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Analytical Report Number : 20-27378

Project / Site name:	Clarendon Road P3	Samples received on:	28/08/2020
Your job number:	6075	Samples instructed on/ Analysis started on:	28/08/2020
Your order number:	S-RE6075/00005	Analysis completed by:	03/09/2020
Report Issue Number:	1	Report issued on:	03/09/2020
Samples Analysed:	12 leachate samples - 12 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.



Analytical Report Number: 20-27378
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Your Order No: S-RE6075/00005

Lab Sample Number	1607298	1607299	1607300	1607301
Sample Reference	VS-I13-N	VS-J13-N	VS-L13-N	VS-M13-N
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	28/08/2020	28/08/2020	28/08/2020	28/08/2020
Time Taken	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	8.2	1.6	18.6	976
Ammonium as NH ₄	µg/l	15	NONE	49	< 15	160	7500

U/S = Unsuitable Sample I/S = Insufficient Sample



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Lab Sample Number	1607302	1607303	1607304	1607305
Sample Reference	VS-N13-N	VS-O13-N	VS-P4-E	VS-P3-E
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	28/08/2020	28/08/2020	28/08/2020	28/08/2020
Time Taken	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	51.5	76.4	6.4	26.9
Ammonium as NH ₄	µg/l	15	NONE	820	580	< 15	15

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Lab Sample Number	1607306	1607307	1607308	1607309
Sample Reference	VS-R6-E	VS-I3-W	VS-I2-W	VS-G11-W
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled	28/08/2020	28/08/2020	28/08/2020	27/08/2020
Time Taken	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	88.1	75.4	47	96.8
Ammonium as NH ₄	µg/l	15	NONE	24	42	< 15	5000

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Analytical Report Number: 20-27378
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Lab Sample Number				1607286	1607287	1607288	1607289
Sample Reference				VS-I13-N	VS-J13-N	VS-L13-N	VS-M13-N
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				28/08/2020	28/08/2020	28/08/2020	28/08/2020
Time Taken				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	13	7.6	11	11
Total mass of sample received	kg	0.001	NONE	2	1.7	1.6	1.6

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

General Inorganics

Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.11	0.064	0.29	1.5
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	210	130	570	3000
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	107	64	286	1510
Ammonium as NH4	mg/kg	0.5	MCERTS	1.3	< 0.5	7.1	4.7

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Lab Sample Number				1607290	1607291	1607292	1607293
Sample Reference				VS-N13-N	VS-O13-N	VS-P4-E	VS-P3-E
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				28/08/2020	28/08/2020	28/08/2020	28/08/2020
Time Taken				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	11	14	8.5	8.6
Total mass of sample received	kg	0.001	NONE	1.7	1.9	2	1.7

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Amosite	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.039	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.039	-

General Inorganics

Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.2	0.65	0.15	0.32
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	390	1300	290	640
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	195	648	147	322
Ammonium as NH4	mg/kg	0.5	MCERTS	12	6.6	< 0.5	< 0.5

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Lab Sample Number				1607294	1607295	1607296	1607297
Sample Reference				VS-R6-E	VS-I3-W	VS-I2-W	VS-G11-W
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				28/08/2020	28/08/2020	28/08/2020	27/08/2020
Time Taken				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	17	7	7	23
Total mass of sample received	kg	0.001	NONE	1.3	1.8	1.8	1.7

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	Amosite	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	0.002	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	0.002	-	-

General Inorganics

Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	1.1	1.1	0.72	0.58
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	2300	2100	1400	1200
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	1130	1060	723	579
Ammonium as NH4	mg/kg	0.5	MCERTS	< 0.5	1.2	< 0.5	71

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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
1607292	VS-P4-E		157	Loose Fibrous Debris	Amosite	0.039	0.039
1607294	VS-R6-E		135	Loose Fibres	Chrysotile	< 0.001	< 0.001
1607295	VS-I3-W		140	Loose Fibrous Debris	Amosite	0.002	0.002

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



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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 *
1607286	VS-I13-N	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1607287	VS-J13-N	None Supplied	None Supplied	Brown loam with gravel.
1607288	VS-L13-N	None Supplied	None Supplied	Brown loam with gravel and vegetation.
1607289	VS-M13-N	None Supplied	None Supplied	Brown loam and clay with gravel.
1607290	VS-N13-N	None Supplied	None Supplied	Brown loam with gravel and vegetation.
1607291	VS-O13-N	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1607292	VS-P4-E	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1607293	VS-P3-E	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1607294	VS-R6-E	None Supplied	None Supplied	Brown loam and clay with gravel and vegetation.
1607295	VS-I3-W	None Supplied	None Supplied	Brown loam with gravel and brick.
1607296	VS-I2-W	None Supplied	None Supplied	Brown loam with gravel.
1607297	VS-G11-W	None Supplied	None Supplied	Brown loam and clay with gravel.



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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Ammonium as NH4 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 NH4 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 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
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
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
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.