



PARTICLE SIZE DISTRIBUTION

Job Ref **22-0874**

Borehole/Pit No. **DC-BH105**

Site Name **Dublin Central Ground Investigation**

Sample No. **1**

Specimen Description **Brownish grey sandy slightly gravelly silty CLAY.**

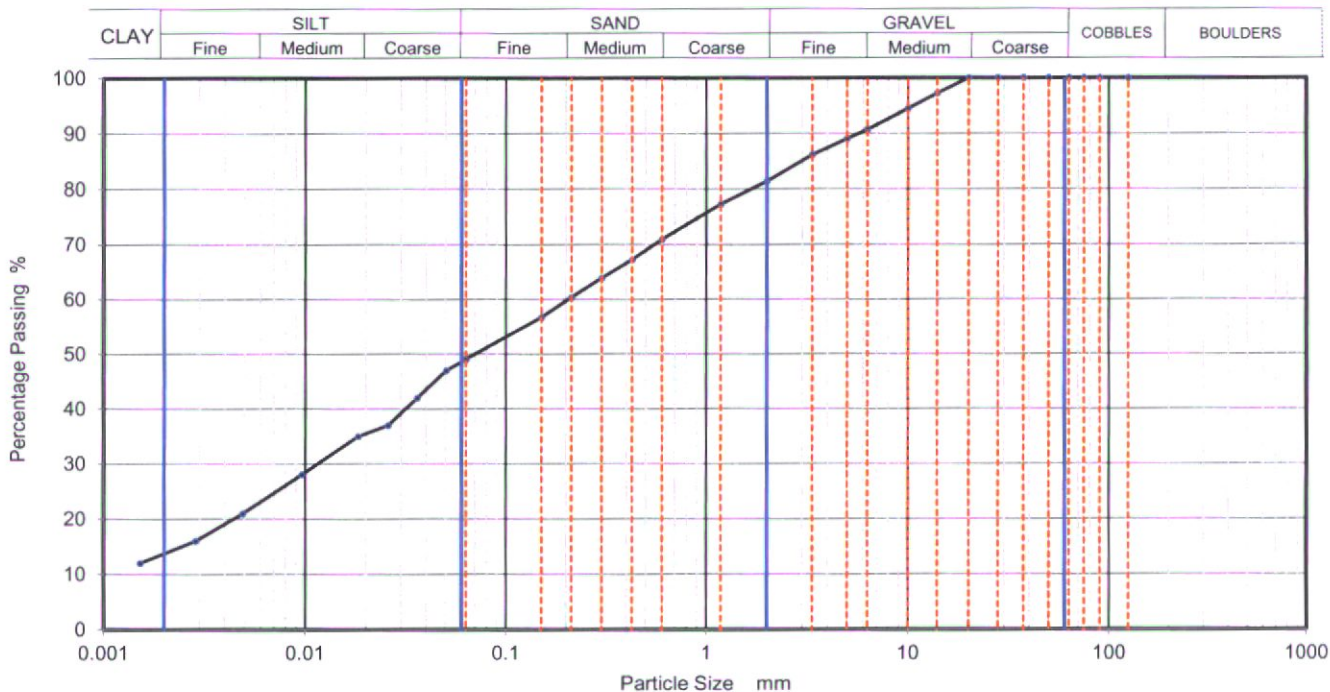
Sample Depth (m)	Top	2.00
	Base	2.50

Specimen Reference **4** Specimen Depth **2** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2022122168**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	49
90	100	0.05034	47
75	100	0.03603	42
63	100	0.02579	37
50	100	0.01834	35
37.5	100	0.00964	28
28	100	0.00490	21
20	100	0.00286	16
14	97	0.00152	12
10	95		
6.3	91		
5	89		
3.35	86		
2	81		
1.18	77		
0.6	71		
0.425	67	Particle density (assumed)	
0.3	64	2.65	Mg/m3
0.212	60		
0.15	57		
0.063	49		

Dry Mass of sample, g **511**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.6
Sand	32.2
Silt	35.5
Clay	13.7

Grading Analysis	
D100	mm
D60	mm 0.204
D30	mm 0.0115
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen Watson

LAB 05R - Version 6

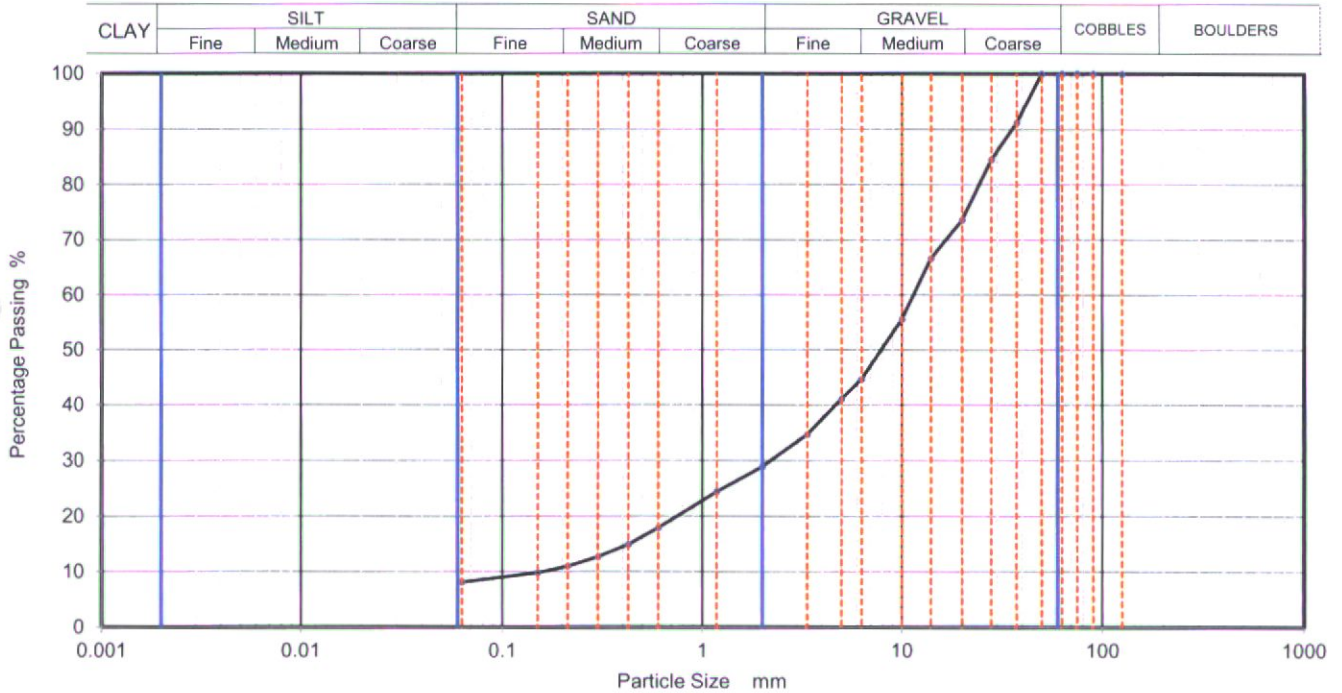


10122



PARTICLE SIZE DISTRIBUTION

		Job Ref		22-0874		
		Borehole/Pit No.		DC-BH105		
Site Name		Dublin Central Ground Investigation		Sample No.		3
Specimen Description		Brownish grey slightly sandy slightly silty subangular fine to coarse GRAVEL.		Sample Depth (m)		5.50
				Base		6.00
Specimen Reference		2	Specimen Depth		5.5	m
Test Method		BS1377:Part 2:1990, clause 9.2		KeyLAB ID		Caus2022122170
		Sample Type		B		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	91		
28	85		
20	74		
14	67		
10	56		
6.3	45		
5	41		
3.35	35		
2	29		
1.18	24		
0.6	18		
0.425	15		
0.3	13		
0.212	11		
0.15	10		
0.063	8		

Dry Mass of sample, g

3017

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	71.1
Sand	20.8
Fines <0.063mm	8.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	72
Curvature Coefficient	2.7

Remarks

Preparation and testing in accordance with BS1377-2:1990 unless noted below

Approved

Stephen Watson

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10122



PARTICLE SIZE DISTRIBUTION

Job Ref **22-0874**

Borehole/Pit No. **DC-BH105**

Site Name **Dublin Central Ground Investigation**

Sample No. **5**

Specimen Description **Brownish grey slightly sandy slightly silty subangular fine to coarse GRAVEL.**

