

Final Report

Report No.: 18-16980-1

Initial Date of Issue: 20-Jun-2018

Client: IGSL

Client Address: M7 Business Park
Naas
County Kildare
Ireland

Contact(s): Darren Keogh
John Clancy

Project: Snugborough

Quotation No.: **Date Received:** 14-Jun-2018

Order No.: **Date Instructed:** 14-Jun-2018

No. of Samples: 1

Turnaround (Wkdays): 5 **Results Due:** 20-Jun-2018

Date Approved: 20-Jun-2018

Approved By:



Details: Martin Dyer, Laboratory Manager

Client: IGSL	Chemtest Job No.: 18-16980			
Quotation No.:	Chemtest Sample ID.: 638359			
	Client Sample ID.: LOC 1			
	Sample Type: SOIL			
Determinand	Accred.	SOP	Units	LOD
Ammonium	U	1220	mg/l	0.050
Ammonium	N	1220	mg/kg	0.10
Boron (Dissolved)	U	1450	µg/l	20
Boron (Dissolved)	U	1450	mg/kg	0.20

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Client: IGSL		Chemtest Job No.: 18-16980			
Quotation No.:		Chemtest Sample ID.: 638359			
		Client Sample ID.: LOC 1			
		Sample Type: SOIL			
		Asbestos Lab: COVENTRY			
Determinand	Accred.	SOP	Units	LOD	
ACM Type	U	2192	%	N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
Moisture	N	2030	%	0.020	6.5
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40
Sulphur (Elemental)	U	2180	mg/kg	1.0	[A] 9.0
Cyanide (Total)	U	2300	mg/kg	0.50	[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	[A] 5.9
Sulphate (Acid Soluble)	U	2430	%	0.010	[A] 1.0
Arsenic	U	2450	mg/kg	1.0	21
Barium	U	2450	mg/kg	10	140
Cadmium	U	2450	mg/kg	0.10	0.31
Chromium	U	2450	mg/kg	1.0	32
Molybdenum	U	2450	mg/kg	2.0	2.2
Antimony	N	2450	mg/kg	2.0	< 2.0
Copper	U	2450	mg/kg	0.50	48
Mercury	U	2450	mg/kg	0.10	< 0.10
Nickel	U	2450	mg/kg	0.50	67
Lead	U	2450	mg/kg	0.50	30
Selenium	U	2450	mg/kg	0.20	0.25
Zinc	U	2450	mg/kg	0.50	78
Chromium (Trivalent)	N	2490	mg/kg	1.0	32
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Total Organic Carbon	U	2625	%	0.20	[A] 1.0
Mineral Oil	N	2670	mg/kg	10	< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0	[AC] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[AC] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[AC] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[AC] < 1.0
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0	[AC] < 1.0

