

Date: 6th April 2022
Ref: ML/GML21156/LR001

Gleeson
4 Aspect Court
Aspect Business Park
Bennerley Road
Bulwell
Nottingham
NG6 8WR

F.A.O Mr M Rogers

RE: Local Authority Response – Land off York Gardens, Gosberton

Dear Mark

Gleeson Developments Ltd (the 'Client') have asked Geo-Matters to provide a response to Local Authority comments which the clients received on 3rd Feb 2022, please find my response in order as presented:

1. The site investigation report does not make reference to the previously developed conceptual model. Geo-Matters were instructed to undertake a Phase II Site Investigation only, notwithstanding this our Phase II Site Investigation (Ref GML21156/2/0 dated Oct 2021 has covered all the potential pollutant linkages outlined in the previous Conceptual Site Model dated May 2018.
2. There is no map of trial pit locations, so it is not possible to identify if the potential source of backfilled land (former ditch) was targeted. Please can this be provided, and comment made? It would appear that all plans were not included in the original report, this has been rectified and copies are included within this letter report. It can be seen that several exploratory investigation locations are targeted to the former drain that was noted on the historical plans between 1887 and 2000.
3. Please could clarification be given as to the number of samples submitted for chemical analysis? Table 5.1 suggests that 10 samples were tested for metals and PAH's, 7 for TPH, 2 for asbestos and 3 for pesticides. However, the appendices only contain test data for 6 samples. Some results were delayed although were received in time to complete the assessment of the report, they were included in the final report, although if your report doesn't include them, it would appear that a previous iteration was issued, I will ensure that the updated report is issued but the full set of results are included in this letter report.
4. As there is no full site plan, it is not possible to comment as to whether this represents sufficient characterisation of the site. Responded in Point 2.

5. Although the chemical test data are compared with appropriate screening levels, there is no discussion as to which soil was sampled (eg topsoil and subsoil) and 2 of the 6 samples were from a depth such that the data are not relevant to human health exposure at this location. As the site is not large in size and the strata encountered does not significantly alter, it was decided to assess the site as one area and thereby assess all soils together. Should there have been anomalies then separate assessments would have been undertaken.
6. There is no rationale presented to explain the proposed remedial strategy to remove a 1m by 1m square of soil based on the slightly elevated test results of TPH C10-C25. There is no discussion as to how this result fits with the rest of the samples. Insufficient testing has been undertaken in order to suggest the use of statistics at this location, however justification as to why this is has been identified as an outlier/ hotspot and why its extent is thought to be so small, is required, especially given there is no significant difference in the soil descriptions. The TPH testing has not been split as per TPHCWG and therefore comments on its suitability for use in this decision should be considered. The assessment takes the lowest target values across either aromatic and aliphatic speciation therefore provides the worst case scenario. An initial remedial area of 1m x 1m is initially undertaken as the exceedance was minor with the validation assessed by obtaining samples from base and sides, if exceedances were to be observed then the area would be widened. This is deemed the easiest sustainable approach by limiting the volume of material removed from the site.
7. Table 6.1 is described as a reassessment of the SPR characteristics, but as the report is not based on the phase 1 report, this is not representative of the potential pollutant linkages previously identified. Addressed in Point 1.
8. Further clarification is requested regarding the ground gas regime and the data interpretation. The report switches between BS8485 and the NHBC traffic light guidance. One methodology should be selected for the risk assessment, preferably BS8485 for clarity, and followed through to design. The report identifies both methodologies and provides information for both interpretations. We acknowledge that your preference is for BS8485 which will be addressed in an update of the report.
9. Although the report concludes that 'CS2/Amber 1 regime' applies, the two are not interchangeable. As addressed in Point 8 and will follow through in the updated report.
10. It hints that for a deep piled foundation there may need to be further consideration but does not mention that looking at the deep borehole data a CS4 regime could be implied. For a CS4 classification with a type A property, the British Standard suggests that 'residential development should not be constructed'. The well installed in BH101 has a depth to base of only 5.24m and consistently records both the highest methane gas concentration as well as the highest flow rates. What was the actual well construction – has it failed or is it a shallow well? If so, what was the backfill below it? There doesn't seem to be an immediate case for barometric pumping on a first examination of the data either. At the time of the report, it was not clear which areas needed to be piled; or even could be piled; and which were to be traditional foundation. Due to the

gas at depth, it was agreed that deeper foundation within areas of high methane readings wouldn't be feasible. The monitoring well at BH1 was installed to 19.00m which was confirmed at the time of drilling, it may be that the location has been compromised by silting / failure or vandalism but monitoring close to the locations BH3, WS4, WS8 & WS09 have not identified high gas readings.

11. Dependent on the locations of these deep boreholes relative to the proposed development, they may need to be decommissioned prior to the commencement of construction to ensure they do not form a new pathway for ground gas migration. Agreed, were addressed within the Piling Risk Assessment (GML21156/4/0 dated Nov 2021) and will be proposed; where there is a concern; once the extended gas monitoring programme has completed.