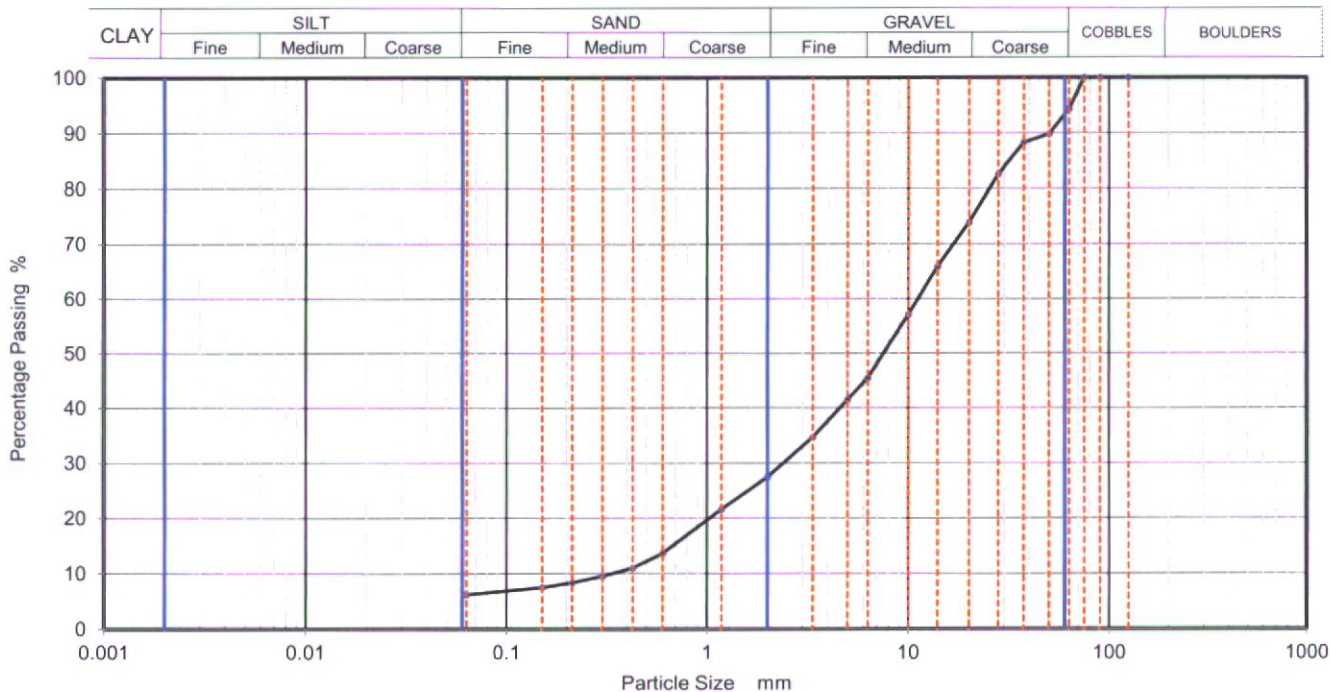
Sample Depth (m)	Top	8.50
	Base	9.00

Specimen Reference	2	Specimen Depth	8.5	m
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Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **Caus2022122171**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	94		
50	90		
37.5	88		
28	83		
20	74		
14	66		
10	57		
6.3	46		
5	42		
3.35	35		
2	27		
1.18	22		
0.6	14		
0.425	11		
0.3	10		
0.212	8		
0.15	8		
0.063	6		

Dry Mass of sample, g **9870**

Sample Proportions	% dry mass
Cobbles	5.6
Gravel	67.0
Sand	21.2
Fines <0.063mm	6.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	33
Curvature Coefficient	1.6

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen Watson

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PARTICLE SIZE DISTRIBUTION

Job Ref **22-0874**

Borehole/Pit No. **DC-BH105**

Site Name **Dublin Central Ground Investigation**

Sample No. **7**

Specimen Description **Brownish grey slightly sandy slightly silty subangular fine to coarse GRAVEL.**

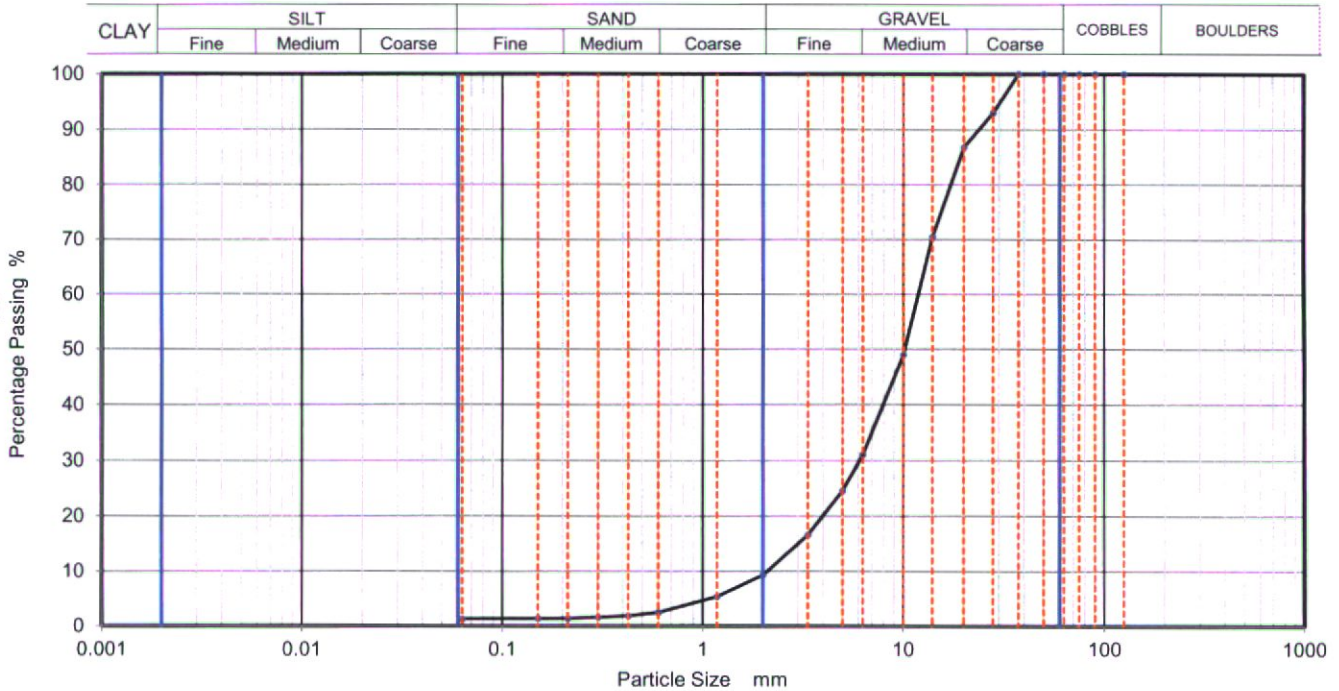
Sample Depth (m)	Top	10.50
	Base	11.00

Specimen Reference	2	Specimen Depth	10.5	m
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Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **Caus2022122172**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	87		
14	71		
10	49		
6.3	31		
5	25		
3.35	17		
2	9		
1.18	5		
0.6	3		
0.425	2		
0.3	2		
0.212	1		
0.15	1		
0.063	1		

Dry Mass of sample, g **2165**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	90.7
Sand	8.0
Fines <0.063mm	1.0

Grading Analysis	
D100	mm
D60	mm 11.9
D30	mm 6.07
D10	mm 2.1
Uniformity Coefficient	5.7
Curvature Coefficient	1.5

