Analytical Report Number: 18-92080

Project / Site name: Castlewood House

Lab Sample Number				998592	998593	998594	998595	998596
Sample Reference				BHDA104	BHDA104	BHDA104	BHDA104	BHDA104
Sample Number				B	B	B	B	D
Depth (m)				0.50	1.20	2.00	3.00	5.50
Date Sampled				20/06/2018	19/06/2018	19/06/2018	20/06/2018	20/06/2018
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	13	< 0.1
Moisture Content	%	N/A	NONE	20	10	10	5.5	15
Total mass of sample received	kg	0.001	NONE	0.47	0.43	0.52	0.56	0.38
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.3	8.6	8.3	7.7	8.3
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.11	0.10	0.033	0.014	0.43

Analytical Report Number: 18-92080

Project / Site name: Castlewood House

Lab Sample Number				998597	998598	998599		
Sample Reference				BHDA104	BHDA104	BHDA104		
Sample Number				D	D	D		
Depth (m)				9.50	14.00	26.50		
Date Sampled				21/06/2018	22/06/2018	22/06/2018		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	16	15	8.4		
Total mass of sample received	kg	0.001	NONE	0.40	0.40	2.0		
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.4	8.4	9.2		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.47	0.76	0.52		

Analytical Report Number : 18-92080

Project / Site name: Castlewood House

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
998572	BHDA101	B	0.50	Brown clay and sand with gravel.
998573	BHDA101	B	1.20	Light brown clay and sand with gravel.
998574	BHDA101	B	6.50	Brown clay.
998575	BHDA101	U	11.00	Brown clay.
998576	BHDA101	U	17.00	Brown clay and sand.
998577	BHDA101	U	26.00	Light grey clay and sand.
998578	BHDA101	D	42.50	Brown clay and sand with stones.
998579	BHDA102	B	0.50	Light brown sand with gravel.
998580	BHDA102	B	2.00	Light brown sand with gravel.
998581	BHDA102	B	3.00	Light brown sand with gravel.
998582	BHDA102	D	9.00	Brown clay.
998583	BHDA102	D	16.50	Brown clay.
998584	BHDA102	U	21.50	Brown clay and sand.
998585	BHDA102	D	27.00	Light brown clay.
998586	BHDA102	D	33.00	Light grey clay.
998587	BHDA103	B	2.00	Light brown sand with gravel.
998588	BHDA103	B	3.00	Light brown sand with gravel.
998589	BHDA103	U	8.00	Brown clay.
998590	BHDA103	U	14.00	Brown clay and sand.
998591	BHDA103	U	20.00	Brown clay.
998592	BHDA104	B	0.50	Brown clay.
998593	BHDA104	B	1.20	Brown clay and sand.
998594	BHDA104	B	2.00	Brown sand with gravel.
998595	BHDA104	B	3.00	Brown sand with stones and gravel
998596	BHDA104	D	5.50	Grey clay.
998597	BHDA104	D	9.50	Grey clay.
998598	BHDA104	D	14.00	Grey clay.
998599	BHDA104	D	26.50	Grey sandy clay.

The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-92080

Project / Site name: Castlewood House

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-90096

Project / Site name:	Castlewood House	**Samples received on:**	22/06/2018
Your job number:		**Samples instructed on:**	22/06/2018
Your order number:		**Analysis completed by:**	27/06/2018
Report Issue Number:	1	**Report issued on:**	02/07/2018
Samples Analysed:	1 10:1 WAC sample		

Signed: _____

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Waste Acceptance Criteria Analytical Results

Report No:	**18-90096**						
					Client:	**LMBGEOSOL**	
Location	**Castlewood House**						
Lab Reference (Sample Number)	988012 / 988013				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	21/06/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	BH102						
Depth (m)	1.20						
Solid Waste Analysis							
TOC (%)**	< 0.1				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	-				6000	--	--
Sum of PCBs (mg/kg) **	-				1	--	--
Mineral Oil (mg/kg)	-				500	--	--
Total PAH (WAC-17) (mg/kg)	-				100	--	--
pH (units)**	8.2				--	>6	--
Acid Neutralisation Capacity (mol / kg)	3.5				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0027			0.0209	0.5	2	25
Barium *	0.0028			0.0216	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	< 0.0004			< 0.0040	0.5	10	70
Copper *	0.013			0.097	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0017			0.0130	0.5	10	30
Nickel *	0.0016			0.012	0.4	10	40
Lead *	< 0.0010			< 0.010	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	0.0070			0.054	0.1	0.5	7
Zinc *	0.0057			0.045	4	50	200
Chloride *	1.1			8.7	800	4000	25000
Fluoride	0.098			0.77	10	150	500
Sulphate *	3.7			29	1000	20000	50000
TDS*	21			160	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	3.46			26.9	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	0.57						
Dry Matter (%)	84						
Moisture (%)	16						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation
** = MCERTS accredited

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes as defined by the Waste (England and Wales) Regulations 2011 (as amended) and EA Guidance WM3.
This analysis is only applicable for landfill acceptance criteria (The Environmental Permitting (England and Wales) Regulations) and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Analytical Report Number : 18-90096

Project / Site name: Castlewood House

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Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
988012	BH102	None Supplied	1.20	Light brown sand with gravel.