We hope this alleviates your concerns at this time and note your comment that the information received to date is not sufficiently uncertain to warrant objecting to the granting of permission and that with appropriate design detail to consider a safe development can be achieved.

Should additional information be required then please do not hesitate to contact me. As outlined above an updated report will be issued shortly.

Yours sincerely

Mark Lewis
Geo-Matters Limited
encs

Mark Lewis

Geo-Matters Limited
104 Bondgate
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Analytical Report Number : 21-84963

Project / Site name:	York Gardens Gosberton	Samples received on:	02/07/2021
Your job number:	GML21156	Samples instructed on/ Analysis started on:	04/07/2021
Your order number:	ML GML21156 003	Analysis completed by:	08/07/2021
Report Issue Number:	1	Report issued on:	08/07/2021
Samples Analysed:	6 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.

Analytical Report Number: 21-84963
Project / Site name: York Gardens Gosberton
Your Order No: ML GML21156 003

Lab Sample Number				1926777	1926778	1926779	1926780	1926781
Sample Reference				TP01	TP02	TP03	TP05	TP06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	1.70	1.30	1.00
Date Sampled				28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021
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
Moisture Content	%	0.01	NONE	12	14	16	20	16
Total mass of sample received	kg	0.001	NONE	1.2	1.5	1.5	1.5	1.5

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

pH - Automated	pH Units	N/A	MCERTS	7.9	-	8.3	8.2	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	480	-	360	290	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.017	-	0.026	0.028	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.5	-	0.7	0.6	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	-	< 0.80	< 0.80	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	-	19	12	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	-	27	21	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	-	19	13	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	-	14	9.6	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	25	-	24	18	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72	-	62	48	-

Analytical Report Number: 21-84963
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				1926777	1926778	1926779	1926780	1926781
Sample Reference				TP01	TP02	TP03	TP05	TP06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	1.70	1.30	1.00
Date Sampled				28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	-	-	-	< 10
TPH (C25 - C40)	mg/kg	10	MCERTS	< 10	-	-	-	< 10

Pesticide and Herbicide Screen

GCMS Pesticide Screen		N/A	NONE	-	None Detected	-	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-84963
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				1926782
Sample Reference				TP08
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				28/06/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	12
Total mass of sample received	kg	0.001	NONE	1.5

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

pH - Automated	pH Units	N/A	MCERTS	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
Fluorene	mg/kg	0.05	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-



Analytical Report Number: 21-84963
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				1926782
Sample Reference				TP08
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				28/06/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Petroleum Hydrocarbons				
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1
TPH (C10 - C25)	mg/kg	10	MCERTS	81
TPH (C25 - C40)	mg/kg	10	MCERTS	10

Pesticide and Herbicide Screen

GCMS Pesticide Screen		N/A	NONE	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 21-84963

Project / Site name: York Gardens Gosberton

* 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 *
1926777	TP01	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
1926778	TP02	None Supplied	0.4	Brown clay with gravel and vegetation.
1926779	TP03	None Supplied	1.7	Brown clay with gravel and vegetation.
1926780	TP05	None Supplied	1.3	Brown clay.
1926781	TP06	None Supplied	1	Brown loam and sand with gravel and vegetation.
1926782	TP08	None Supplied	0.1	Brown clay with gravel and vegetation.

Analytical Report Number : 21-84963

Project / Site name: York Gardens Gosberton

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
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	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.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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 stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
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.	L009-PL	D	MCERTS
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
GC Pesticide Screen (TIC)	Analysis of unknown pesticides by GCMS	GC Pesticide Screen (TIC)	L064B	D	NONE

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.



Analytical Report Number : 21-84963
Project / Site name: York Gardens Gosberton

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
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Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Geo-Matters Limited
Client Address: 104 Bondgate, Castle Donington,
DE74 2NR

Contact: Mark Lewis
Site Address: York Gardens, Gosberton

Client Reference: GML21156
Job Number: 21-85139
Date Sampled: Not Given
Date Received: 02/07/2021
Date Tested: 13/07/2021
Sampled By: Client - ML