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen Watson

LAB 05R - Version 6

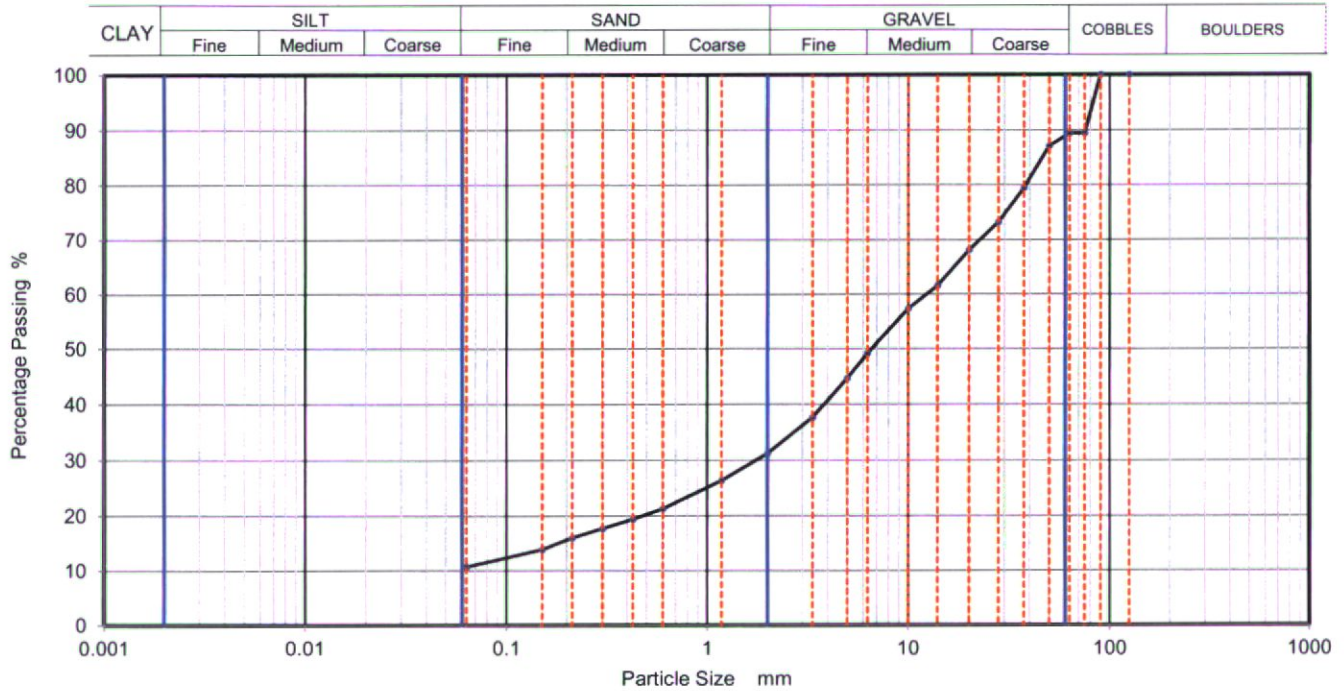


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PARTICLE SIZE DISTRIBUTION

		Job Ref		22-0874			
		Borehole/Pit No.		DC-BH105			
Site Name		Dublin Central Ground Investigation		Sample No.		11	
Specimen Description		Brownish grey slightly sandy slightly silty subangular fine to coarse GRAVEL.		Sample Depth (m)		Top	13.50
						Sample Type	
Specimen Reference		2	Specimen Depth		13.5		
Test Method		BS1377:Part 2:1990, clause 9.2		KeyLAB ID		Caus2022122174	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	89		
63	89		
50	87		
37.5	80		
28	73		
20	68		
14	62		
10	57		
6.3	49		
5	45		
3.35	38		
2	31		
1.18	26		
0.6	21		
0.425	19		
0.3	18		
0.212	16		
0.15	14		
0.063	11		

Dry Mass of sample, g

9437

Sample Proportions	% dry mass
Cobbles	10.6
Gravel	58.2
Sand	20.5
Fines <0.063mm	11.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen Watson



LAB 05R - Version 6

10122



Final Report

Report No.: 23-02437-1
Initial Date of Issue: 31-Jan-2023
Client: Causeway Geotech Ltd
Client Address: 8 Drumahiskey Road
 Balnamore
 Ballymoney
 County Antrim
 BT53 7QL
Contact(s): Colm Hurley
 Stephen McCracken
Project: 22-0874 Dublin Central Ground Investigation

Quotation No.:		Date Received:	26-Jan-2023
Order No.:		Date Instructed:	26-Jan-2023
No. of Samples:	9		
Turnaround (Wkdays):	7	Results Due:	03-Feb-2023
Date Approved:	31-Jan-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 22-0874 Dublin Central Ground Investigation

Client: Causeway Geotech Ltd	Chemtest Job No.:		23-02437	23-02437	23-02437	23-02437	23-02437	23-02437	23-02437	23-02437	23-02437	23-02437	
Quotation No.:	Chemtest Sample ID.:		1579873	1579874	1579875	1579876	1579877	1579878	1579879	1579880	1579881		
Order No.:	Client Sample Ref.:		20	21	16	15	18	20	1	10	13		
	Sample Location:		DC-BH101	DC-BH101	DC-BH102	DC-BH104	DC-BH104	DC-BH104	DC-BH105	DC-BH105	DC-BH105		
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
	Top Depth (m):		15.00	16.50	15.00	12.10	16.00	18.00	2.00	12.50	15.00		
	Bottom Depth (m):		16.50	18.00		12.60	16.50	19.50	2.50	13.30	16.50		
	Date Sampled:		25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023	25-Jan-2023		
Determinand	Accred.	SOP	Units	LOD									
Moisture	N	2030	%	0.020	13	11	11	10	12	12	21	9.0	7.9
Soil Colour	N	2040		N/A							Brown		
Other Material	N	2040		N/A							Stones		
Soil Texture	N	2040		N/A							Loam		
pH (2.5:1)	N	2010		4.0	8.8	8.8	8.7	8.6	8.8	8.8	8.7	8.1	8.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.097	0.055	0.023	0.072	0.046	0.042	0.13	0.039	0.040
Total Sulphur	M	2175	%	0.010	0.068	0.014	0.16	0.18	0.028	0.042	0.15	0.067	0.071
Sulphate (Acid Soluble)	U	2430	%	0.010	0.034	0.021	0.064	0.043	0.036	0.023	0.078	0.018	0.036

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

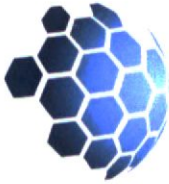
All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com



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Registered in Ireland
Company Number 633786

www.causewaygeotech.com

SOIL AND ROCK SAMPLE ANALYSIS LABORATORY TEST REPORT

31 January 2023

Project Name:	Dublin Central Ground Investigation
Project No.:	22-0874
Client:	Dublin Central GP Ltd
Engineer:	Waterman

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s). This testing was performed between 05/01/2023 and 31/01/2023.

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd



Project Name: Dublin Central Ground Investigation

Report Reference: Schedule 3 - FINAL

The table below details the tests carried out, the specifications used, and the number of tests included in this report. The results contained in this report relate to the sample(s) as received

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.


Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	8
SOIL	Liquid and Plastic Limits of soil-4 point cone penetrometer method	BS 1377-2: 1990: Cl 4.4, 5.3 & 5.4	8
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	4
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	4

Summary of Classification Test Results

Project No. 22-0874	Project Name Dublin Central Ground Investigation
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Hole No.	Sample				Specimen Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Casagrande Classification
	Ref	Top	Base	Type		bulk	dry							
DC-BH108	8	3.00	4.50	B	Brown sandy slightly gravelly silty CLAY.			11	61	29 -1pt	13	16		CL
DC-BH108	9	4.50	6.00	B	Brown sandy slightly gravelly silty CLAY.			8.1	60	27 -1pt	15	12		CL
DC-BH108	10	7.00	8.00	B	Brown sandy slightly gravelly silty CLAY.			7.9	48	27 -1pt	14	13		CL
DC-BH108	11	8.00	9.00	B	Dark brown sandy slightly gravelly silty CLAY.			9.5	70	30 -1pt	15	15		CL
DC-BH108	12	9.00	10.00	B	Dark brown sandy slightly gravelly silty CLAY.			10	63	23 -1pt	13	10		CL
DC-BH108	13	10.00	11.00	B	Greyish brown sandy slightly gravelly silty CLAY.			14	64	24 -1pt	13	11		CL
DC-BH108	14	11.00	12.00	B	Greyish brown sandy slightly gravelly silty CLAY.			11	75	31 -1pt	13	18		CL
DC-BH108	15	12.00	13.50	C	Greyish brown sandy slightly gravelly silty CLAY.			12	71	29 -1pt	14	15		CL

All tests performed in accordance with BS1377:1990 unless specified otherwise
LAB 01R Version 6

Key Density test Liquid Limit Particle density Linear measurement unless : 4pt cone unless : sp - small pycnometer wd - water displacement cas - Casagrande method gj - gas jar wi - immersion in water 1pt - single point test	Date Printed 31/01/2023	Approved By Stephen Watson	 10122
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PARTICLE SIZE DISTRIBUTION

