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Analytical Report Number : 20-20770

Project / Site name:	Clarendon	Samples received on:	22/07/2020
Your job number:	6075	Sample instructed/ Analysis started on:	22/07/2020
Your order number:	S-RE6075-00005	Analysis completed by:	27/07/2020
Report Issue Number:	1	Report issued on:	27/07/2020
Samples Analysed:	5 leachate samples - 5 soil samples		

Signed: *A. Czerwińska*

Agnieszka Czerwińska

Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 20-20770-1 Clarendon 6075

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report relate only to the sample(s) submitted for testing.

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Your Order No: S-RE6075-00005

Lab Sample Number				1569752	1569753	1569754	1569755	1569756
Sample Reference				VS-O-2	VS-O-1	VS-2N	VS-1O	VS-2O
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
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	< 0.1
Moisture Content		%	N/A	NONE	2.3	9.0	10	4.6
Total mass of sample received		kg	0.001	NONE	2.0	2.0	2.0	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Amosite	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.001	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.001	-	< 0.001

General Inorganics

Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.065	1.7	1.2	0.74	1.1
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	130	3500	2400	1500	2300
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	64.7	1730	1200	737	1130
Ammonium as NH ₄	mg/kg	0.5	MCERTS	< 0.5	1.0	12	18	1.9



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Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1569754	VS-2N		207	Loose Fibrous Debris	Amosite	0.001	0.001
1569756	VS-2O		179	Loose Fibrous Debris	Chrysotile	< 0.001	< 0.001

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



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Your Order No: S-RE6075-00005

Lab Sample Number				1569757	1569758	1569759	1569760	1569761
Sample Reference				VS-O-2	VS-O-1	VS-2N	VS-10	VS-20
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				22/07/2020	22/07/2020	22/07/2020	22/07/2020	22/07/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)				Units	Limit of detection	Accreditation Status		

General Inorganics

Sulphate as SO ₄	mg/l	0.1	ISO 17025	7.0	156	86.0	154	122
Ammonium as NH ₄	µg/l	15	NONE	110	64	140	320	210



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* 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 *
1569752	VS-O-2	None Supplied	None Supplied	Brown sand with gravel.
1569753	VS-O-1	None Supplied	None Supplied	Brown sandy clay with gravel.
1569754	VS-2N	None Supplied	None Supplied	Brown clay and sand with gravel.
1569755	VS-1O	None Supplied	None Supplied	Light brown clay and sand with gravel.
1569756	VS-2O	None Supplied	None Supplied	Light brown clay and sand with gravel.

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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
Ammonium as NH ₄ in leachate	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Ammonium as NH ₄ in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
NRA Leachate Prep	10:1 extract with de-ionised water shaken for 24 hours then filtered.	In-house method based on National Rivers Authority	L020-PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 1986 Methods for the Determination of Metals in Soil""	L039-PL	W	ISO 17025
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	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.