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

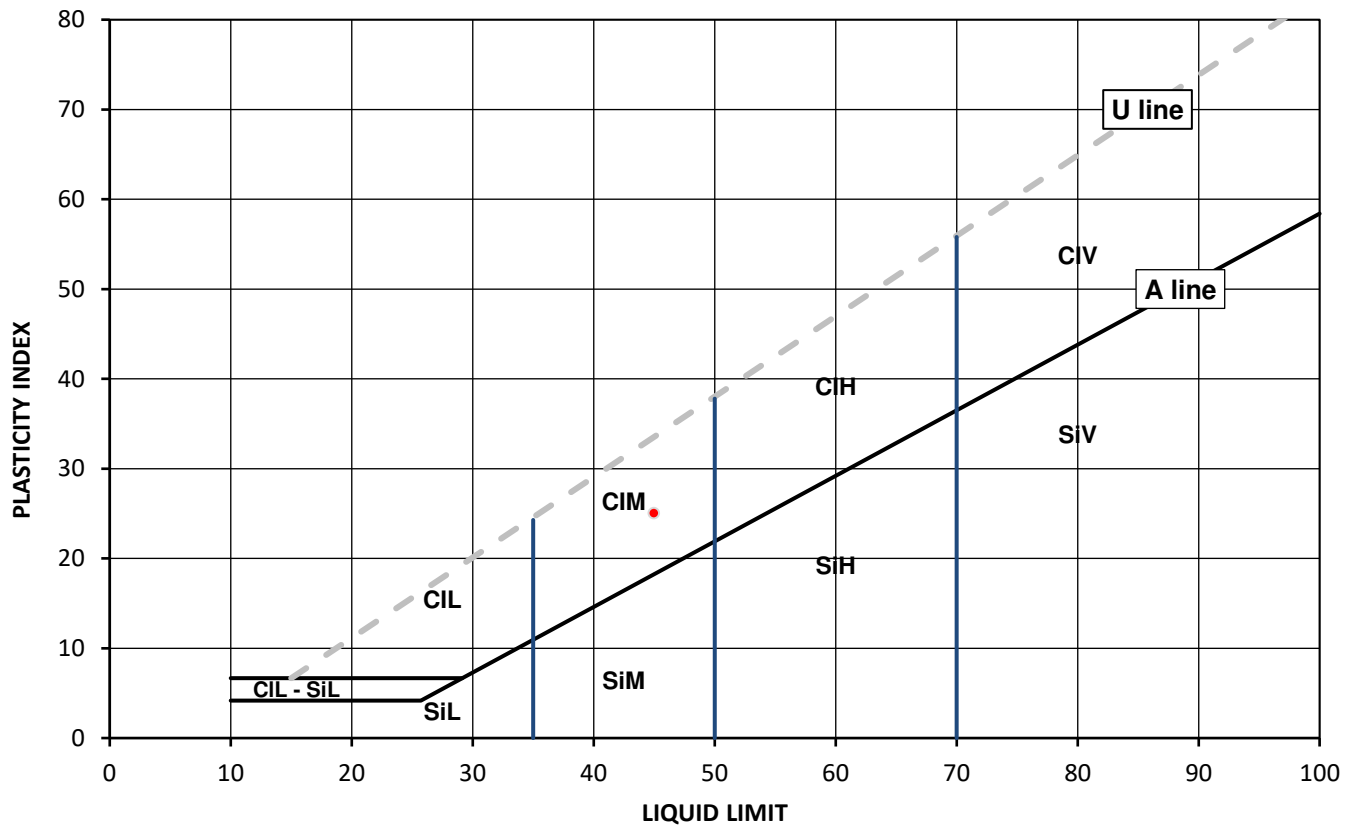
Test Results:

Laboratory Reference: 1927730
Hole No.: TP01
Sample Reference: Not Given
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 1.90
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
30	45	20	25	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Szczepan Bielatowicz
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

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Date Reported: 20/07/2021

GF 232.10



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Geo-Matters Limited
Client Address: 104 Bondgate, Castle Donington,
DE74 2NR

Contact: Mark Lewis
Site Address: York Gardens, Gosberton

Client Reference: GML21156
Job Number: 21-85139
Date Sampled: Not Given
Date Received: 02/07/2021
Date Tested: 13/07/2021
Sampled By: Client - ML