Job Ref **22-0874**

Borehole/Pit No. **DC-BH108**

Site Name **Dublin Central Ground Investigation**

Sample No. **8**

Specimen Description **Brown sandy slightly gravelly silty CLAY.**

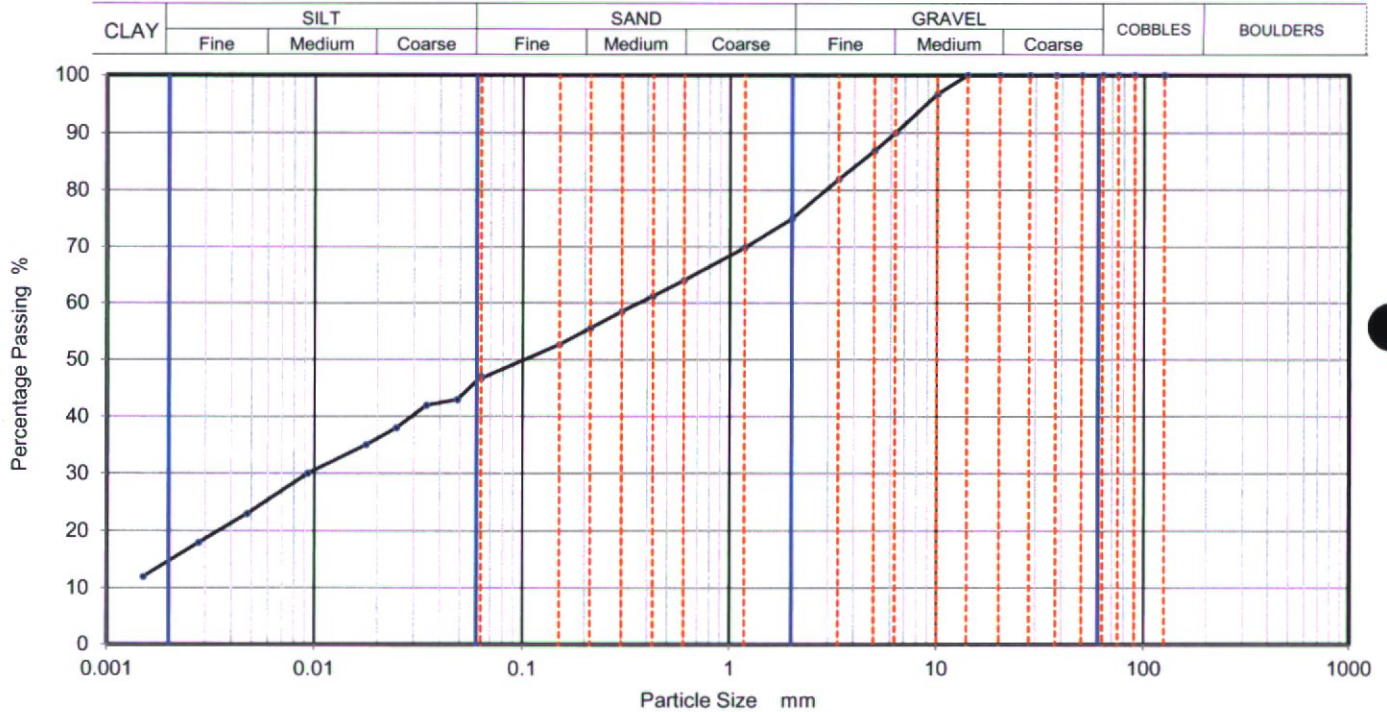
Sample Depth (m)	Top	3.00
	Base	4.50

Specimen Reference	6	Specimen Depth	3	m
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Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus202301060**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	47
90	100	0.04843	43
75	100	0.03447	42
63	100	0.02470	38
50	100	0.01769	35
37.5	100	0.00930	30
28	100	0.00476	23
20	100	0.00280	18
14	100	0.00150	12
10	97		
6.3	90		
5	87		
3.35	82		
2	75		
1.18	70		
0.6	64	Particle density (assumed) 2.65 Mg/m ³	
0.425	61		
0.3	59		
0.212	56		
0.15	53		
0.063	47		

Dry Mass of sample, g **500**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	25.0
Sand	28.3
Silt	32.0
Clay	14.7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

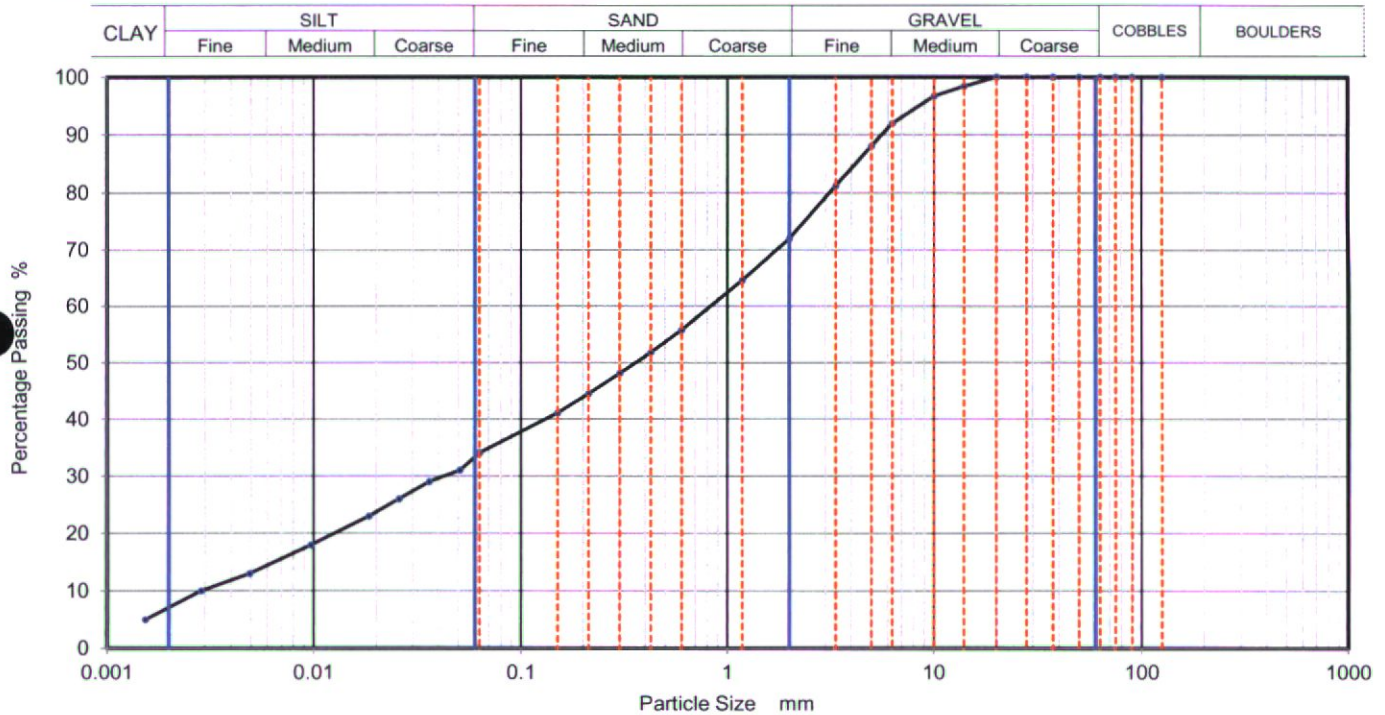
Approved
Stephen Watson





PARTICLE SIZE DISTRIBUTION

		Job Ref		22-0874		
		Borehole/Pit No.		DC-BH108		
Site Name		Dublin Central Ground Investigation		Sample No.		10
Specimen Description		Brown sandy slightly gravelly silty CLAY.		Sample Depth (m)		7.00
						Base
Specimen Reference		6	Specimen Depth		7	m
Test Method		BS1377:Part 2:1990, clauses 9.2 and 9.5		KeyLAB ID		Caus202301062
				Sample Type		B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	34
90	100	0.05065	31
75	100	0.03603	29
63	100	0.02579	26
50	100	0.01845	23
37.5	100	0.00969	18
28	100	0.00493	13
20	100	0.00287	10
14	98	0.00154	5
10	97		
6.3	92		
5	88		
3.35	81		
2	72		
1.18	65		
0.6	56		
0.425	52	Particle density (assumed)	
0.3	48	2.65 Mg/m ³	
0.212	45		
0.15	41		
0.063	34		

Dry Mass of sample, g

500

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	28.0
Sand	37.9
Silt	27.2
Clay	6.9

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	280
Curvature Coefficient	0.72