Analytical Report Number : 18-90096

Project / Site name: Castlewood House

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Acid neutralisation capacity of soil	Determination of acid neutralisation capacity by addition of acid or alkali followed by electronic probe.	In-house method based on Guidance an Sampling and Testing of Wastes to Meet Landfill Waste Acceptance""	L046-UK	W	NONE
BS EN 12457-2 (10:1) Leachate Prep	10:1 (as recieved, moisture adjusted) end over end extraction with water for 24 hours. Eluate filtered prior to analysis.	In-house method based on BSEN12457-2.	L043-PL	W	NONE
Chloride 10:1 WAC	Determination of Chloride colorimetrically by discrete analyser.	In house based on MEWAM Method ISBN 0117516260.	L082-PL	W	ISO 17025
Dissolved organic carbon 10:1 WAC	Determination of dissolved inorganic carbon in leachate by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	NONE
Fluoride 10:1 WAC	Determination of fluoride in leachate by 1:1ratio with a buffer solution followed by Ion Selective Electrode.	In-house method based on Use of Total Ionic Strength Adjustment Buffer for Electrode Determination"	L033B-PL	W	ISO 17025
Metals in leachate by ICP-OES	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols 10:1 WAC	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate 10:1 WAC	Determination of sulphate in leachate by ICP-OES	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
Total dissolved solids 10:1 WAC	Determination of total dissolved solids in water by electrometric measurement.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L004-PL	W	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 18-91646

Project / Site name:	Castlewood House	**Samples received on:**	05/07/2018
Your job number:		**Samples instructed on:**	05/07/2018
Your order number:		**Analysis completed by:**	16/07/2018
Report Issue Number:	1	**Report issued on:**	16/07/2018
Samples Analysed:	1 10:1 WAC sample.		

Signed: _____

Jordan Hill
Reporting Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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Waste Acceptance Criteria Analytical Results

Report No:	**18-91646**						
					Client:	**LMBGEOSOL**	
Location	**Castlewood House**						
Lab Reference (Sample Number)	996266 / 996287				**Landfill Waste Acceptance Criteria Limits**		
Sampling Date	26/06/2018				Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill
Sample ID	TP105 (Medius)						
Depth (m)	0.40						
Solid Waste Analysis							
TOC (%)**	1.0				3%	5%	6%
Loss on Ignition (%) **	-				--	--	10%
BTEX (µg/kg) **	-				6000	--	--
Sum of PCBs (mg/kg) **	-				1	--	--
Mineral Oil (mg/kg)	-				500	--	--
Total PAH (WAC-17) (mg/kg)	-				100	--	--
pH (units)**	7.6				--	>6	--
Acid Neutralisation Capacity (mol / kg)	2.3				--	To be evaluated	To be evaluated
Eluate Analysis (BS EN 12457 - 2 preparation utilising end over end leaching procedure)	10:1 mg/l			10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic *	0.0043			0.0315	0.5	2	25
Barium *	0.0017			0.0126	20	100	300
Cadmium *	< 0.0001			< 0.0008	0.04	1	5
Chromium *	0.0016			0.012	0.5	10	70
Copper *	0.0052			0.038	2	50	100
Mercury *	< 0.0005			< 0.0050	0.01	0.2	2
Molybdenum *	0.0056			0.0408	0.5	10	30
Nickel *	0.0009			0.0063	0.4	10	40
Lead *	0.0026			0.019	0.5	10	50
Antimony *	< 0.0017			< 0.017	0.06	0.7	5
Selenium *	< 0.0040			< 0.040	0.1	0.5	7
Zinc *	0.0020			0.014	4	50	200
Chloride *	2.5			18	800	4000	25000
Fluoride	0.12			0.87	10	150	500
Sulphate *	33			240	1000	20000	50000
TDS*	120			900	4000	60000	100000
Phenol Index (Monohydric Phenols) *	< 0.010			< 0.10	1	-	-
DOC	6.12			44.5	500	800	1000
Leach Test Information							
Stone Content (%)	< 0.1						
Sample Mass (kg)	1.2						
Dry Matter (%)	85						
Moisture (%)	15						

Results are expressed on a dry weight basis, after correction for moisture content where applicable.
*= UKAS accredited (liquid eluate analysis only)
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** = MCERTS accredited

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