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

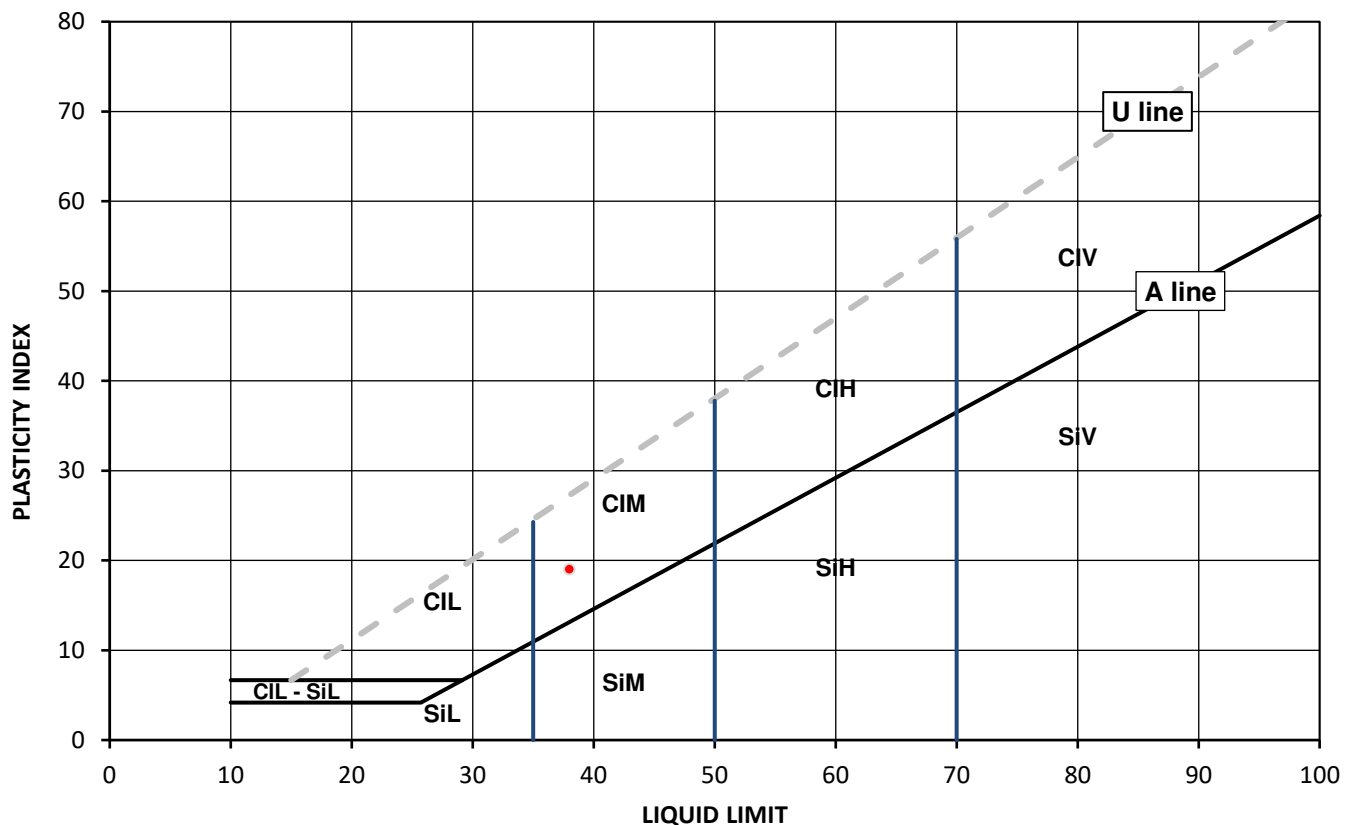
Test Results:

Laboratory Reference: 1927731
Hole No.: TP05
Sample Reference: Not Given
Soil Description: Brown sandy CLAY

Depth Top [m]: 2.30
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
24	38	19	19	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	
	V Very high	
	O Organic	append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Szczepan Bielatowicz
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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Szczepan Bielatowicz

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Date Reported: 20/07/2021

GF 232.10



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Geo-Matters Limited
Client Address: 104 Bondgate, Castle Donington,
DE74 2NR

Contact: Mark Lewis
Site Address: York Gardens, Gosberton

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: GML21156
Job Number: 21-85139
Date Sampled: Not Given
Date Received: 02/07/2021
Date Tested: 13/07/2021
Sampled By: Client - ML