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **22-0874**

Borehole/Pit No. **DC-BH108**

Site Name **Dublin Central Ground Investigation**

Sample No. **12**

Specimen Description **Dark brown sandy slightly gravelly silty CLAY.**

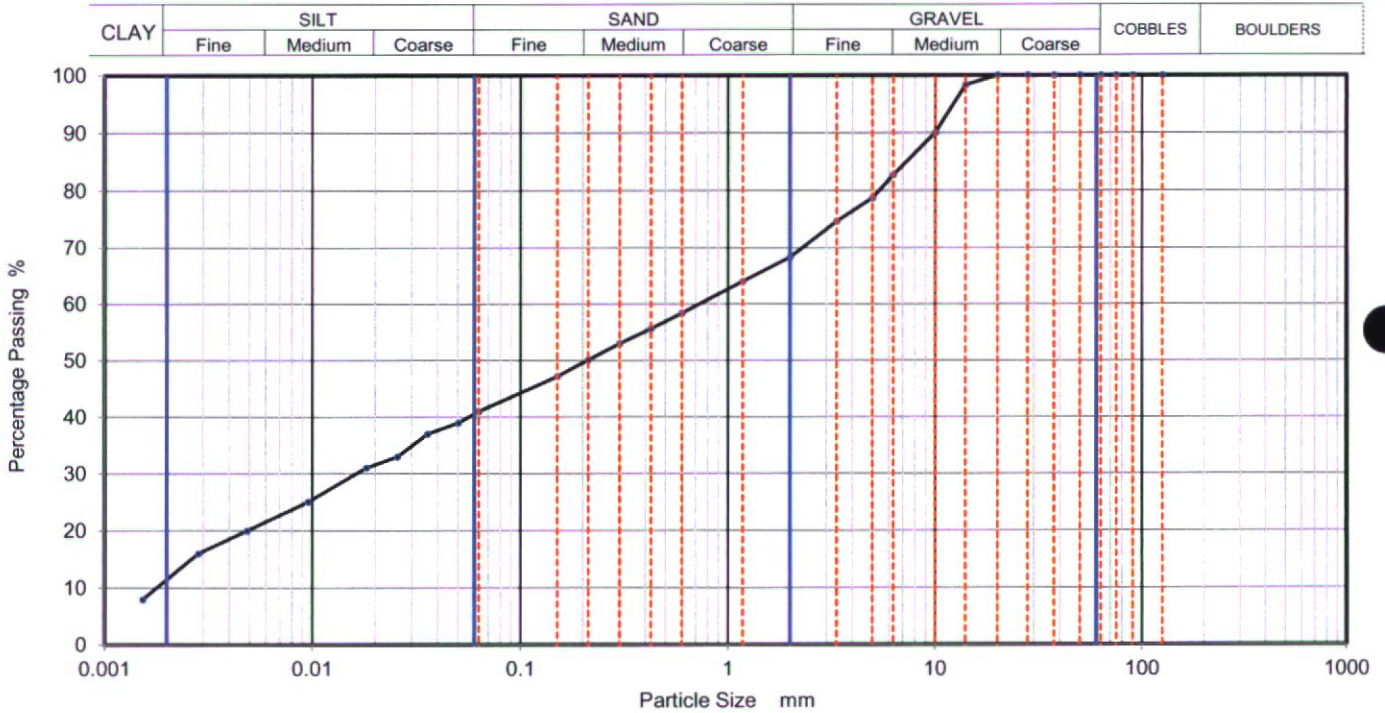
Sample Depth (m)	Top	9.00
	Base	10.00

Specimen Reference	6	Specimen Depth	9	m
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Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus202301064**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	41
90	100	0.05034	39
75	100	0.03581	37
63	100	0.02563	33
50	100	0.01823	31
37.5	100	0.00958	25
28	100	0.00487	20
20	100	0.00284	16
14	98	0.00153	8
10	90		
6.3	83		
5	79		
3.35	75		
2	68		
1.18	64		
0.6	58	Particle density (assumed) 2.65 Mg/m ³	
0.425	56		
0.3	53		
0.212	50		
0.15	47		
0.063	41		

Dry Mass of sample, g **503**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	31.7
Sand	27.4
Silt	29.7
Clay	11.2

Grading Analysis		
D100	mm	
D60	mm	0.728
D30	mm	0.0159
D10	mm	0.00182
Uniformity Coefficient		400
Curvature Coefficient		0.19

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

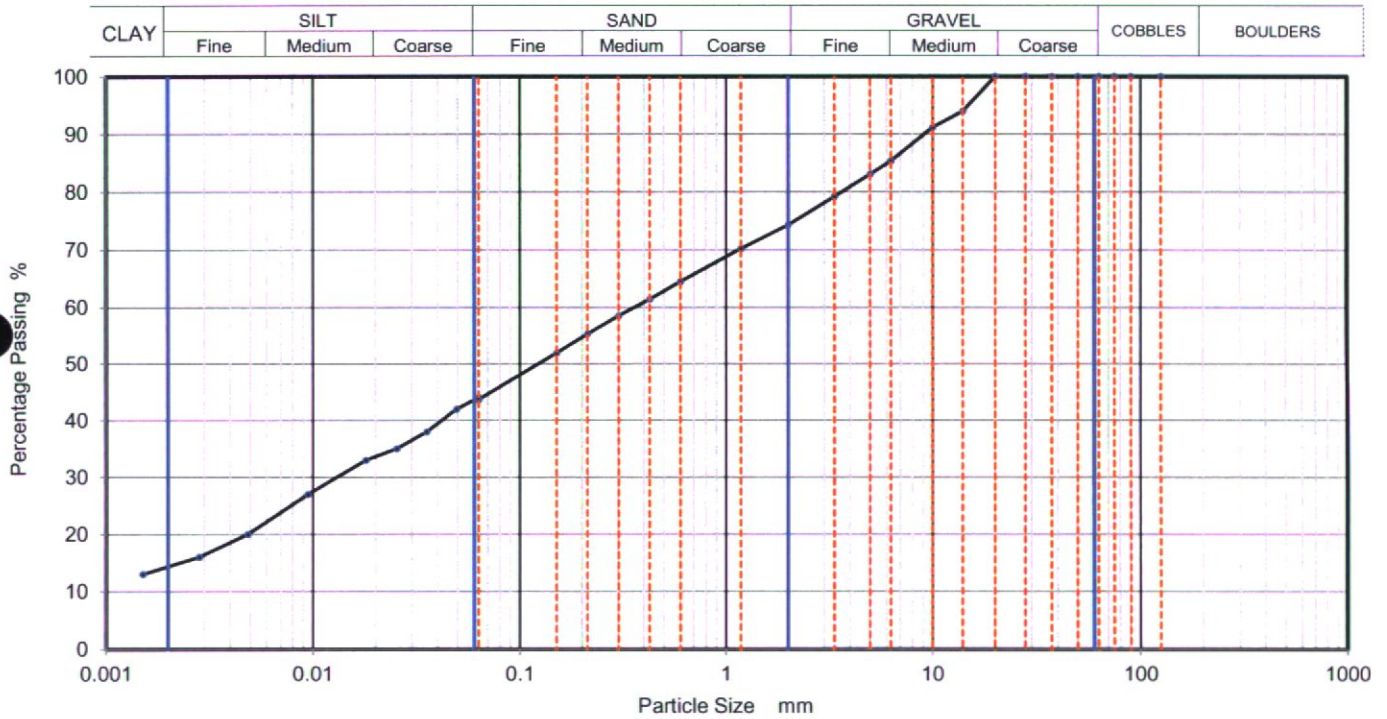
Stephen Watson





PARTICLE SIZE DISTRIBUTION

		Job Ref		22-0874			
		Borehole/Pit No.		DC-BH108			
Site Name		Dublin Central Ground Investigation		Sample No.		14	
Specimen Description		Greyish brown sandy slightly gravelly silty CLAY.		Sample Depth (m)	Top	11.00	
					Base	12.00	
Specimen Reference		6	Specimen Depth	11	m	Sample Type	B
Test Method		BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus202301066	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04935	42
75	100	0.03536	38
63	100	0.02532	35
50	100	0.01802	33
37.5	100	0.00948	27
28	100	0.00485	20
20	100	0.00283	16
14	94	0.00151	13
10	91		
6.3	85		
5	83		
3.35	79		
2	74		
1.18	70		
0.6	65	Particle density (assumed) 2.65 Mg/m ³	
0.425	61		
0.3	59		
0.212	55		
0.15	52		
0.063	44		

Dry Mass of sample, g 503

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	25.7
Sand	30.6
Silt	29.3
Clay	14.4

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	
Curvature Coefficient	

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

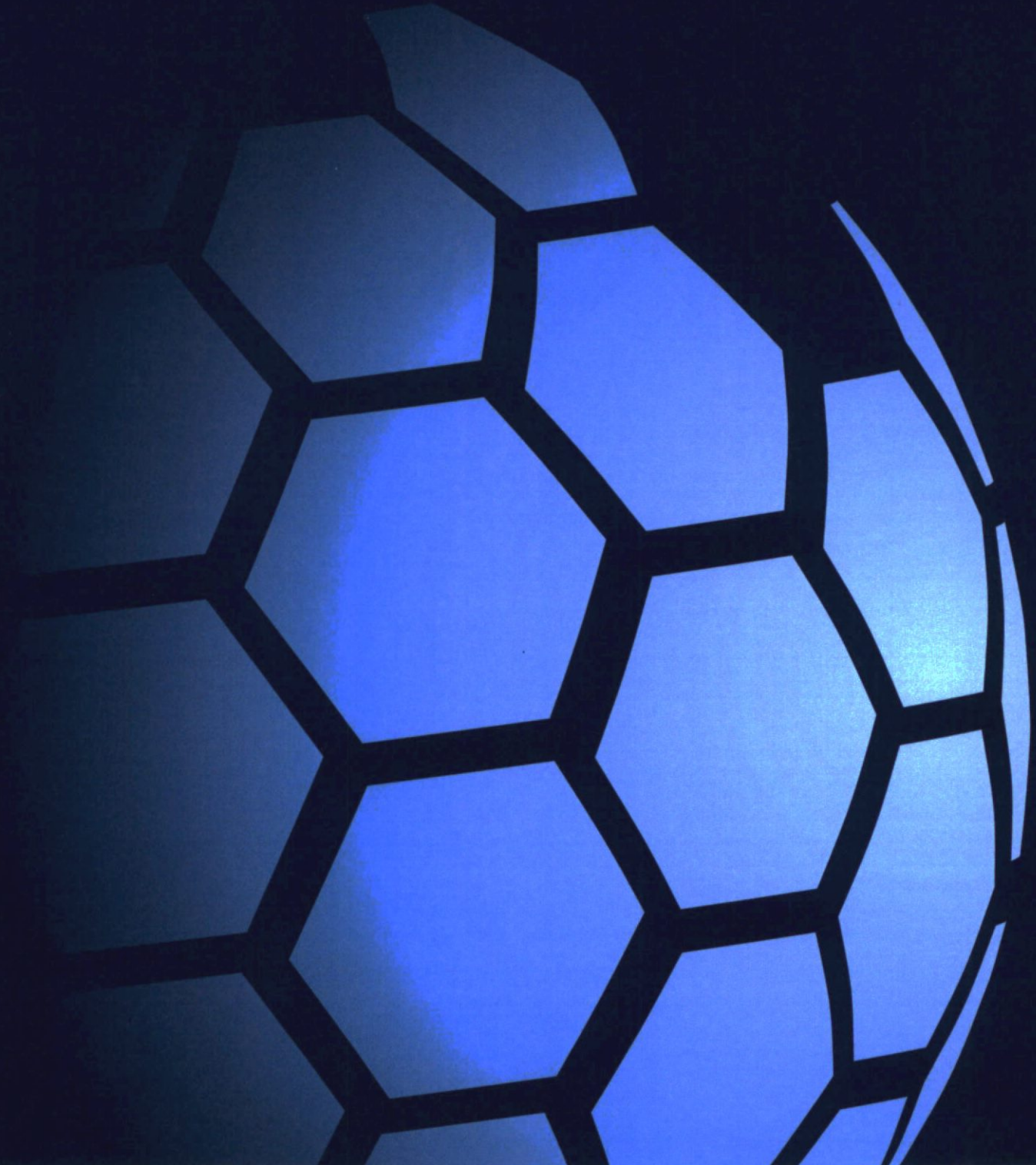
Stephen Watson





CAUSEWAY
— GEOTECH

APPENDIX F
ENVIRONMENTAL LABORATORY TEST RESULTS





Amended Report

Report No.: 22-44440-5
Initial Date of Issue: 21-Dec-2022
Date of Re-Issue: 21-Dec-2022

Client Causeway Geotech Ltd

Client Address: 8 Drumahiskey Road
Balnamore
Ballymoney
County Antrim
BT53 7QL

Contact(s): Alistair McQuat
Carin Cornwall
Celine Rooney
Colm Hurley
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Gabriella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen McCracken
Stephen Watson

Project 22-0874 DUBLIN CENTRAL

Quotation No.: Q22-27312
Date Received: 18-Nov-2022

Order No.:
Date Instructed: 23-Nov-2022

No. of Samples: 3

Turnaround (Wkdays): 10
Results Due: 06-Dec-2022

Date Approved: 21-Dec-2022
Subcon Results Due: 14-Dec-2022

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Leachate

Project: 22-0874 DUBLIN CENTRAL

Client: Causeway Geotech Ltd	Chemtest Job No.:		22-44440	22-44440	22-44440			
Quotation No.: Q22-27312	Chemtest Sample ID.:		1548794	1548797	1548798			
Order No.:	Client Sample Ref.:		2	5	6			
	Sample Location:		DC BH103	DC BH103	DC BH103			
	Sample Type:		SOIL	SOIL	SOIL			
	Top Depth (m):		1.0	4.0	5.0			
	Date Sampled:		16-Nov-2022	16-Nov-2022	16-Nov-2022			
Determinand	Accred.	SOP	Type	Units	LOD			
Ammonium	U	1220	10:1	mg/l	0.050	0.072	0.086	0.051
Ammonium	N	1220	10:1	mg/kg	0.10	0.98	1.1	0.62

Results - Soil

Project: 22-0874 DUBLIN CENTRAL

Client: Causeway Geotech Ltd	Chemtest Job No.:			22-44440	22-44440	22-44440
Quotation No.: Q22-27312	Chemtest Sample ID.:			1548794	1548797	1548798
Order No.:	Client Sample Ref.:			2	5	6
	Sample Location:			DC BH103	DC BH103	DC BH103
	Sample Type:			SOIL	SOIL	SOIL
	Top Depth (m):			1.0	4.0	5.0
	Date Sampled:			16-Nov-2022	16-Nov-2022	16-Nov-2022
	Asbestos Lab:			DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
Benzo(j)fluoranthene	SN		mg/kg	1	< 1	< 1
ACM Type	U	2192		N/A	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.6	7.8
pH	M	2010		4.0	8.4	9.0
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.3	0.50
Sulphur (Elemental)	M	2180	mg/kg	1.0	1.7	1.9
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	11	8.5
Sulphate (Total)	U	2430	%	0.010	0.22	0.015
Arsenic	M	2455	mg/kg	0.5	25	2.4
Barium	M	2455	mg/kg	0	58	7
Cadmium	M	2455	mg/kg	0.10	0.44	< 0.10
Chromium	M	2455	mg/kg	0.5	9.2	8.6
Molybdenum	M	2455	mg/kg	0.5	3.3	< 0.5
Antimony	N	2455	mg/kg	2.0	2.1	< 2.0
Copper	M	2455	mg/kg	0.50	44	1.3
Mercury	M	2455	mg/kg	0.05	1.1	< 0.05
Nickel	M	2455	mg/kg	0.50	38	8.0
Lead	M	2455	mg/kg	0.50	250	1.6
Selenium	M	2455	mg/kg	0.25	0.86	< 0.25
Zinc	M	2455	mg/kg	0.50	60	13
Chromium (Trivalent)	N	2490	mg/kg	1.0	9.2	8.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	6.5	0.53
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0

Results - Soil

Project: 22-0874 DUBLIN CENTRAL

Client: Causeway Geotech Ltd		Chemtest Job No.:		22-44440	22-44440	22-44440
Quotation No.: Q22-27312		Chemtest Sample ID.:		1548794	1548797	1548798
Order No.:		Client Sample Ref.:		2	5	6
		Sample Location:		DC BH103	DC BH103	DC BH103
		Sample Type:		SOIL	SOIL	SOIL
		Top Depth (m):		1.0	4.0	5.0
		Date Sampled:		16-Nov-2022	16-Nov-2022	16-Nov-2022
		Asbestos Lab:		DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD		
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	260	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	260	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	260	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010

Results - Soil

Project: 22-0874 DUBLIN CENTRAL

Client: Causeway Geotech Ltd	Chemtest Job No.:				22-44440	22-44440	22-44440
Quotation No.: Q22-27312	Chemtest Sample ID.:				1548794	1548797	1548798
Order No.:	Client Sample Ref.:				2	5	6
	Sample Location:				DC BH103	DC BH103	DC BH103
	Sample Type:				SOIL	SOIL	SOIL
	Top Depth (m):				1.0	4.0	5.0
	Date Sampled:				16-Nov-2022	16-Nov-2022	16-Nov-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 22-0874 DUBLIN CENTRAL

Chemtest Job No: 22-44440 Chemtest Sample ID: 1548794 Sample Ref: 2 Sample ID: Sample Location: DC BH103 Top Depth(m): 1.0 Bottom Depth(m): Sampling Date: 16-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	6.5	3	5	6
Loss On Ignition	2610	M	%	11	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	1100	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0030	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0099	0.099	0.5	2	25
Barium	1455	U	0.012	0.12	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.010	0.10	0.5	10	70
Copper	1455	U	0.011	0.11	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0028	0.028	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	0.028	0.28	0.5	10	50
Antimony	1455	U	0.020	0.20	0.06	0.7	5
Selenium	1455	U	0.0010	0.0099	0.1	0.5	7
Zinc	1455	U	0.006	0.055	4	50	200
Chloride	1220	U	4.8	48	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	22	220	1000	20000	50000
Total Dissolved Solids	1020	N	98	980	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	7.3	73	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.6

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 DUBLIN CENTRAL

Chemtest Job No: 22-44440 Chemtest Sample ID: 1548797 Sample Ref: 5 Sample ID: Sample Location: DC BH103 Top Depth(m): 4.0 Bottom Depth(m): Sampling Date: 16-Nov-2022					Landfill Waste Acceptance Criteria		
					Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	0.53	3	5	6
Loss On Ignition	2610	M	%	0.56	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0041	0.041	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0006	0.0055	0.5	10	70
Copper	1455	U	0.0019	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0076	0.076	0.5	10	30
Nickel	1455	U	0.0007	0.0070	0.4	10	40
Lead	1455	U	0.0006	0.0062	0.5	10	50
Antimony	1455	U	0.0012	0.012	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	0.004	0.039	4	50	200
Chloride	1220	U	4.6	46	800	15000	25000
Fluoride	1220	U	0.11	1.1	10	150	500
Sulphate	1220	U	7.2	72	1000	20000	50000
Total Dissolved Solids	1020	N	85	840	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	7.8

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 DUBLIN CENTRAL

Chemtest Job No: 22-44440 Chemtest Sample ID: 1548798 Sample Ref: 6 Sample ID: Sample Location: DC BH103 Top Depth(m): 5.0 Bottom Depth(m): Sampling Date: 16-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	2.2	3	5	6
Loss On Ignition	2610	M	%	0.87	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0002	0.0025	0.5	2	25
Barium	1455	U	0.006	0.056	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0013	0.013	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0013	0.013	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.087	< 1.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	0.99

Waste Acceptance Criteria

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

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics (cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com

Final Report

Report No.: 22-45545-1
Initial Date of Issue: 04-Jan-2023
Client: Causeway Geotech Ltd
Client Address: 8 Drumahiskey Road
 Balnamore
 Ballymoney
 County Antrim
 BT53 7QL

Contact(s): Alistair McQuat
 Carin Cornwall
 Celine Rooney
 Colm Hurley
 Darren O'Mahony
 Gabriella Horan
 Joe Gervin
 John Cameron
 Lucy Newland
 Martin Gardiner
 Matthew Gilbert
 Neil Haggan
 Paul Dunlop
 Sean Ross
 Stephen Franey
 Stephen McCracken
 Stephen Watson

Project: 22-0874 Dublin Central

Quotation No.: Q22-27312	Date Received: 25-Nov-2022
Order No.:	Date Instructed: 01-Dec-2022
No. of Samples: 4	
Turnaround (Wkdays): 10	Results Due: 14-Dec-2022
Date Approved: 04-Jan-2023	Subcon Results Due: 22-Dec-2022

Approved By:



Details: Stuart Henderson, Technical
 Manager

Results - Leachate

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd	Chemtest Job No.:		22-45545	22-45545	22-45545	22-45545			
Quotation No.: Q22-27312	Chemtest Sample ID.:		1553249	1553251	1553253	1553256			
Order No.:	Client Sample Ref.:		2	4	6				
	Sample Location:		DC-BH110	DC-BH110	DC-BH110	DC-BH110			
	Sample Type:		SOIL	SOIL	SOIL	SOIL			
	Top Depth (m):		4.00	10.00	16.00	1.00			
	Date Sampled:		22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022			
Determinand	Accred.	SOP	Type	Units	LOD				
Ammonium	U	1220	10:1	mg/l	0.050	0.35	0.34	0.26	0.090
Ammonium	N	1220	10:1	mg/kg	0.10	4.1	4.1	3.2	3.0

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd		Chemtest Job No.:		22-45545	22-45545	22-45545	22-45545
Quotation No.: Q22-27312		Chemtest Sample ID.:		1553249	1553251	1553253	1553256
Order No.:		Client Sample Ref.:		2	4	6	
		Sample Location:		DC-BH110	DC-BH110	DC-BH110	DC-BH110
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		4.00	10.00	16.00	1.00
		Date Sampled:		22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
		Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Benzo(j)fluoranthene	SN		mg/kg	1	< 1	< 1	< 1
ACM Type	U	2192		N/A	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	9.5	10	8.8
pH	U	2010		4.0	7.9	8.4	8.3
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	2.6	2.0	1.7
Cyanide (Total)	U	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	10	9.8	6.5
Sulphate (Total)	U	2430	%	0.010	0.043	1.8	0.18
Arsenic	U	2455	mg/kg	0.5	2.8	4.1	3.6
Barium	U	2455	mg/kg	0	12	130	14
Cadmium	U	2455	mg/kg	0.10	0.46	0.75	0.50
Chromium	U	2455	mg/kg	0.5	5.0	7.1	7.9
Molybdenum	U	2455	mg/kg	0.5	0.8	1.2	0.9
Antimony	N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Copper	U	2455	mg/kg	0.50	8.2	21	7.3
Mercury	U	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Nickel	U	2455	mg/kg	0.50	11	20	13
Lead	U	2455	mg/kg	0.50	4.0	10	6.1
Selenium	U	2455	mg/kg	0.25	0.33	3.4	0.56
Zinc	U	2455	mg/kg	0.50	22	43	31
Chromium (Trivalent)	N	2490	mg/kg	1.0	5.0	7.1	7.9
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	2.3	1.6	1.3
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd		Chemtest Job No.:		22-45545	22-45545	22-45545	22-45545
Quotation No.: Q22-27312		Chemtest Sample ID.:		1553249	1553251	1553253	1553256
Order No.:		Client Sample Ref.:		2	4	6	
		Sample Location:		DC-BH110	DC-BH110	DC-BH110	DC-BH110
		Sample Type:		SOIL	SOIL	SOIL	SOIL
		Top Depth (m):		4.00	10.00	16.00	1.00
		Date Sampled:		22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
		Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD			
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10
Benzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	3.3
Toluene	U	2760	µg/kg	1.0	< 1.0	< 1.0	7.1
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	4.8
o-Xylene	U	2760	µg/kg	1.0	< 1.0	< 1.0	2.8
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0
Naphthalene	U	2800	mg/kg	0.10	< 0.10	< 0.10	0.15
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd	Chemtest Job No.:				22-45545	22-45545	22-45545	22-45545
Quotation No.: Q22-27312	Chemtest Sample ID.:				1553249	1553251	1553253	1553256
Order No.:	Client Sample Ref.:				2	4	6	
	Sample Location:				DC-BH110	DC-BH110	DC-BH110	DC-BH110
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				4.00	10.00	16.00	1.00
	Date Sampled:				22-Nov-2022	22-Nov-2022	22-Nov-2022	22-Nov-2022
	Asbestos Lab:				DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD				
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Phenols	U	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45545 Chemtest Sample ID: 1553249 Sample Ref: 2 Sample ID: Sample Location: DC-BH110 Top Depth(m): 4.00 Bottom Depth(m): Sampling Date: 22-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	U	%	2.3	3	5	6
Loss On Ignition	2610	U	%	0.47	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.013	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0008	0.0083	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0006	0.0058	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0076	0.076	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0007	0.0066	0.06	0.7	5
Selenium	1455	U	0.0007	0.0069	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	2.3	23	1000	20000	50000
Total Dissolved Solids	1020	N	48	480	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.5

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45545 Chemtest Sample ID: 1553251 Sample Ref: 4 Sample ID: Sample Location: DC-BH110 Top Depth(m): 10.00 Bottom Depth(m): Sampling Date: 22-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	U	%	1.6	3	5	6
Loss On Ignition	2610	U	%	0.58	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0004	0.0040	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0018	0.018	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0005	0.0054	0.06	0.7	5
Selenium	1455	U	0.0045	0.045	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	4.1	41	1000	20000	50000
Total Dissolved Solids	1020	N	49	490	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.5	55	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	10

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45545 Chemtest Sample ID: 1553253 Sample Ref: 6 Sample ID: Sample Location: DC-BH110 Top Depth(m): 16.00 Bottom Depth(m): Sampling Date: 22-Nov-2022				Landfill Waste Acceptance Criteria Limits			
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	U	%	1.3	3	5	6
Loss On Ignition	2610	U	%	0.31	--	--	10
Total BTEX	2760	U	mg/kg	0.018	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0005	0.0052	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	< 0.0002	< 0.0020	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0006	0.0061	0.06	0.7	5
Selenium	1455	U	0.0018	0.018	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.20	2.0	10	150	500
Sulphate	1220	U	3.6	36	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.1	< 50	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	8.8

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45545 Chemtest Sample ID: 1553256 Sample Ref: Sample ID: Sample Location: DC-BH110 Top Depth(m): 1.00 Bottom Depth(m): Sampling Date: 22-Nov-2022				Landfill Waste Acceptance Criteria Limits			
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	U	%	4.0	3	5	6
Loss On Ignition	2610	U	%	30	--	--	10
Total BTEX	2760	U	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	U	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	U		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	< 0.0020	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0004	0.0036	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0040	0.040	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0043	0.043	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0006	0.0056	0.06	0.7	5
Selenium	1455	U	0.0006	0.0062	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.19	1.9	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	56	560	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.4	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	5.9

Waste Acceptance Criteria

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

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection

Test Methods

SOP	Title	Parameters included	Method summary
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

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

Charges may apply to extended sample storage

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

customerservices@chemtest.com



Final Report

Report No.: 22-45980-1
Initial Date of Issue: 09-Jan-2023
Client Causeway Geotech Ltd
Client Address: 8 Drumahiskey Road
Balnamore
Ballymoney
County Antrim
BT53 7QL
Contact(s): Alistair McQuat
Carin Cornwall
Celine Rooney
Colm Hurley
Darren O'Mahony
Dean McCloskey
Gabriella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen McCracken

Project 22-0874 Dublin Central

Quotation No.: Q22-27312

Date Received: 01-Dec-2022

Order No.:

Date Instructed: 02-Dec-2022

No. of Samples: 8

Turnaround (Wkdays): 7

Results Due: 12-Dec-2022

Date Approved: 08-Jan-2023

Subcon Results Due: 23-Dec-2022

Approved By:

Details: Stuart Henderson, Technical
Manager

Results - Leachate

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd		Chemtest Job No.:											
Quotation No.: Q22-27312		Chemtest Sample ID.:											
		22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980		
		1555319	1555320	1555321	1555323	1555328	1555330	1555332	1555333				
		DC-BH106	DC-BH106	DC-BH106	DC-BH106	DC-BH107	DC-BH107	DC-BH107	DC-BH107	DC-BH107	DC-BH107		
		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL		
		0.50	1.00	3.00	7.00	2.00	4.00	10.00	13.00				
		28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022		
Determinand	Accred.	SOP	Type	Units	LOD								
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.066	
Ammonium	N	1220	10:1	mg/kg	0.10	0.87	0.75	0.55	1.1	0.81	0.79	0.76	1.7

