

Report of Intrusive investigation at Mill Hill Quarry

**Mill Hill
Grimethorpe
South Yorkshire**

JWA Contract Consultants Ltd was instructed by Mr C. Gaddes of Gaddes Homes Ltd to undertake an intrusive investigation and Chemical analysis on site in order to meet Planning Conditions issued by Barnsley MDC.

This report is for the sole use of Gaddes Homes Ltd and cannot be re-assigned to any further party without prior permission from JWA Contract Consultants Ltd

This Report should be read in conjunction with two previous reports submitted on the site by RGS (Rogers Geotechnical Services Ltd) ref: J4708/19/E/EDS dated 16th May 2019, and by G&M Consulting ref:C439/02/AS on the results of the installation of three bore holes.

In line with the recommendation of the RGS Phase One Desk Study, section 5.1 for an intrusive investigation and soil chemical analysis the following was carried out.

A total of 9 Trial Pits were excavated by tracked excavator provided by Gaddes Homes Ltd. John Whitham of JWA' undertook on site sampling on the 6th November 2021.

7 of the Trial Pits were located within the garden areas of the proposed properties, with a further 2 trial Pits within the roadway and building foot prints. This arrangement provides a confidence level of 91% of identifying any contamination of 7% or greater by plan area of the residential garden properties.

A total of 15 spot samples were taken and dispatched under Chain of Custody to i2 Laboratory, a UKAS and MCERTS accredited laboratory. All the samples being analysed for a standard range of environmental contaminants, ie for Metals and Poly-aromatic Hydrocarbons together with a further 3 samples being selected for Asbestos analysis.

Weather conditions on the day, Dry and Overcast.

Ground Conditions

Ground conditions were found to be rough vegetation with distressed patches due to previous activities on site of undertaking bore holes and general site mobilisation.

A layer of top soil was generally found across the site varying from 100mm to 200mm, this material included some bricks and rubble and indicated the soil had established itself over the years since the abandonment of the working quarry.

Sub soils were found to be Sandy Clays with more sandy material in occasionally lenses within the clay layers, but generally being of a more homogeneous nature across the whole site. G&M Consulting, in their report states "Made Ground to 2.2m BGL (Below Ground Level). JWA' found no indications that this material being "Made Ground". There being no foreign matter within the soil structure.

Chemical Analysis

The chemical analytical results have been set against SIRIUS (Human Health Generic Assessment Criteria) for soils. As the future development is to be residential housing, the standard adopted is for "residential with plant uptake". Therefore judged, where vegetables could be grown within the garden areas and consumed by the residents.

The Chemical results are:-

1. The results are below analytical detection levels.
- Or 2. The results are below the SIRIUS action levels.

However, there being one exception of one result from Trial Pit 3 sample 1. Ref 2075415. This sample was obtained within the top 100mm of the ground. Arsenic at 59mg/kg exceeds the SIRIUS standard of 32mg/kg.

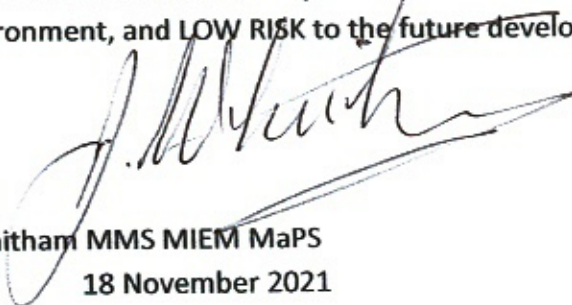
The laboratory was requested to review both the soil sample and the result in order to establish the reason. It was reported that there was no indication within the soil sample which may had effected the result and beyond a full retest. This was not undertaken.

Recommendation

As the site would require a general site strip prior to development it is recommended that particular care be made around TP3 and the removal of this material from site.

Conclusions and Risk Assessment

With the removal of the site strip and area around TP3 the site is deemed to be LOW RISK to the environment, and LOW RISK to the future development.



John Whitham MMS MIEM MaPS
18 November 2021



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Analytical Report Number : 21-21542

Project / Site name:	Mill Hill Quarry	Samples received on:	08/11/2021
Your job number:		Samples instructed on/ Analysis started on:	08/11/2021
Your order number:		Analysis completed by:	17/11/2021
Report Issue Number:	1	Report issued on:	17/11/2021
Samples Analysed:	15 soil samples		

Izabela Wójcik
Signed:

Izabela Wójcik
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

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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: 21-21542
Project / Site name: Mill Hill Quarry

Lab Sample Number			2075412	2075413	2075414	2075415	2075416
Sample Reference			TP1/1	TP1/2	TP2	TP3/1	TP3/2
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			0.15	1.40	0.45	0.10	1.50
Date Sampled			08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection					
		Acceptance Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	11	11	12
Total mass of sample received	kg	0.001	NONE	1.0	1.2	1.2	1.2

Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	Not-detected	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.1	7.2	8.0	8.4	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	580	210	960	1800	450
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	76	44	72	220	94
Water Soluble SO ₄ 16hr extraction (2:1) Leachate Equivalent	g/l	0.00125	MCERTS	0.038	0.022	0.036	0.11	0.047
Water Soluble SO ₄ 16hr extraction (2:1) Leachate Equivalent	mg/l	1.25	MCERTS	37.9	22.2	36.1	111	46.9
Sulphide	mg/kg	1	MCERTS	7.7	3.2	< 1.0	2.6	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	4.8	1.0	1.1	3.9	1.5

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.62	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.60	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	8.6	0.62	< 0.05	0.86	0.38
Anthracene	mg/kg	0.05	MCERTS	2.2	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	17	1.1	< 0.05	1.4	0.60
Pyrene	mg/kg	0.05	MCERTS	15	0.92	< 0.05	1.2	0.53
Benzo(a)anthracene	mg/kg	0.05	MCERTS	9.3	0.58	< 0.05	0.76	0.31
Chrysene	mg/kg	0.05	MCERTS	7.3	0.52	< 0.05	0.72	0.32
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	12	0.54	< 0.05	0.67	0.32
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	8.8	0.38	< 0.05	0.56	0.20
Benzo(a)pyrene	mg/kg	0.05	MCERTS	15	0.53	< 0.05	0.78	0.30
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	8.2	0.31	< 0.05	0.41	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	2.1	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	9.2	0.38	< 0.05	0.44	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	115	5.86	< 0.80	7.73	2.96

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Lab Sample Number				2075412	2075413	2075414	2075415	2075416
Sample Reference				TP1/1	TP1/2	TP2	TP3/1	TP3/2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.15	1.40	0.45	0.10	1.50
Date Sampled				08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
				Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	6.9	12	59	11
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.3	0.5	2.7	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	11	15	17	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	31	12	18	65	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	39	21	130	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	18	21	32	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	38	40	180	54

US = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-21542
Project / Site name: Mill Hill Quarry

Lab Sample Number			2075417	2075418	2075419	2075420	2075421
Sample Reference			TP4	TP5/1	TP5/2	TP6	TP7/1
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)			0.35	0.15	0.90	0.35	0.25
Date Sampled			08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection					
		Acceleration Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	15	19	15	20
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2

Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	-	Not-detected

General Inorganics

Parameter	Units	N/A	MCERTS	7.5	6.8	7.9	7.9	7.7
pH - Automated								
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	30	MCERTS	1700	410	210	390	960
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	75	49	65	38	44
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.038	0.024	0.033	0.019	0.022
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	37.7	24.4	32.7	18.9	21.8
Sulphide	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	4.4	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	2.7	4.5	0.9	2.5	4.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Parameter	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	2.1	< 0.05	< 0.05	1.1	1.7
Anthracene	mg/kg	0.05	MCERTS	0.51	< 0.05	< 0.05	0.35	0.28
Fluoranthene	mg/kg	0.05	MCERTS	4.4	0.50	< 0.05	2.1	3.3
Pyrene	mg/kg	0.05	MCERTS	3.7	0.45	< 0.05	1.7	2.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.0	0.28	< 0.05	1.1	1.6
Chrysene	mg/kg	0.05	MCERTS	1.9	0.27	< 0.05	0.83	1.5
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.7	0.29	< 0.05	0.95	1.5
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	1.3	0.20	< 0.05	0.45	1.1
Benzo(e)pyrene	mg/kg	0.05	MCERTS	2.0	0.26	< 0.05	0.79	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.96	< 0.05	< 0.05	0.55	0.77
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.21
Benzo(g,h)perylene	mg/kg	0.05	MCERTS	1.0	< 0.05	< 0.05	0.55	0.85

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	21.5	2.25	< 0.80	10.4	17.2

Analytical Report Number: 21-21542
Project / Site name: Mill Hill Quarry

Lab Sample Number			2075417	2075418	2075419	2075420	2075421	
Sample Reference			TP4	TP5/1	TP5/2	TP6	TP7/1	
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)			0.35	0.15	0.90	0.35	0.25	
Date Sampled			08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	HCERTS	17	8.7	9.3	14	18
Boron (water soluble)	mg/kg	0.2	HCERTS	0.7	0.6	0.3	0.9	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	HCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	HCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	HCERTS	18	14	12	14	17
Copper (aqua regia extractable)	mg/kg	1	HCERTS	25	21	12	23	28
Lead (aqua regia extractable)	mg/kg	1	HCERTS	27	39	27	35	47
Mercury (aqua regia extractable)	mg/kg	0.3	HCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	HCERTS	16	18	23	18	21
Selenium (aqua regia extractable)	mg/kg	1	HCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	HCERTS	66	62	47	74	110

US = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-21542
Project / Site name: Mill Hill Quarry