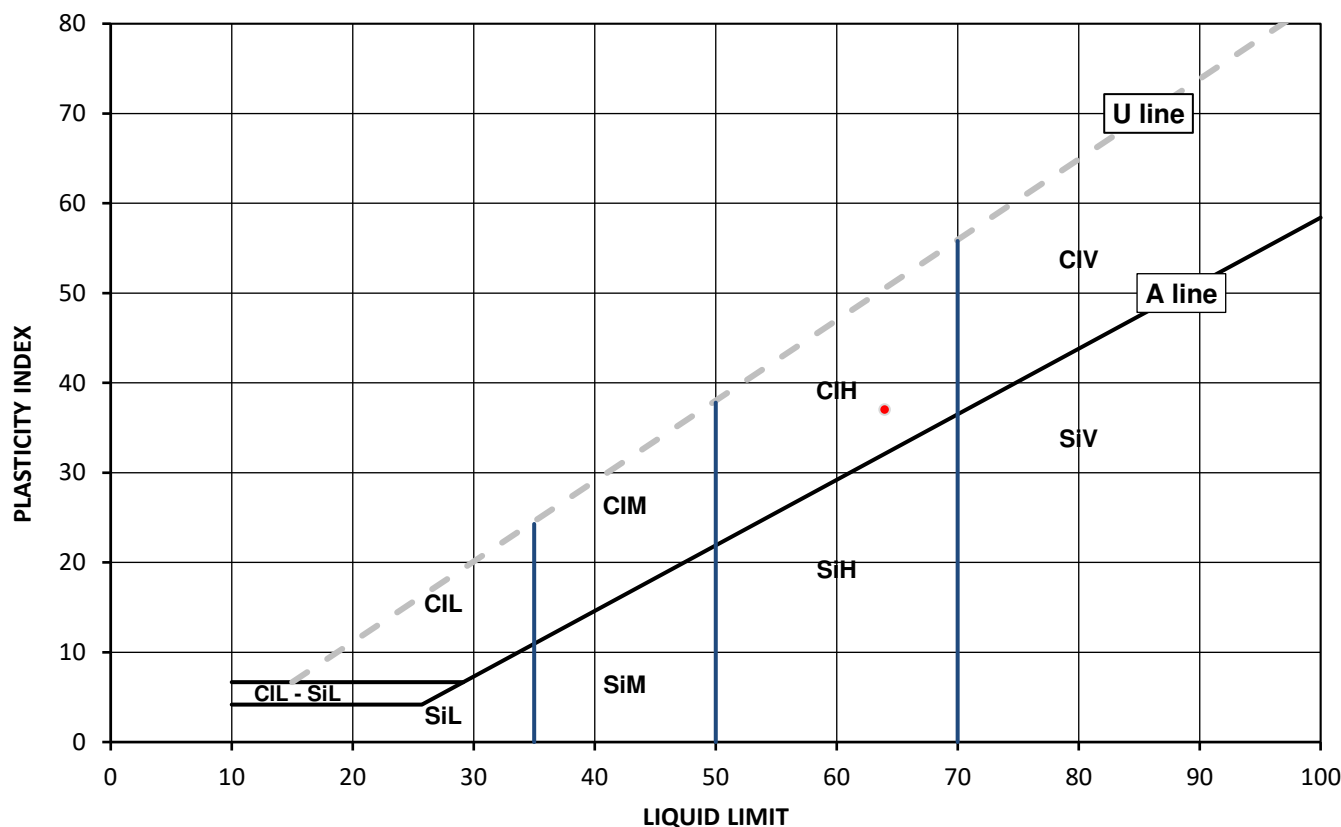
Test Results:

Laboratory Reference: 1927732
Hole No.: TP06
Sample Reference: Not Given
Soil Description: Brown CLAY

Depth Top [m]: 2.50
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
48	64	27	37	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Szczepan Bielatowicz
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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Szczepan Bielatowicz

Page 1 of 1

Date Reported: 20/07/2021

GF 232.10



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Geo-Matters Limited
Client Address: 104 Bondgate, Castle Donington,
DE74 2NR

Contact: Mark Lewis
Site Address: York Gardens, Gosberton

Client Reference: GML21156
Job Number: 21-85139
Date Sampled: Not Given
Date Received: 02/07/2021
Date Tested: 13/07/2021
Sampled By: Client - ML

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

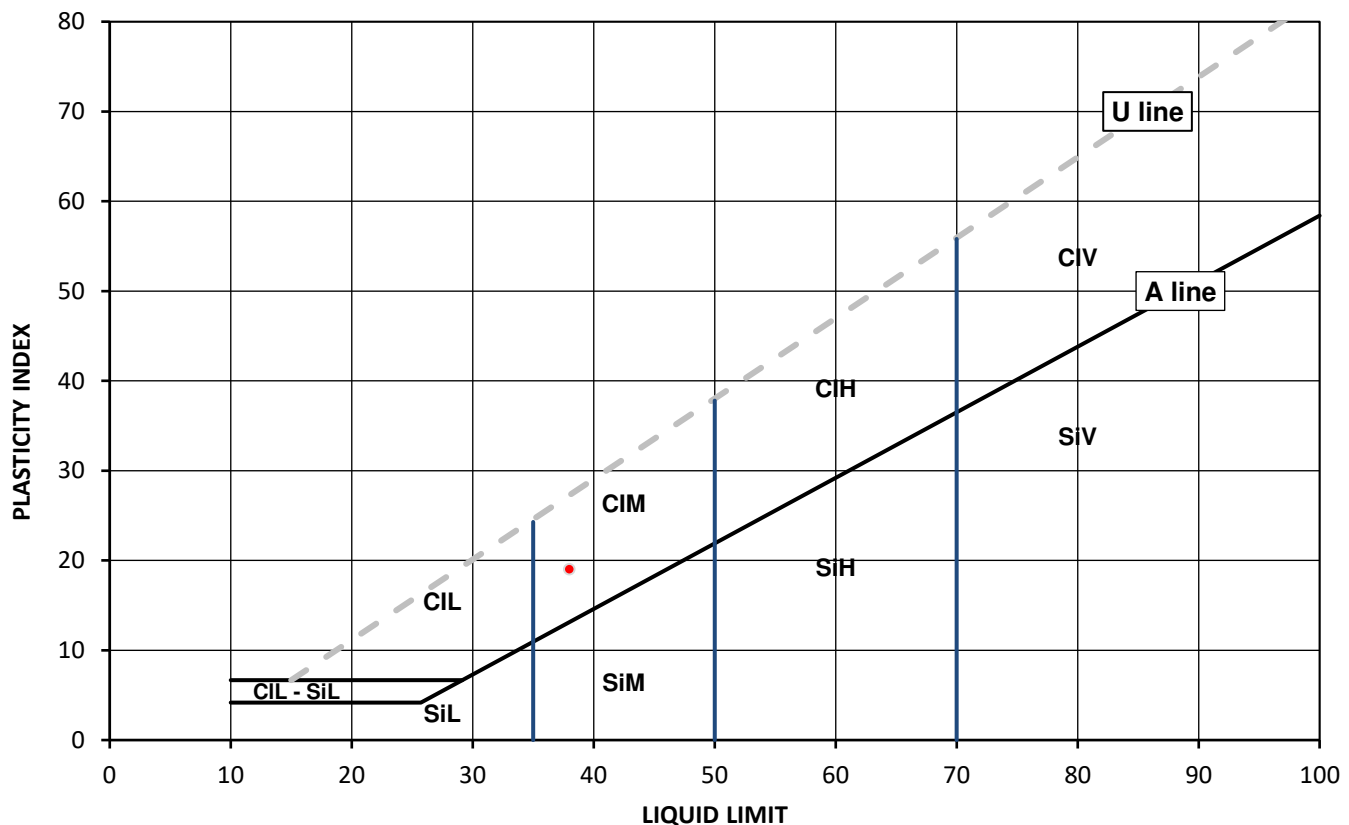
Test Results:

Laboratory Reference: 1927733
Hole No.: TP13
Sample Reference: Not Given
Soil Description: Brown sandy CLAY

Depth Top [m]: 2.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
27	38	19	19	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Szczepan Bielatowicz
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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Page 1 of 1

Date Reported: 20/07/2021

GF 232.10



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client: Geo-Matters Limited
Client Address: 104 Bondgate, Castle Donington,
DE74 2NR

Contact: Mark Lewis
Site Address: York Gardens, Gosberton

Client Reference: GML21156
Job Number: 21-85139
Date Sampled: Not Given
Date Received: 02/07/2021
Date Tested: 13/07/2021
Sampled By: Client - ML

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

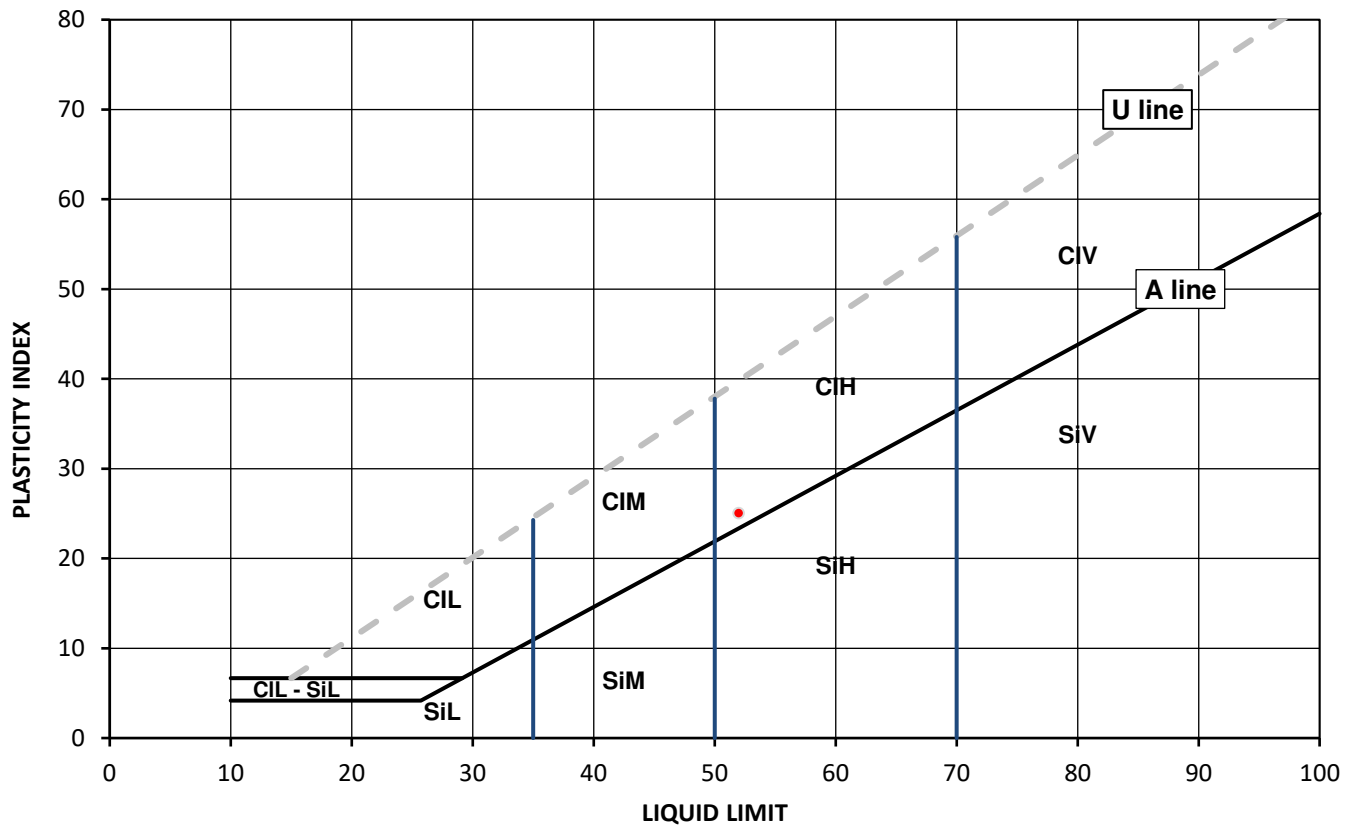
Test Results:

Laboratory Reference: 1927734
Hole No.: TP14
Sample Reference: Not Given
Soil Description: Brown slightly sandy CLAY

Depth Top [m]: 1.80
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
32	52	27	25	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Szczepan Bielatowicz
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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Page 1 of 1

Date Reported: 20/07/2021

GF 232.10



4041

Client: Geo-Matters Limited
 Client Address: 104 Bondgate, Castle Donington,
 DE74 2NR

Contact: Mark Lewis
 Site Address: York Gardens, Gosberton

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

Moisture Content by BS 1377-2: 1990: Clause 3.2; Water Content by BS EN
 17892-1: 2014; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test),
 Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Environmental Science

Client Reference: GML21156

Job Number: 21-85139

Date Sampled: Not Given

Date Received: 02/07/2021

Date Tested: 13/07/2021

Sampled By: Client - ML

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m															
1927730	TP01	Not Given	1.90	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	30		100	45	20	25						
1927731	TP05	Not Given	2.30	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	24		100	38	19	19						
1927732	TP06	Not Given	2.50	Not Given	D	Brown CLAY	Atterberg 1 Point	48		100	64	27	37						
1927733	TP13	Not Given	2.00	Not Given	D	Brown sandy CLAY	Atterberg 1 Point	27		100	38	19	19						
1927734	TP14	Not Given	1.80	Not Given	D	Brown slightly sandy CLAY	Atterberg 1 Point	32		100	52	27	25						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Szczepan Bielatowicz
 PL Deputy Head of Geotechnical Section
 for and on behalf of i2 Analytical Ltd

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INFO

Geo-Matters Limited
104 Bondgate
Castle Donington
DE74 2NR

t: 01332817644

e: info@geo-matters.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 : 21-16538

Project / Site name:	York Gardens Gosberton	Samples received on:	14/10/2021
Your job number:	GML21156	Samples instructed on/ Analysis started on:	14/10/2021
Your order number:	ML GML21156 003	Analysis completed by:	21/10/2021
Report Issue Number:	1	Report issued on:	21/10/2021
Samples Analysed:	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

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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: 21-16538
Project / Site name: York Gardens Gosberton
Your Order No: ML GML21156 003

Lab Sample Number				2048039	2048040	2048041	2048042	2048043
Sample Reference				TP09	TP11	TP12	TP13	TP14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	0.10	0.10	0.80	0.10
Date Sampled				14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
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
Moisture Content	%	0.01	NONE	15	15	15	15	18
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1	1.1	1.1

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

pH - Automated	pH Units	N/A	MCERTS	8.4	8.7	-	-	8.4
Total Sulphate as SO ₄	mg/kg	50	MCERTS	570	540	-	-	680
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.022	0.0095	-	-	0.012
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.3	2.4	-	-	2.5

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.51	-	-	0.56
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.50	-	-	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.37	-	-	0.28
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.35	-	-	0.35
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.31	-	-	0.39
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.29	-	-	0.22
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.36	-	-	0.41
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.69	-	-	2.77
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	17	-	-	17
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	< 0.2
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	< 4.0	-	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	28	-	-	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	20	-	-	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	34	35	-	-	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	23	-	-	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	77	-	-	82

Analytical Report Number: 21-16538
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				2048039	2048040	2048041	2048042	2048043
Sample Reference				TP09	TP11	TP12	TP13	TP14
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.10	0.10	0.10	0.80	0.10
Date Sampled				14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status		

Petroleum Hydrocarbons

Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	-	-	< 0.1	-
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TPH (C10 - C25)	mg/kg	10	MCERTS	-	-	-	< 10	-
TPH (C25 - C40)	mg/kg	10	MCERTS	-	-	-	< 10	-