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd		Chemtest Job No.:		22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980
Quotation No.: Q22-27312		Chemtest Sample ID.:		1555319	1555320	1555321	1555323	1555328	1555330	1555332	1555333	
Sample Location:		DC-BH106		DC-BH106	DC-BH106	DC-BH106	DC-BH106	DC-BH107	DC-BH107	DC-BH107	DC-BH107	DC-BH107
Sample Type:		SOIL		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.50		1.00	3.00	7.00	2.00	4.00	10.00	13.00		
Date Sampled:		28-Nov-2022		28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022
Asbestos Lab:		DURHAM		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD								
Benzo(j)fluoranthene	SN		mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
ACM Type	U	2192		N/A	-	-	-	-	-	-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	7.5	3.6	12	0.90	30	4.2	7.4	5.5
pH	M	2010		4.0	10.2	10.1	10.6	10.8	11.3	9.3	8.9	8.8
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	1.0	0.94	0.53	< 0.40	0.88	< 0.40	< 0.40	< 0.40
Sulphur (Elemental)	M	2180	mg/kg	1.0	27	66	5.5	1.4	6.1	< 1.0	1.8	2.8
Cyanide (Total)	M	2300	mg/kg	0.50	12	15	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	11	220	14	1.4	8.6	10	11	11
Sulphate (Total)	U	2430	%	0.010	0.34	0.37	0.33	0.21	0.47	0.085	0.34	0.18
Arsenic	M	2455	mg/kg	0.5	30	32	9.2	7.7	10	6.2	7.7	4.4
Barium	M	2455	mg/kg	0	33	81	22	47	80	63	34	20
Cadmium	M	2455	mg/kg	0.10	0.12	0.33	0.13	1.1	0.90	1.4	1.0	0.79
Chromium	M	2455	mg/kg	0.5	8.0	9.2	6.3	14	18	10	12	9.6
Molybdenum	M	2455	mg/kg	0.5	0.6	0.9	0.6	1.9	1.7	2.3	1.7	1.0
Antimony	N	2455	mg/kg	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Copper	M	2455	mg/kg	0.50	19	20	11	20	19	15	15	9.3
Mercury	M	2455	mg/kg	0.05	0.29	0.32	0.39	< 0.05	0.16	< 0.05	< 0.05	< 0.05
Nickel	M	2455	mg/kg	0.50	12	16	9.3	27	26	28	27	15
Lead	M	2455	mg/kg	0.50	35	44	32	18	30	12	18	11
Selenium	M	2455	mg/kg	0.25	0.25	0.37	< 0.25	1.1	0.73	0.79	1.0	0.73
Zinc	M	2455	mg/kg	0.50	34	40	26	78	68	60	53	41
Chromium (Trivalent)	N	2490	mg/kg	1.0	8.0	9.2	6.1	14	18	10	12	9.6
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon	M	2625	%	0.20	1.6	1.9	2.6	2.6	0.79	1.8	0.55	0.50
Mineral Oil (TPH Calculation)	N	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C8-C10	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd		Chemtest Job No.:		22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980
Quotation No.: Q22-27312		Chemtest Sample ID.:		1555319	1555320	1555321	1555323	1555328	1555330	1555332	1555333
Sample Location:		DC-BH106	DC-BH106	DC-BH106	DC-BH106	DC-BH107	DC-BH107	DC-BH107	DC-BH107	DC-BH107	DC-BH107
Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Top Depth (m):		0.50	1.00	3.00	7.00	2.00	4.00	10.00	13.00		
Date Sampled:		28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022
Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD							
Aromatic TPH >C10-C12	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C12-C16	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C16-C21	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C21-C35	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Naphthalene	M	2800	mg/kg	0.10	0.96	0.86	0.70	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	0.34	0.42	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	0.22	0.17	0.16	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	0.38	0.40	0.26	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	2.6	2.4	1.5	0.15	< 0.10	< 0.10	< 0.10
Anthracene	M	2800	mg/kg	0.10	0.53	0.49	0.25	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	2.6	2.6	1.1	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	M	2800	mg/kg	0.10	2.2	2.2	1.0	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	1.2	1.1	0.53	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	1.4	1.1	0.46	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	1.4	1.1	0.45	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	0.58	< 0.10	0.22	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	1.3	0.98	0.20	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	0.78	0.53	0.28	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	0.16	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	0.81	0.71	0.29	< 0.10	< 0.10	< 0.10	< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	17	15	7.6	< 2.0	< 2.0	< 2.0	< 2.0
PCB 28	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 52	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 90+101	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 118	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 153	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 138	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
PCB 180	U	2815	mg/kg	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 22-0874 Dublin Central

Client: Causeway Geotech Ltd	Chemtest Job No.:		22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980	22-45980
Quotation No.: Q22-27312	Chemtest Sample ID.:		1555319	1555320	1555321	1555323	1555328	1555330	1555332	1555333
	Sample Location:		DC-BH106	DC-BH106	DC-BH106	DC-BH106	DC-BH107	DC-BH107	DC-BH107	DC-BH107
	Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	Top Depth (m):		0.50	1.00	3.00	7.00	2.00	4.00	10.00	13.00
	Date Sampled:		28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022	28-Nov-2022
	Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	Accred.	SOP	Units	LOD						
Total Phenols	M	2920	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555319 Sample Ref: Sample ID: Sample Location: DC-BH106 Top Depth(m): 0.50 Bottom Depth(m): Sampling Date: 28-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	1.6	3	5	6
Loss On Ignition	2610	M	%	4.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	17	100	--	--
pH	2010	M		10.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.015	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.017	0.17	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0005	0.0051	0.5	10	70
Copper	1455	U	0.0028	0.028	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0013	0.013	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0008	0.0082	0.06	0.7	5
Selenium	1455	U	0.0012	0.012	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	2.0	20	800	15000	25000
Fluoride	1220	U	0.16	1.6	10	150	500
Sulphate	1220	U	5.9	59	1000	20000	50000
Total Dissolved Solids	1020	N	95	950	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	7.5

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555320 Sample Ref: Sample ID: Sample Location: DC-BH106 Top Depth(m): 1.00 Bottom Depth(m): Sampling Date: 28-Nov-2022				Landfill Waste Acceptance Criteria Limits			
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	1.9	3	5	6
Loss On Ignition	2610	M	%	3.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	15	100	--	--
pH	2010	M		10.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.019	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.023	0.23	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0020	0.020	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0010	0.010	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0007	0.0075	0.06	0.7	5
Selenium	1455	U	0.0009	0.0092	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	1.2	12	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	5.7	57	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.9	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	3.6

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555321 Sample Ref: Sample ID: Sample Location: DC-BH106 Top Depth(m): 3.00 Bottom Depth(m): Sampling Date: 28-Nov-2022				Landfill Waste Acceptance Criteria			
				Limits			
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill	
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	2.6	3	5	6
Loss On Ignition	2610	M	%	4.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	7.6	100	--	--
pH	2010	M		10.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.036	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.012	0.12	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0025	0.025	0.5	10	70
Copper	1455	U	0.0021	0.021	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0029	0.029	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0007	0.0069	0.06	0.7	5
Selenium	1455	U	0.0007	0.0073	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	1.4	14	800	15000	25000
Fluoride	1220	U	0.15	1.5	10	150	500
Sulphate	1220	U	5.3	53	1000	20000	50000
Total Dissolved Solids	1020	N	96	950	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.5	< 50	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555323 Sample Ref: Sample ID: Sample Location: DC-BH106 Top Depth(m): 7.00 Bottom Depth(m): Sampling Date: 28-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	2.6	3	5	6
Loss On Ignition	2610	M	%	1.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		10.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.011	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0011	0.011	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0033	0.033	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0008	0.0076	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.12	1.2	10	150	500
Sulphate	1220	U	2.8	28	1000	20000	50000
Total Dissolved Solids	1020	N	46	460	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.0	< 50	500	800	1000

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	0.90

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555328 Sample Ref: Sample ID: Sample Location: DC-BH107 Top Depth(m): 2.00 Bottom Depth(m): Sampling Date: 28-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	0.79	3	5	6
Loss On Ignition	2610	M	%	2.2	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		11.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0035	0.035	0.5	2	25
Barium	1455	U	0.006	0.061	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0016	0.016	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0028	0.028	0.5	10	30
Nickel	1455	U	0.0005	0.0052	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	0.0009	0.0090	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	2.1	21	800	15000	25000
Fluoride	1220	U	0.18	1.8	10	150	500
Sulphate	1220	U	6.6	66	1000	20000	50000
Total Dissolved Solids	1020	N	120	1200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	30

Waste Acceptance Criteria

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

Results - Single Stage WAC

Project: 22-0874 Dublin Central

Chemtest Job No: 22-45980 Chemtest Sample ID: 1555330 Sample Ref: Sample ID: Sample Location: DC-BH107 Top Depth(m): 4.00 Bottom Depth(m): Sampling Date: 28-Nov-2022					Landfill Waste Acceptance Criteria Limits		
					Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Determinand	SOP	Accred.	Units				
Total Organic Carbon	2625	M	%	1.8	3	5	6
Loss On Ignition	2610	M	%	1.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		9.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0090	--	To evaluate	To evaluate
Eluate Analysis			10:1 Eluate mg/l	10:1 Eluate mg/kg	Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg		
Arsenic	1455	U	0.0007	0.0071	0.5	2	25
Barium	1455	U	< 0.005	< 0.050	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	< 0.0005	< 0.0050	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0031	0.031	0.5	10	30
Nickel	1455	U	< 0.0005	< 0.0050	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	< 0.0005	< 0.0050	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.10	1.0	10	150	500
Sulphate	1220	U	3.1	31	1000	20000	50000
Total Dissolved Solids	1020	N	53	530	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	4.2

Waste Acceptance Criteria

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