

**Alix Hamilton**

Keltbray Remediation Ltd
St Andrew's House
Portsmouth Road
Esher
KT10 9TA

t: 02076431000

e: alix.hamilton@keltbray.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 20-15279-A

Replaces Analytical Report Number : 20-15279-A, issue no. 3

Report format change.

Project / Site name:	Clarendon Road	Samples received on:	19/06/2020
Your job number:	6075	Sample instructed/ Analysis started on:	19/06/2020
Your order number:	SRE-6075-00005	Analysis completed by:	07/07/2020
Report Issue Number:	4	Report issued on:	08/07/2020
Samples Analysed:	13 leachate samples - 13 soil samples		

Signed: Karolina Marek

Karolina Marek
PL Head of 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 20-15279-4A Clarendon Road 6075.XLS

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

Page 1 of 10

Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539831	1539832	1539834	1539835	1539836
Sample Reference				SP005	VS-G12-W	VS-G11	VS-H11	VS-K4
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				19/06/2020	19/06/2020	19/06/2020	19/06/2020	19/06/2020
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	< 0.1
Moisture Content	%	N/A	NONE	6.0	20	20	22	21
Total mass of sample received	kg	0.001	NONE	1.0	2.0	1.4	1.5	2.0

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Amosite	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.003	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	0.003	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	11.8	8.0	7.9	7.9	7.6
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.069	0.60	1.2	3.5	3.5
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	140	1200	2400	7000	7000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	68.9	602	1190	3510	3490
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	< 0.5	1.4	200	260	1.3
Ammonia as NH ₃	mg/kg	0.5	MCERTS	< 0.5	1.7	240	310	1.6
Ammonium as NH ₄	mg/kg	0.5	MCERTS	< 0.5	1.8	260	330	1.7

Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539837	1539838	1539839	1539840	1539841
Sample Reference				VS-L4	VS-K3	SP-008	VS-K2	VS-L2
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				19/06/2020	19/06/2020	19/06/2020	19/06/2020	19/06/2020
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	< 0.1
Moisture Content	%	N/A	NONE	21	20	21	21	21
Total mass of sample received	kg	0.001	NONE	2.0	2.0	0.60	1.5	1.5

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	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.6	7.6	7.8	7.7	7.7
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	3.4	1.6	1.0	2.9	3.5
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	6800	3200	2000	5700	7000
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	3380	1590	1020	2870	3520
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	1.4	0.6	0.8	1.0	1.1
Ammonia as NH ₃	mg/kg	0.5	MCERTS	1.8	0.8	0.9	1.2	1.3
Ammonium as NH ₄	mg/kg	0.5	MCERTS	1.9	0.8	1.0	1.3	1.4

Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539842	1539843	1539844		
Sample Reference				VS-M3	VS-M2	VS-M4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				19/06/2020	19/06/2020	19/06/2020		
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	21	21	21		
Total mass of sample received	kg	0.001	NONE	1.5	2.0	0.60		

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		
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-		
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.6	7.7	7.6		
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	3.3	3.1	3.2		
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	6700	6200	6500		
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	3340	3090	3240		
Ammoniacal Nitrogen as N	mg/kg	0.5	MCERTS	1.2	1.5	1.4		
Ammonia as NH ₃	mg/kg	0.5	MCERTS	1.5	1.9	1.7		
Ammonium as NH ₄	mg/kg	0.5	MCERTS	1.6	2.0	1.8		



Analytical Report Number: 20-15279-A
Project / Site name: Clarendon Road
Your Order No: SRE-6075-00005

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
1539831	SP005		142	Loose Fibres	Chrysotile & Amosite	0.003	0.003

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



Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539846	1539847	1539849	1539850	1539851
Sample Reference				SP005	VS-G12-W	VS-G11	VS-H11	VS-K4
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				19/06/2020	19/06/2020	19/06/2020	19/06/2020	19/06/2020
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	29.3	96.7	154	141	1100
Ammonium as NH ₄	µg/l	15	NONE	460	280	15000	21000	310



Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539852	1539853	1539854	1539855	1539856
Sample Reference				VS-L4	VS-K3	SP-008	VS-K2	VS-L2
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				19/06/2020	19/06/2020	19/06/2020	19/06/2020	19/06/2020
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	672	278	125	1400	454
Ammonium as NH ₄	µg/l	15	NONE	240	240	240	210	260



Analytical Report Number: 20-15279-A

Project / Site name: Clarendon Road

Your Order No: SRE-6075-00005

Lab Sample Number				1539857	1539858	1539859		
Sample Reference				VS-M3	VS-M2	VS-M4		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				None Supplied	None Supplied	None Supplied		
Date Sampled				19/06/2020	19/06/2020	19/06/2020		
Time Taken				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	347	357	1060		
Ammonium as NH ₄	µg/l	15	NONE	250	210	180		



Analytical Report Number : 20-15279-A

Project / Site name: Clarendon Road

* 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 *
1539831	SP005	None Supplied	None Supplied	Brown loam and sand with gravel and brick.
1539832	VS-G12-W	None Supplied	None Supplied	Brown clay.
1539834	VS-G11	None Supplied	None Supplied	Brown clay with gravel.
1539835	VS-H11	None Supplied	None Supplied	Brown clay with gravel.
1539836	VS-K4	None Supplied	None Supplied	Brown clay with gravel.
1539837	VS-L4	None Supplied	None Supplied	Brown clay.
1539838	VS-K3	None Supplied	None Supplied	Brown clay.
1539839	SP-008	None Supplied	None Supplied	Brown clay.
1539840	VS-K2	None Supplied	None Supplied	Brown clay.
1539841	VS-L2	None Supplied	None Supplied	Brown clay.
1539842	VS-M3	None Supplied	None Supplied	Brown clay.
1539843	VS-M2	None Supplied	None Supplied	Brown clay.
1539844	VS-M4	None Supplied	None Supplied	Brown clay.

Analytical Report Number : 20-15279-A

Project / Site name: Clarendon Road

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
Ammonia as NH ₃ 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
Ammoniacal Nitrogen as N in soil	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (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
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
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
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	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 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.