site or on-site sources (see Annex A, BS8485)*
NOTE In practice the choice of materials might well rely on factors such as construction method and the risk of damage after installation. It is important to ensure that the chosen combination gives an appropriate level of protection			
A) It is possible to test ventilation systems by installing monitoring probes for post installation validation. *B) If a 1 200g DPM material is to function as a gas barrier it should be installed according to BRE 212 /BRE 414 being taped and sealed to all penetrations* *C) Polymeric Materials> 1200 g (proportional to thickness) but their physical properties mean that they are more robust and resistant to damage.*			

BS8485:2015 + A1 2019 Table 3 Solution Scores

Where the gas situation is 4 or more (and for NHBC Red situations) the site requires a comprehensive risk assessment to confirm the scope of protection measures. These are higher risk sites and reliance on Table 2 and 3 alone is not sufficient.

For a site which is impacted by migratory gases from an off site source, the development may be protected by imposing pathway intervention methods, which if successfully validated, could also remove the need for further analysis. It is essential that the gas regime in these circumstances has been fully characterised and that the only source impacting the site is located off site and that the pathway is clearly defined and its interception equally proven before construction commences. Pathway intervention methods may include vertical membrane installations, venting trenches, rows of stone columns, activated trenches and various proprietary systems. These systems are particularly relevant to domestic housing where there is limited scope for foundation type solutions.

CURRENT GUIDANCE ON REMEDIATION

When risk assessment of the site has been completed and it indicates that remedial works are required, the main guidance in managing this process is set out in the DEFRA/EA publication LCRM (2020)) "*Model Procedures for the Management of Land Contamination*." The stages of managing remediation are as follows:

(a) Options Appraisal and develop Remediation Strategy;
(b) Develop Implementation Plan and Verification Plan;
(c) Remediation, Verification and Monitoring.

The Remediation Strategy sets out the remediation targets, identifies technically feasible remedial solutions and presents an evaluation of the options so that these can be assessed enabling that the most suitable solution is adopted. An outline of the proposed remedial method should be presented. Agreement should be sought of the appropriate statutory bodies for the Remediation Strategy before proceeding to the next stage.

The Implementation Plan is a detailed method statement setting out how the remediation is to be carried out including stating how the site will be managed, welfare procedures, health and safety considerations together with practical measures such as details of temporary works, programme of works, waste management licences and regulatory consents required. Agreement should again be sought of the appropriate statutory bodies for this Plan.

The Verification Plan sets out the requirements for gathering data to demonstrate that the remediation has met the required remediation objectives and criteria. The Verification Plan presents the requirements for a wide range of issues including the level of supervision, sampling and testing regimes for treated materials, waste and imported materials, required monitoring works during and post remediation, how compliance with all licenses and consents will be checked etc. Agreement should again be sought of the appropriate statutory bodies for the Verification Plan. On completion of the remediation a Verification Report should be produced to provide a complete record of all remediation activities on site and the data collected as required in the Verification Plan. The Verification Report should demonstrate that the remediation has met the remedial targets to show that the site is suitable for the proposed use.

APPENDIX L: NOTES ON LIMITATIONS

`Notes on Limitations
For
Geoenvironmental and Geotechnical Consultancy Services

General

This document has been prepared by CC GEOTECHNICAL LTD within the terms of the contract, scope of work, and resources agreed in writing with the client. The limitations of liability of CC GEOTECHNICAL LTD for the contents of this document have been agreed with the Client, as set out in the terms and conditions of offer and related contract documentation.

This document is intended for the sole use of the client indicated above and CC GEOTECHNICAL LTD accepts no responsibility of whatever nature to third parties to whom this document or any part of this document is made known. Any such party relies upon that information at their own risk.

The findings and opinions provided in this document are made in good faith and are subject to the limitations imposed by employing site assessment methods and techniques, appropriate to the time of investigation and within the limitations and constraints defined in this document.

The findings and opinions are relevant to the dates when the assessment was undertaken, but should not necessarily be relied upon to represent conditions at a substantially later date. In particular, seasonal groundwater levels, with the effects of precipitation, may affect the conditions found during the investigation. The report should be read in conjunction with the further Notes on Limitations included in Appendix A.

Where opinions expressed in this report are based on current available guidance and legislation, no liability can be accepted by CC GEOTECHNICAL LTD for the effects of any future changes to such guidelines and legislation. Additional information, improved practices, new guidance, changes in legislation, or amendments to design proposals, may necessitate this report having to be reviewed in whole or in part after that date. Opinions and interpretations are not accredited by UKAS.

Factual data contained in this report may have been obtained from enquiries with reputable third parties, the results of which are relied on unless indicated to be inaccurate by contradictory information.

CC GEOTECHNICAL LTD possesses a non-exclusive and non-transferable Ordnance Survey Licence but does not possess any right to sub-license any of the rights granted by this licence to any party. Under the terms of CC GEOTECHNICAL LTD`s Ordnance Survey Licence, copying of figures containing Ordnance Survey data or using figures for any purpose other than as part of this report is not permitted.

CC GEOTECHNICAL LTD has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought form CC GEOTECHNICAL LTD, and a charge may be levied against such approval.

CC GEOTECHNICAL LTD accepts no responsibility or liability for:

1. the consequences of this document being used for any purpose or project other than for which it was commissioned

and/or

2. the consequences of use of this document by any party with whom an agreement has not been executed.

Phase I Environmental Audits / Desk Studies

The work undertaken to provide the basis of a Phase 1 Desk Study report comprises a study of available documented information from a variety of sources (including the client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in a Desk Study report have been dictated by finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in the report, CC GEOTECHNICAL LTD reserves the right to review such information and to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Factual Ground Investigations

The investigation of the site has been carried out in accordance with the scope and specification instructed by the Client. No interpretations of the data generated by the investigation have been provided or implied. The exploratory holes undertaken in this commission, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. Conditions may exist on the site which have not been detected by the works undertaken. Furthermore, the number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” or more widespread contamination where concentrations may be significantly higher than those actually encountered.

Interpretative Phase II Environmental Audits

The investigation of the site has been carried out with the intention of providing sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated to potential human targets, building materials, the environment (including adjacent land), and surface and groundwater.

The amount of exploratory work and chemical testing undertaken may have been restricted by factors including inter alia the Clients budget, the available timescale, access to all parts of the site, the existence of buried services etc., and where this is the case, a more comprehensive investigation may be required if the site is to be redeveloped, since a number of important engineering and environmental issues may need further assessment.

For those reasons, if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

It must be borne in mind, that the exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” or more widespread contamination where concentrations may be significantly higher than those actually encountered. The findings of the investigation are valid for the time of investigation and the passage of time may result in changes to the contamination status of the site, and a reassessment of the site may be required where significant time has elapsed.

Geoenvironmental Ground Investigations

The investigation of the site has been carried out within the constraints of Client budget, available timeframe, access to all parts of the site, the existence of buried services and a more comprehensive investigation may be required to provide sufficient information regarding the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions, to formulate a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to the site remediation, these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, investigate only a small volume of the ground in relation to the size of the site, and can only provide a general indication of the site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be ground conditions present on the site which have not been disclosed by this investigation, and which have therefore not been taken into account in this report. The findings of the investigation are valid for the time of investigation and the passage of time may result in changes to the contamination status of the site, and a reassessment of the site may be required where significant time has elapsed.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal, weather, or other effects.

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations and no liability can be accepted for the retrospective effects of any future changes or amendments to these values.