Pesticide and Herbicide Screen

GCMS Pesticide Screen		N/A	NONE	-	-	None Detected	-	-
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U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 21-16538
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				2048044	2048045	2048046	2048047	2048048
Sample Reference				TP16	TP17	TP19	TP21	TP22
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.40	0.30	1.30	0.10	0.70
Date Sampled				14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
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
Moisture Content	%	0.01	NONE	16	19	16	17	16
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1	1.1	1.1

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

pH - Automated	pH Units	N/A	MCERTS	8.4	-	8.2	8.3	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	820	-	530	510	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.021	-	0.020	0.015	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	2.4	-	2.1	2.3	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	0.70	-	0.71	0.67	-
Pyrene	mg/kg	0.05	MCERTS	0.63	-	0.72	0.65	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.33	-	0.37	0.34	-
Chrysene	mg/kg	0.05	MCERTS	0.36	-	0.42	0.38	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.38	-	0.48	0.39	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.22	-	0.27	0.24	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.38	-	0.47	0.41	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	0.22	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	0.29	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	3.00	-	3.95	3.08	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	-	17	17	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	< 4.0	-	< 4.0	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	-	29	31	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	-	20	29	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	80	-	41	38	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	-	23	25	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	79	-	80	87	-

Analytical Report Number: 21-16538
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				2048044	2048045	2048046	2048047	2048048
Sample Reference				TP16	TP17	TP19	TP21	TP22
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.40	0.30	1.30	0.10	0.70
Date Sampled				14/10/2021	14/10/2021	14/10/2021	14/10/2021	14/10/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH (C10 - C25)	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH (C25 - C40)	mg/kg	10	MCERTS	-	< 10	-	-	-
Pesticide and Herbicide Screen								
GCMS Pesticide Screen		N/A	NONE	-	-	-	-	None Detected

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

Analytical Report Number: 21-16538
 Project / Site name: York Gardens Gosberton
 Your Order No: ML GML21156 003

Lab Sample Number				2048049	2048050	2048051
Sample Reference				TP23	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.20	0.10
Date Sampled				14/10/2021	14/10/2021	14/10/2021
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	%	0.01	NONE	17	17	17
Total mass of sample received	kg	0.001	NONE	1.1	1.1	1.1

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

pH - Automated	pH Units	N/A	MCERTS	-	8.2	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	710	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.020	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	2.4	-

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	-	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	-	0.52	-
Pyrene	mg/kg	0.05	MCERTS	-	0.51	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.24	-
Chrysene	mg/kg	0.05	MCERTS	-	0.31	-
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	0.33	-
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	0.19	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.32	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	2.42	-
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	17	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	< 0.2	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	< 4.0	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	29	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	22	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	38	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	24	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	83	-

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Lab Sample Number				2048049	2048050	2048051
Sample Reference				TP23	TP23	TP24
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.20	0.10
Date Sampled				14/10/2021	14/10/2021	14/10/2021
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Petroleum Hydrocarbons						
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1
TPH (C10 - C25)						
TPH (C10 - C25)	mg/kg	10	MCERTS	< 10	-	< 10
TPH (C25 - C40)						
TPH (C25 - C40)	mg/kg	10	MCERTS	< 10	-	< 10
Pesticide and Herbicide Screen						
GCMS Pesticide Screen		N/A	NONE	-	-	-

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

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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 *
2048039	TP09	None Supplied	2.1	Brown clay and loam with gravel and vegetation.
2048040	TP11	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2048041	TP12	None Supplied	0.1	Brown clay and loam with gravel and vegetation.
2048042	TP13	None Supplied	0.8	Brown clay and loam with gravel and vegetation.
2048043	TP14	None Supplied	0.1	Brown clay and sand with gravel and vegetation.
2048044	TP16	None Supplied	1.4	Brown clay and sand with gravel and vegetation.
2048045	TP17	None Supplied	0.3	Brown clay and sand with gravel and vegetation.
2048046	TP19	None Supplied	1.3	Brown clay and sand with gravel and vegetation.
2048047	TP21	None Supplied	0.1	Brown clay and sand with gravel and vegetation.
2048048	TP22	None Supplied	0.7	Brown clay and sand with gravel and vegetation.
2048049	TP23	None Supplied	0.1	Brown clay and sand with gravel and vegetation.
2048050	TP23	None Supplied	1.2	Brown clay and sand with gravel and vegetation.
2048051	TP24	None Supplied	0.1	Brown clay and sand with gravel and vegetation.

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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
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	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.	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
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 stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
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.	L009-PL	D	MCERTS
TPH Oils (Soils)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
DRO (Soil)	Determination of extractable hydrocarbons in soil by GC-MS/FID.	In-house method with silica gel split/clean up.	L076-PL	D	MCERTS
GC Pesticide Screen (TIC)	Analysis of unknown pesticides by GCMS	GC Pesticide Screen (TIC)	L064B	D	NONE

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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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
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Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.