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Client: IGSL		Chemtest Job No.: 18-16980	
Quotation No.:		Chemtest Sample ID.: 638359	
		Client Sample ID.: LOC 1	
		Sample Type: SOIL	
		Asbestos Lab: COVENTRY	
Determinand	Accred.	SOP	Units LOD
Aromatic TPH >C35-C44	N	2680	mg/kg 1.0 [AC] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg 5.0 [AC] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg 10.0 [AC] < 10
Benzene	U	2760	µg/kg 1.0 [AC] < 1.0
Toluene	U	2760	µg/kg 1.0 [AC] < 1.0
Ethylbenzene	U	2760	µg/kg 1.0 [AC] < 1.0
m & p-Xylene	U	2760	µg/kg 1.0 [AC] < 1.0
o-Xylene	U	2760	µg/kg 1.0 [AC] < 1.0
Methyl Tert-Butyl Ether	U	2760	µg/kg 1.0 [AC] < 1.0
Naphthalene	U	2800	mg/kg 0.10 < 0.10
Acenaphthylene	N	2800	mg/kg 0.10 < 0.10
Acenaphthene	U	2800	mg/kg 0.10 < 0.10
Fluorene	U	2800	mg/kg 0.10 < 0.10
Phenanthrene	U	2800	mg/kg 0.10 < 0.10
Anthracene	U	2800	mg/kg 0.10 < 0.10
Fluoranthene	U	2800	mg/kg 0.10 < 0.10
Pyrene	U	2800	mg/kg 0.10 < 0.10
Benzo[a]anthracene	U	2800	mg/kg 0.10 < 0.10
Chrysene	U	2800	mg/kg 0.10 < 0.10
Benzo[b]fluoranthene	U	2800	mg/kg 0.10 < 0.10
Benzo[k]fluoranthene	U	2800	mg/kg 0.10 < 0.10
Benzo[a]pyrene	U	2800	mg/kg 0.10 < 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg 0.10 < 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg 0.10 < 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg 0.10 < 0.10
Coronene	N	2800	mg/kg 0.10 < 0.10
Total Of 17 PAH's	N	2800	mg/kg 2.0 < 2.0
PCB 28	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 52	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 90+101	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 118	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 153	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 138	U	2815	mg/kg 0.010 [AC] < 0.010
PCB 180	U	2815	mg/kg 0.010 [AC] < 0.010
Total PCBs (7 Congeners)	N	2815	mg/kg 0.10 [AC] < 0.10
Total Phenols	U	2920	mg/kg 0.30 < 0.30

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Results - Single Stage WAC

Project: Snugborough

Chemtest Job No: 18-16980

Chemtest Sample ID: 638359

Sample Ref: LOC 1

Sample ID:

Top Depth(m):

Bottom Depth(m):

Sampling Date:

Determinand	SOP	Accred.	Units	Landfill Waste Acceptance Criteria		
				Inert Waste Landfill	Stable, Non-reactive hazardous waste in non-hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon	2625	U	%	3	5	6
Loss On Ignition	2610	U	%	--	--	10
Total BTEX	2760	U	mg/kg	6	--	--
Total PCBs (7 Congeners)	2815	U	mg/kg	1	--	--
TPH Total WAC (Mineral Oil)	2670	U	mg/kg	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	100	--	--
pH	2010	U		--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	--	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	1450	U	< 0.0010	< 0.050	0.5	25
Barium	1450	U	0.019	< 0.50	20	100
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1
Chromium	1450	U	< 0.0010	< 0.050	0.5	10
Copper	1450	U	< 0.0010	< 0.050	2	50
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10
Nickel	1450	U	< 0.0010	< 0.050	0.4	10
Lead	1450	U	< 0.0010	< 0.010	0.5	10
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7
Selenium	1450	U	0.013	0.013	0.1	0.5
Zinc	1450	U	0.0088	< 0.50	4	50
Chloride	1220	U	1.2	12	800	15000
Fluoride	1220	U	0.079	< 1.0	10	150
Sulphate	1220	U	340	3400	1000	20000
Total Dissolved Solids	1020	N	410	4100	4000	60000
Phenol Index	1920	U	< 0.030	< 0.30	1	--
Dissolved Organic Carbon	1610	U	8.0	80	500	800

Solid Information

Dry mass of test portion/kg	0.090
Moisture (%)	6.5

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.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request. The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample ID:	Sample Ref:	Sample ID:	Sampled Date:	Deviation Code(s):	Containers Received:
638359		LOC 1		AC	Plastic Tub 500g

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SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
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.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
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–C44 Aromatics: >C5–C7, >C7–C8, >C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35–C44	Dichloromethane extraction / GCxGC FID detection

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	Waste material including soil, sludges and granular waste	Compliance Test for Leaching of Granular Waste Material and Sludge

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Report Information

Key

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

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

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

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

All Asbestos testing is performed at the indicated laboratory

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

Sample Deviation Codes

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

Sample Retention and Disposal

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

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

Charges may apply to extended sample storage

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

customerservices@chemtest.co.uk