Lab Sample Number	2075422		2075423		2075424		2075425		2075426	
Sample Reference	TP7/2		TP8/1		TP8/2		TP9/1		TP9/2	
Sample Number	None Supplied		None Supplied		None Supplied		None Supplied		None Supplied	
Depth (m)	0.75		0.70		1.50		0.20		1.10	
Date Sampled	08/11/2021		08/11/2021		08/11/2021		08/11/2021		08/11/2021	
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		33
Moisture Content	%	0.01	NONE	14	15	11	22			10
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	1.2	1.2		1.2

Asbestos in Soil	Type	N/A	ISO 17025	-	-	-	-	-
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General Inorganics

Parameter	pH Units	N/A	MCERTS	7.6	8.1	7.6	8.1	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1100	770	290	1500	220
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	76	150	99	280	120
Water Soluble SO4 16hr extraction (2:1) Leachate (Equivalent)	g/l	0.00125	MCERTS	0.038	0.075	0.050	0.14	0.062
Water Soluble SO4 16hr extraction (2:1) Leachate (Equivalent)	mg/l	1.25	MCERTS	37.9	74.5	49.5	138	61.9
Sulphide	mg/kg	1	MCERTS	< 1.0	28	< 1.0	14	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	2.8	5.2	0.7	9.6	1.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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Speciated PAHs

Parameter	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	1.6	< 0.05
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.32	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	1.3	< 0.05	4.6	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	1.5	< 0.05	4.2	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	12	< 0.05	44	1.1
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	3.6	< 0.05	14	0.36
Anthracene	mg/kg	0.05	MCERTS	< 0.05	15	< 0.05	58	1.6
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	12	< 0.05	47	1.3
Pyrene	mg/kg	0.05	MCERTS	< 0.05	6.6	< 0.05	25	0.61
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	5.0	< 0.05	16	0.43
Chrysene	mg/kg	0.05	MCERTS	< 0.05	6.6	< 0.05	20	0.51
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	2.6	< 0.05	9.9	0.28
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	5.6	< 0.05	17	0.47
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	2.5	< 0.05	8.0	0.26
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.73	< 0.05	2.3	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	2.9	< 0.05	8.3	0.28
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05				

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	78.5	< 0.80	280	7.11
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Analytical Report Number: 21-21542
Project / Site name: Mill Hill Quarry

Lab Sample Number			2075422	2075423	2075424	2075425	2075426	
Sample Reference			TP7/2	TP8/1	TP8/2	TP9/1	TP9/2	
Sample Number			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)			0.75	0.70	1.50	0.20	1.10	
Date Sampled			08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	
Time Taken			None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	HCERTS	17	14	8.1	30	7.7
Boron (water soluble)	mg/kg	0.2	HCERTS	0.4	1.4	0.4	1.8	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	HCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	HCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	HCERTS	19	39	11	22	14
Copper (aqua regia extractable)	mg/kg	1	HCERTS	23	52	11	54	13
Lead (aqua regia extractable)	mg/kg	1	HCERTS	24	95	12	100	15
Mercury (aqua regia extractable)	mg/kg	0.3	HCERTS	< 0.3	< 0.3	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	HCERTS	20	23	19	22	20
Selenium (aqua regia extractable)	mg/kg	1	HCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	HCERTS	70	170	35	180	38

U/S = Unstable Sample I/S = Insufficient Sample

Analytical Report Number : 21-21542

Project / Site name: Mill Hill Quarry

* 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 *
2075412	TP1/1	None Supplied	0.15	Brown loam and clay with gravel and vegetation.
2075413	YP1/2	None Supplied	1.4	Brown loam and clay with gravel and vegetation.
2075414	TP2	None Supplied	0.45	Brown loam and clay with gravel and vegetation.
2075415	TP3/1	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2075416	TP3/2	None Supplied	1.5	Brown loam and clay with gravel and vegetation.
2075417	TP4	None Supplied	0.35	Brown clay and sand with gravel.
2075418	TP5/1	None Supplied	0.15	Brown loam and clay with gravel and vegetation.
2075419	TP5/2	None Supplied	0.9	Brown clay and sand with gravel.
2075420	TP6	None Supplied	0.35	Brown clay and sand with gravel.
2075421	TP7/1	None Supplied	0.25	Brown clay and loam.
2075422	TP7/2	None Supplied	0.75	Brown clay and sand with gravel.
2075423	TP8/1	None Supplied	0.7	Brown loam and clay with gravel and vegetation.
2075424	TP8/2	None Supplied	1.5	Brown sandy clay.
2075425	TP9/1	None Supplied	0.2	Brown clay and loam with gravel.
2075426	TP9/2	None Supplied	1.1	Brown sand with gravel and stones.

Analytical Report Number : 21-21542
Project / Site name: Mill Hill Quarry

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 Analyt	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (aschate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on NEN/AM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarized light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 246	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically, (30 °C)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L009-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Thiocyanate in soil	Determination of thiocyanate in soil by extraction in water followed by acidification followed by addition of ferric nitrate followed by discrete analyser (spectrophotometer).	In-house method	L082-PL	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stones > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (aschate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS