

PHOTO SHEET



Photograph 16: Core runs between 1.2 and 4.5 m bgl of marl of the Cornbrash formation and the boundary between with the clay of the Forest Marble Formation in BH05.



Photograph 16a: Marl between 1.2 and 1.5 m bgl.



Photograph 17: Core runs between 4.5 and 7.0 m bgl of mudstone, clay, and limestone of the Forest Marble Formation in BH05.



Photograph 18: Core run between 7.0 and 10.0 m bgl of mudstone and limestone of the Forest Marble Formation in BH05.



Photograph 19: Core run between 10.0 and 11.5 m bgl of mudstone and limestone of the Forest Marble Formation in BH05.



Photograph 20: Core run between 11.5 and 13.0 m bgl of mudstone and limestone of the Forest Marble Formation in BH05. Base of borehole at 13.0 m bgl.


Client Elliott Wood Partnership Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core runs from BH05	Appendix G

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Photograph 21: Core runs between 0.9 and 3.5 m bgl of marl of the Cornbrash formation and the boundary between with the clay of the Forest Marble Formation in BH06.



Photograph 22: Core runs between 3.5 and 5.0 m bgl of mudstone, and limestone of the Forest Marble Formation in BH06. End of borehole at 5 m bgl.



Photograph 23: Core runs between 0.6 and 2.6 m bgl of marl and limestone of the Cornbrash Formation in BH07.



Photograph 24: Core run between 3.6 and 4.4 m bgl of mudstone and limestone of the Forest Marble Formation in BH07.


Client Elliott Wood Partnership Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core runs from BH06 and BH07	Appendix G

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Photograph 25: Core run of sandy gravelly clay of the Cornbrash Formation between 1.2 – 1.6 m bgl in BH08.



Photograph 26: Core run between 1.6 -3.1 m bgl showing the boundary between the Cornbrash Formation and the Forest Marble Formation in BH08.



Photograph 27: Core runs the Cornbrash Formation between 1.2 – 3.0 m bgl in BH09.



Photograph 28: Core runs the Cornbrash Formation between 1.2 – 3.0 m bgl in BH10.


Client Great Wolf Resorts Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core Runs from BH08, BH09, and BH10	Appendix G

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Photograph 29: Core runs between 1.2 - 3.0 m bgl in BH11.



Photograph 30: Core runs between 0.8 - 3.0 m bgl in BH12.


Client Elliott Wood Partnership Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core runs from BH1 and BH12	Appendix G

PHOTO SHEET



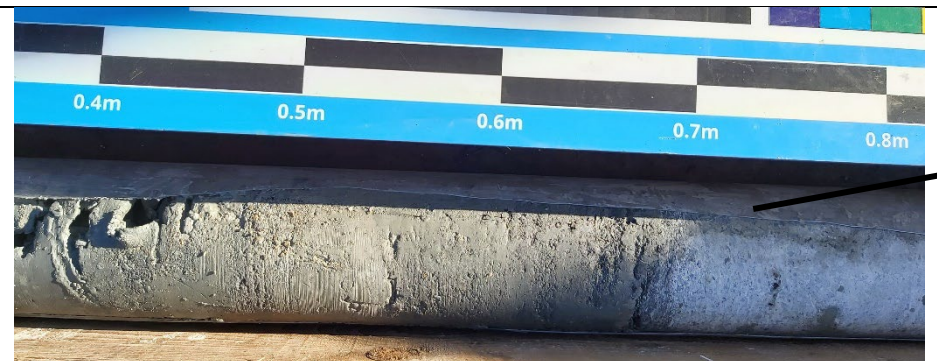
Photograph 1: Core run of sandy gravelly clay between 1.2 – 1.7 m bgl in BH01.



Photograph 2: Core run between 1.7 -3.2 m bgl. Clayey limestone gravel between 1.7 and 2.0, and stiff becoming very stiff dark grey clay between 2.0 and 3.2 m bgl in BH01.



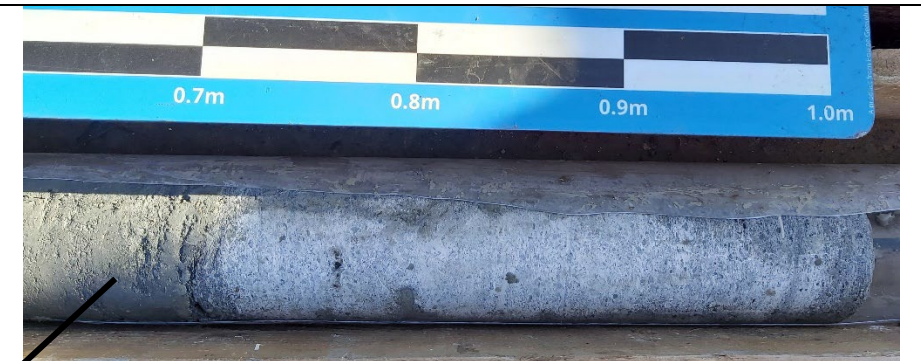
Photograph 3a: Weak mudstone recovered as gravel of stiff grey clay between 3.2 and 3.6 m bgl.



Photograph 3b: Weak mudstone between 3.6 and 4.35 m bgl.



Photograph 3: Core runs between 3.2 – 4.7 and 4.7 – 5.0 in BH01



Photograph 3c: Medium grained limestone between 4.35 – 4.70 m bgl.



Photograph 3d: Stiff dark grey clay between 4.7 – 5.0 m bgl.


Client Great Wolf Resorts Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core Runs from BH01	Appendix G

PHOTO SHEET



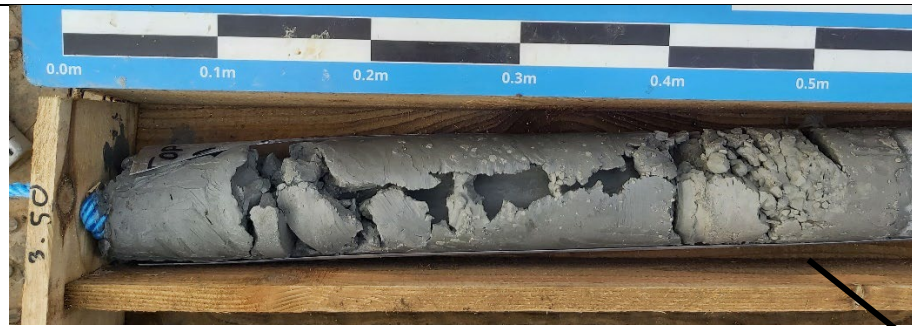
Photograph 1: Limestone gravel between 1.34 and 2.00 m bgl in BH02.



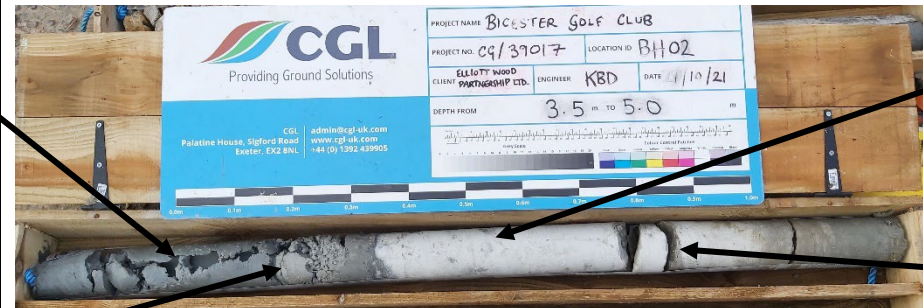
Photograph 2: Core run between 2.0 -3.5 m bgl. No recovery between 2.0 and 2.55. Limestone between 2.55 m and 3.05. Mudstone from 3.05 to 3.50 m bgl.



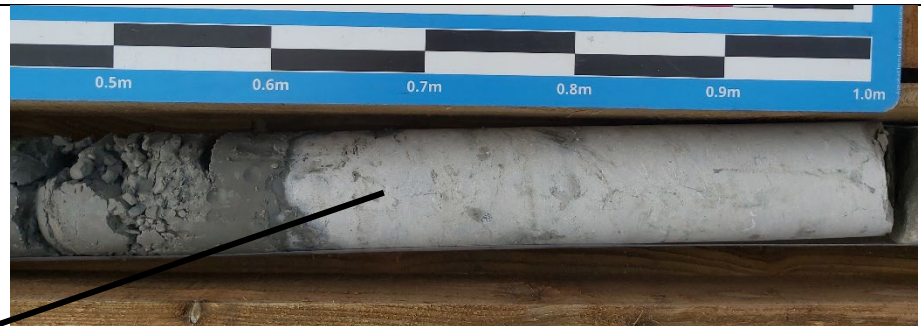
Photograph 2a: boundary between the limestone and the mudstone at ~3.00 m bgl.



Photograph 3a: Stiff dark grey clay between 3.5 and 3.9 m bgl.



Photograph 3: Core run between 3.5 – 5.0.



Photograph 3c: Fine grained limestone between 4.1 – 4.8 m bgl.



Photograph 3b: Weak mudstone recovered as gravel between 3.9 and 4.1 m bgl.



Photograph 3d: Fracture surface at 4.54 m bgl.


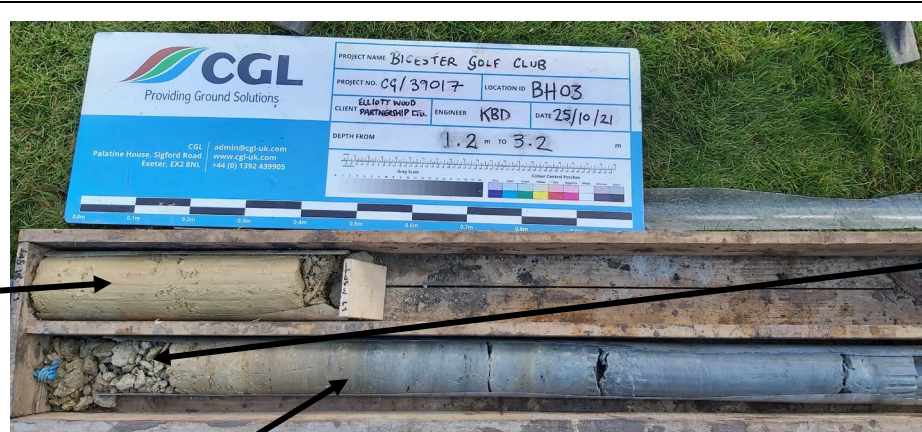
Client Elliott Wood Partnership Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core runs from BH02	Appendix G

PHOTO SHEET



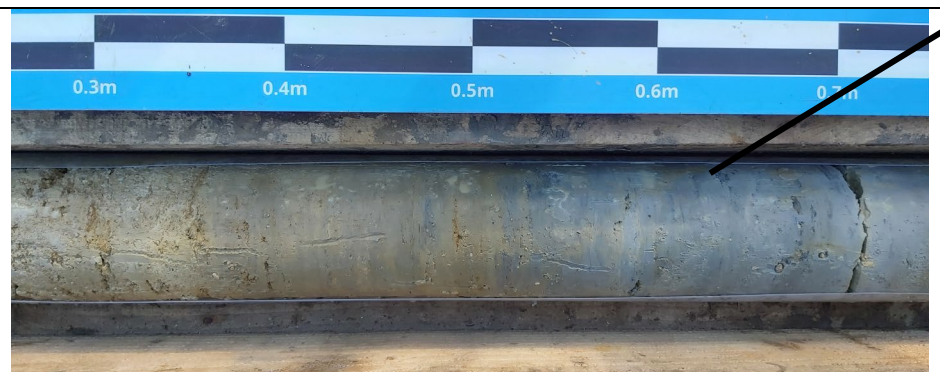
Photograph 1a: Core run between 1.2 and 1.70 m bgl of stiff slightly gravelly clay.



Photograph 1: Core runs between 1.20 m and 3.20 m bgl in BH03.



Photograph 1b: limestone recovered as gravel between 1.70 and 1.85 m bgl.



Photograph 1c: The boundary between the brown limestone of the Cornbrash Formation and the grey mudstone of the Forest Marble Formation, at ~2.0 m bgl.



Photograph 2: Core run between 3.20 and 4.70 m bgl in BH03.



Photograph 2b: Light grey ine grained limestone between 3.8 – 4.7 m bgl.



Photograph 2a: Weak dark grey mudstone between 3.9 and 4.1 m bgl.



Photograph 2c: Green staining on the limestone



Photograph 3: Core run of dark grey mudstone between 4.70 m and 5.00 bgl.


Client Elliott Wood Partnership Ltd.	Project Bicester Golf Club	Job No CG39017
	Title Core runs from BH03	Appendix G

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Photograph 1: Core runs between 0.70 and 2.50 m bgl of marl and limestone of the Cornbrash Formation in BH04.



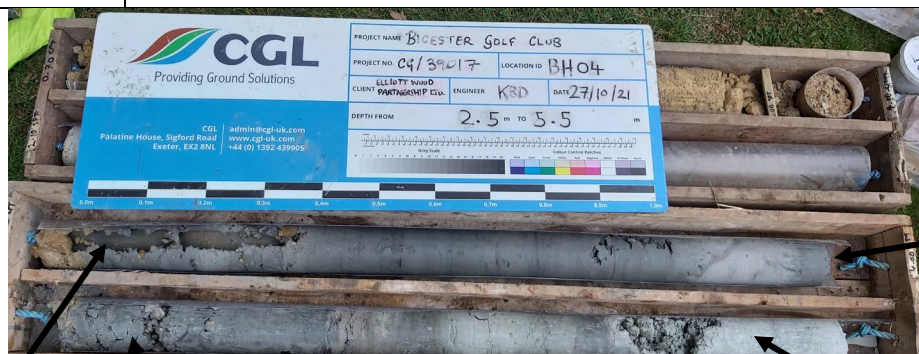
Photograph 1a: Marl as recovered - described as firm to stiff sandy gravelly clay between 0.70 and 1.5 m bgl.



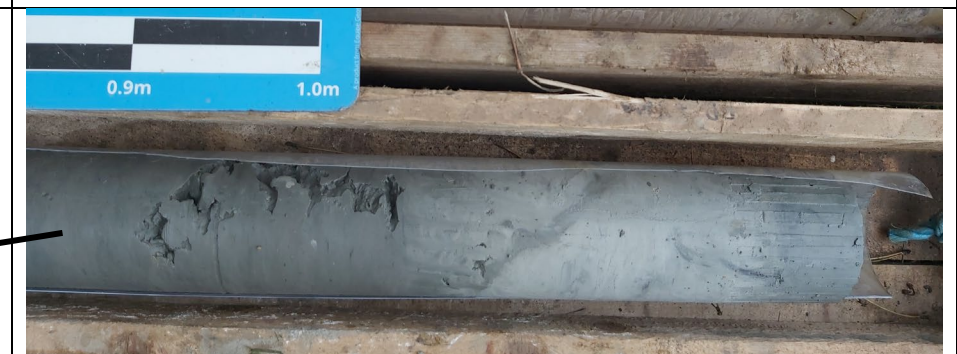
Photograph 1b: Marl when broken open. Gravel is fine to coarse sub-angular to angular grey limestone.



Photograph 1c: Intact light brown to pinkish orange mottled grey medium grained limestone – the base of the Cornbrash Formation. Between 2.10 and 2.55 m bgl.



Photograph 2: Core run between 3.20 and 4.70 m bgl in BH04.



Photograph 2b: Weak light grey mudstone between 3.70 and 4.00 m bgl.




Photograph 2a: Stiff dark grey clay of the Forest Marble Formation between 2.55 and 3.70 m. Top section disturbed by SPT.



Photograph 2c: Firm slightly sandy slightly gravelly clay between 4.00 and 4.30 m bgl.



Photograph 2d: Weak greenish grey mudstone between 4.90 and 5.50 m bgl, recovered as gravel between 4.90 and 5.10 m bgl.

<p>Client Elliott Wood Partnership Ltd.</p>	<p>Project Bicester Golf Club</p>	<p>Job No CG39017</p>
	<p>Title Core runs from BH04</p>	<p>Appendix G</p>

APPENDIX H

Chemical Laboratory Testing Results



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Analytical Report Number : 21-18816

Project / Site name:	Bicester Golf Course, Bicester	Samples received on:	22/10/2021
Your job number:	CG39017	Samples instructed on/ Analysis started on:	26/10/2021
Your order number:		Analysis completed by:	04/11/2021
Report Issue Number:	1	Report issued on:	04/11/2021
Samples Analysed:	2 leachate samples - 6 soil samples		

Signed: 

Joanna Wawrzeczko
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: 21-18816
Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2060967	2060968	2060969	2060970	2060971
Sample Reference				BH01	BH06	BH09	BH10	BH08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.20	0.40	0.50	0.30
Date Sampled				21/10/2021	20/10/2021	19/10/2021	18/10/2021	19/10/2021
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	47
Moisture Content	%	0.01	NONE	16	13	9.2	13	9.2
Total mass of sample received	kg	0.001	NONE	0.80	0.80	0.80	0.80	0.80

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

pH - Automated	pH Units	N/A	MCERTS	8.2	8.0	8.4	8.5	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	650	1200	830	1100	1100
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	-	-	0.013	0.030	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	13	30	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.0066	0.015	-
Organic Matter (automated)	%	0.1	MCERTS	5.1	5.0	1.2	2.5	3.0

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

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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85
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Analytical Report Number: 21-18816
Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number	2060967				2060968	2060969	2060970	2060971
Sample Reference	BH01				BH06	BH09	BH10	BH08
Sample Number	None Supplied				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20				0.20	0.40	0.50	0.30
Date Sampled	21/10/2021				20/10/2021	19/10/2021	18/10/2021	19/10/2021
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

Element	Units	Limit of detection	Accreditation Status	2060967	2060968	2060969	2060970	2060971
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.9	4.6	< 1.0	< 1.0	6.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	19	12	20	17
Barium (aqua regia extractable)	mg/kg	1	MCERTS	59	51	19	51	52
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.96	1.0	0.52	0.91	0.90
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	0.6	< 0.2	1.1	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	24	26	12	23	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	26	12	23	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	21	11	13	14	9.3
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	19	9.7	23	15
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	22	23	14	24	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	45	54	25	50	50
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	90	58	49	55	45

Monoaromatics & Oxygenates

Compound	Units	Limit of detection	Accreditation Status	2060967	2060968	2060969	2060970	2060971
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Compound	Units	Limit of detection	Accreditation Status	2060967	2060968	2060969	2060970	2060971
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

Compound	Units	Limit of detection	Accreditation Status	2060967	2060968	2060969	2060970	2060971
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

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

Analytical Report Number: 21-18816

Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2060972
Sample Reference				BH02
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				22/10/2021
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	8.9
Total mass of sample received	kg	0.001	NONE	0.80

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

pH - Automated	pH Units	N/A	MCERTS	8.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	970
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-
Organic Matter (automated)	%	0.1	MCERTS	2.5

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	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
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
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85
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Analytical Report Number: 21-18816

Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2060972
Sample Reference				BH02
Sample Number				None Supplied
Depth (m)				0.40
Date Sampled				22/10/2021
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17
Barium (aqua regia extractable)	mg/kg	1	MCERTS	65
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.92
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2
Chromium (III)	mg/kg	1	NONE	24
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24
Copper (aqua regia extractable)	mg/kg	1	MCERTS	10
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	47
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	53

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

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



Analytical Report Number: 21-18816

Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2060973	2060974
Sample Reference				BH06	BH10
Sample Number				None Supplied	None Supplied
Depth (m)				0.20	0.50
Date Sampled				20/10/2021	18/10/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.5	8.0
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Sulphate as SO ₄	µg/l	100	ISO 17025	3230	2830
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	9.14	7.91

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	5.6	5.5
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	< 1.0	4.6
Barium (dissolved)	µg/l	0.05	ISO 17025	8.9	8.6
Beryllium (dissolved)	µg/l	0.2	ISO 17025	0.8	1.0
Boron (dissolved)	µg/l	10	ISO 17025	160	140
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	U/S*
Chromium (III)	µg/l	1	NONE	< 1.0	U/S*
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.5	1.0
Copper (dissolved)	µg/l	0.7	ISO 17025	2.8	2.5
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	3.6
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	4.8	3.9
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	11	5.4
Calcium (dissolved)	mg/l	0.012	ISO 17025	7.5	13



Analytical Report Number: 21-18816

Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2060973	2060974
Sample Reference				BH06	BH10
Sample Number				None Supplied	None Supplied
Depth (m)				0.20	0.50
Date Sampled				20/10/2021	18/10/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10

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

*U/S due to high variances between chromium (hexavalent) and chromium (dissolved) caused by method differences.

Analytical Report Number : 21-18816

Project / Site name: Bicester Golf Course, Bicester

* 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 *
2060967	BH01	None Supplied	0.2	Brown clay and loam with gravel and vegetation.
2060968	BH06	None Supplied	0.2	Brown clay and loam with vegetation.
2060969	BH09	None Supplied	0.4	Brown clay and sand.
2060970	BH10	None Supplied	0.5	Brown clay with gravel and vegetation.
2060971	BH08	None Supplied	0.3	Brown clay and loam with stones and vegetation.
2060972	BH02	None Supplied	0.4	Brown clay and loam with gravel and vegetation.

Analytical Report Number : 21-18816

Project / Site name: Bicester Golf Course, Bicester

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
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
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
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	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 leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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 leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	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
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025

Analytical Report Number : 21-18816

Project / Site name: Bicester Golf Course, Bicester

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
Total sulphate (as SO ₄ 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
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	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
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
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

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 30°C.

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.

Sample Deviation Report



Analytical Report Number : 21-18816

Project / Site name: Bicester Golf Course, Bicester

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH08	None Supplied	S	2060971	c	Total cyanide in soil	L080-PL	c
BH09	None Supplied	S	2060969	c	Total cyanide in soil	L080-PL	c
BH10	None Supplied	S	2060970	c	Total cyanide in soil	L080-PL	c



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Analytical Report Number : 21-18988

Project / Site name:	Bicester Golf Course Bicester	Samples received on:	22/10/2021
Your job number:	CG39017	Samples instructed on/ Analysis started on:	27/10/2021
Your order number:		Analysis completed by:	09/11/2021
Report Issue Number:	1	Report issued on:	09/11/2021
Samples Analysed:	8 soil samples		

Signed: 

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

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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: 21-18988

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number			2062065	2062066	2062067	2062068	2062069
Sample Reference			BH06	BH06	BH06	BH08	BH08
Sample Number			1	1	3	1	3
Depth (m)			0.40-0.60	1.70	4.50	0.40-0.60	0.90-1.10
Date Sampled			20/10/2021	20/10/2021	20/10/2021	19/10/2021	19/10/2021
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
Moisture Content	%	0.01	NONE	7.9	11	9.5	15
Total mass of sample received	kg	0.001	NONE	0.40	0.60	0.60	0.40

General Inorganics

	pH Units	N/A	MCERTS	8.7	8.4	8.1	8.3	8.7
pH - Automated								
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	820	1800	-	-
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.015	-	-	0.012	0.032
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	15	-	-	12	32
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0074	0.013	0.12	0.0060	0.016
Total Sulphur	mg/kg	50	MCERTS	-	300	2600	-	-

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

Analytical Report Number: 21-18988

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2062070	2062071	2062072
Sample Reference				BH08	BH08	BH08
Sample Number				1	2	2
Depth (m)				1.70	2.40	3.00
Date Sampled				20/10/2021	20/10/2021	20/10/2021
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	0.17	15	11
Total mass of sample received	kg	0.001	NONE	1.4	0.60	0.60

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	8.1	8.1
Total Sulphate as SO ₄	mg/kg	50	MCERTS	980	1000	1100
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.023	0.31
Total Sulphur	mg/kg	50	MCERTS	390	410	7800

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

Analytical Report Number : 21-18988

Project / Site name: Bicester Golf Course Bicester

* 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 *
2062065	BH06	1	0.40-0.60	Brown loam and clay with gravel and vegetation.
2062066	BH06	1	1.7	Light brown clay and sand with gravel.
2062067	BH06	3	4.5	Grey clay and sand with gravel.
2062068	BH08	1	0.40-0.60	Brown clay and loam with gravel and vegetation.
2062069	BH08	3	0.90-1.10	Brown clay and loam with gravel and vegetation.
2062070	BH08	1	1.7	Beige clay and sand with chalk.
2062071	BH08	2	2.4	Light brown clay and sand with gravel.
2062072	BH08	2	3	Grey clay and sand.

Analytical Report Number : 21-18988
 Project / Site name: Bicester Golf Course Bicester

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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/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
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 Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	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.

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.



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Analytical Report Number : 21-19829

Project / Site name:	Bicester Golf Course Bicester	Samples received on:	29/10/2021
Your job number:	CG39017	Samples instructed on/ Analysis started on:	29/10/2021
Your order number:		Analysis completed by:	09/11/2021
Report Issue Number:	1	Report issued on:	09/11/2021
Samples Analysed:	2 leachate samples - 6 soil samples		

Signed: _____

Joanna Wawrzeczko
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: 21-19829
Project / Site name: Bicester Golf Course Bicester

Lab Sample Number	2066756	2066757	2066758	2066759	2066760			
Sample Reference	BH03	BH05	BH04	BH04	BH07			
Sample Number	1	1	1	2	1			
Depth (m)	0.30	0.10	0.15	0.50	0.15			
Date Sampled	Deviating	Deviating	Deviating	Deviating	Deviating			
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	21	29	43	30	20
Moisture Content	%	0.01	NONE	12	12	12	9.9	4.6
Total mass of sample received	kg	0.001	NONE	1.0	1.0	1.0	1.0	1.0

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

pH - Automated	pH Units	N/A	MCERTS	7.7	8.2	8.0	8.5	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	790	650	920	500	300
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.015	-	0.021	0.022	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	15	-	21	22	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0074	-	0.010	0.011	-
Organic Matter (automated)	%	0.1	MCERTS	7.0	8.8	4.8	2.6	0.7

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

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	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85	< 0.85	< 0.85	< 0.85
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Analytical Report Number: 21-19829
Project / Site name: Bicester Golf Course Bicester

Lab Sample Number	2066756				2066757				2066758				2066759				2066760			
Sample Reference	BH03				BH05				BH04				BH04				BH07			
Sample Number	1				1				1				2				1			
Depth (m)	0.30				0.10				0.15				0.50				0.15			
Date Sampled	Deviating				Deviating				Deviating				Deviating				Deviating			
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

Parameter	Units	Limit of detection	Accreditation Status	2066756	2066757	2066758	2066759	2066760
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	16	26	20	28
Barium (aqua regia extractable)	mg/kg	1	MCERTS	47	44	77	99	20
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	0.82	1.1	1.0	0.75
Boron (water soluble)	mg/kg	0.2	MCERTS	2.1	2.4	1.1	0.3	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	26	21	28	27	31
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	21	29	27	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	13	19	13	4.2
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	20	24	15	6.9
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	26	18	24	26	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50	40	54	55	130
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	76	54	73	51	37

Monoaromatics & Oxygenates

Parameter	Units	Limit of detection	Accreditation Status	2066756	2066757	2066758	2066759	2066760
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	2066756	2066757	2066758	2066759	2066760
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

Parameter	Units	Limit of detection	Accreditation Status	2066756	2066757	2066758	2066759	2066760
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10

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

Analytical Report Number: 21-19829

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2066761
Sample Reference				BH07
Sample Number				2
Depth (m)				0.30
Date Sampled				Deviating
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	5.3
Total mass of sample received	kg	0.001	NONE	1.0

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

pH - Automated	pH Units	N/A	MCERTS	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	660
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-
Water soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-
Organic Matter (automated)	%	0.1	MCERTS	1.1

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	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
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
Coronene	mg/kg	0.05	NONE	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85
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Analytical Report Number: 21-19829

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2066761
Sample Reference				BH07
Sample Number				2
Depth (m)				0.30
Date Sampled				Deviating
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Heavy Metals / Metalloids				
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	24
Barium (aqua regia extractable)	mg/kg	1	MCERTS	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.64
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2
Chromium (III)	mg/kg	1	NONE	25
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	3.3
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.0
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	85
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	34

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10

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



Analytical Report Number: 21-19829
 Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2066762	2066763
Sample Reference				BH05	BH07
Sample Number				1	1
Depth (m)				0.10	0.15
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status		

General Inorganics

pH	pH Units	N/A	ISO 17025	7.7	7.9
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Sulphate as SO4	µg/l	100	ISO 17025	1200	676
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	11.8	8.70

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	11	< 1.0
Barium (dissolved)	µg/l	0.05	ISO 17025	6.8	5.6
Beryllium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.1
Boron (dissolved)	µg/l	10	ISO 17025	11	11
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	1	NONE	< 1.0	1.1
Chromium (dissolved)	µg/l	0.4	ISO 17025	0.9	1.1
Copper (dissolved)	µg/l	0.7	ISO 17025	11	8.4
Lead (dissolved)	µg/l	1	ISO 17025	< 1.0	2.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	3.8	4.4
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	< 1.7	< 1.7
Zinc (dissolved)	µg/l	0.4	ISO 17025	12	9.1

Calcium (dissolved)	mg/l	0.012	ISO 17025	16	11
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Analytical Report Number: 21-19829

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2066762	2066763
Sample Reference				BH05	BH07
Sample Number				1	1
Depth (m)				0.10	0.15
Date Sampled				Deviating	Deviating
Time Taken				None Supplied	None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics & Oxygenates

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10

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

Analytical Report Number : 21-19829

Project / Site name: Bicester Golf Course Bicester

* 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 *
2066756	BH03	1	0.3	Brown loam and clay with stones and vegetation.
2066757	BH05	1	0.1	Brown loam and clay with vegetation and stones.
2066758	BH04	1	0.15	Brown loam and clay with vegetation and stones.
2066759	BH04	2	0.5	Brown loam and clay with vegetation and stones.
2066760	BH07	1	0.15	Brown sandy loam with vegetation and stones.
2066761	BH07	2	0.3	Brown sandy loam with vegetation and rubble.

Analytical Report Number : 21-19829

Project / Site name: Bicester Golf Course Bicester

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
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
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	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 leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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 leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	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
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025

Analytical Report Number : 21-19829

Project / Site name: Bicester Golf Course Bicester

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
Total sulphate (as SO ₄ 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
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	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
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
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

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 30°C.

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.

Sample Deviation Report



Analytical Report Number : 21-19829

Project / Site name: Bicester Golf Course Bicester

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH03	1	S	2066756	a	None Supplied	None Supplied	None Supplied
BH04	1	S	2066758	a	None Supplied	None Supplied	None Supplied
BH04	2	S	2066759	a	None Supplied	None Supplied	None Supplied
BH05	1	L	2066762	a	None Supplied	None Supplied	None Supplied
BH05	1	S	2066757	a	None Supplied	None Supplied	None Supplied
BH07	1	L	2066763	a	None Supplied	None Supplied	None Supplied
BH07	1	S	2066760	a	None Supplied	None Supplied	None Supplied
BH07	2	S	2066761	a	None Supplied	None Supplied	None Supplied



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Analytical Report Number : 21-20757

Project / Site name:	Bicester Golf Course, Bicester	Samples received on:	02/11/2021
Your job number:	CG39017	Samples instructed on/ Analysis started on:	04/11/2021
Your order number:		Analysis completed by:	15/11/2021
Report Issue Number:	1	Report issued on:	15/11/2021
Samples Analysed:	1 leachate sample - 3 soil samples		

Signed: 
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

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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: 21-20757
Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number	2071457			2071458			2071459		
Sample Reference	BH11			BH11			BH12		
Sample Number	1			2			1		
Depth (m)	0.20-0.40			0.70-0.90			0.20-0.40		
Date Sampled	01/11/2021			01/11/2021			01/11/2021		
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	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.4	9.6	11	7.4	9.6	11
Total mass of sample received	kg	0.001	NONE	1.5	1.5	1.5	1.5	1.5	1.5

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

General Inorganics

Parameter	Units	N/A	MCERTS	2071457	2071458	2071459
pH - Automated	pH Units	N/A	MCERTS	8.6	8.6	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	830	660	1200
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.029	0.080	0.51
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	29	80	510
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.040	0.26
Organic Matter (automated)	%	0.1	MCERTS	1.9	0.5	3.2

Total Phenols

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

Speciated PAHs

Parameter	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
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
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05

Total PAH

Total WAC-17 PAHs	mg/kg	0.85	NONE	< 0.85	< 0.85	< 0.85

Analytical Report Number: 21-20757
 Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number	2071457	2071458	2071459
Sample Reference	BH11	BH11	BH12
Sample Number	1	2	1
Depth (m)	0.20-0.40	0.70-0.90	0.20-0.40
Date Sampled	01/11/2021	01/11/2021	01/11/2021
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status

Heavy Metals / Metalloids

Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	2071457	2071458	2071459
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	14	6.7	18
Barium (aqua regia extractable)	mg/kg	1	MCERTS	55	18	72
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.74	0.48	0.99
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	0.5	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	18	11	25
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	11	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.6	7.7	40
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	9.7	67
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	8.6	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	20	48
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	38	30	100

Analytical Report Number: 21-20757
Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number	2071457			2071458			2071459		
Sample Reference	BH11			BH11			BH12		
Sample Number	1			2			1		
Depth (m)	0.20-0.40			0.70-0.90			0.20-0.40		
Date Sampled	01/11/2021			01/11/2021			01/11/2021		
Time Taken	None Supplied			None Supplied			None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status						

Monoaromatics & Oxygenates

Parameter	Units	Limit of detection	Accreditation Status	2071457	2071458	2071459
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

Parameter	Units	Limit of detection	Accreditation Status	2071457	2071458	2071459
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10

Parameter	Units	Limit of detection	Accreditation Status	2071457	2071458	2071459
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10

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



Analytical Report Number: 21-20757
 Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2071460
Sample Reference				BH11
Sample Number				1
Depth (m)				0.20-0.40
Date Sampled				01/11/2021
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

General Inorganics

pH	pH Units	N/A	ISO 17025	8.0
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0
Sulphate as SO4	µg/l	100	ISO 17025	3380
Dissolved Organic Carbon (DOC)	mg/l	0.1	NONE	5.62

Total Phenols

Total Phenols (monohydric)	µg/l	1	ISO 17025	< 1.0
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01

Total PAH

Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2
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Heavy Metals / Metalloids

Antimony (dissolved)	µg/l	1.7	ISO 17025	< 1.7
Arsenic (dissolved)	µg/l	1	ISO 17025	5.2
Barium (dissolved)	µg/l	0.05	ISO 17025	10
Beryllium (dissolved)	µg/l	0.2	ISO 17025	0.3
Boron (dissolved)	µg/l	10	ISO 17025	120
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0
Chromium (III)	µg/l	1	NONE	1.6
Chromium (dissolved)	µg/l	0.4	ISO 17025	1.6
Copper (dissolved)	µg/l	0.7	ISO 17025	5.3
Lead (dissolved)	µg/l	1	ISO 17025	3.0
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5
Nickel (dissolved)	µg/l	0.3	ISO 17025	5.0
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0
Vanadium (dissolved)	µg/l	1.7	ISO 17025	4.8
Zinc (dissolved)	µg/l	0.4	ISO 17025	13

Calcium (dissolved)	mg/l	0.012	ISO 17025	17
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Analytical Report Number: 21-20757
 Project / Site name: Bicester Golf Course, Bicester

Lab Sample Number				2071460
Sample Reference				BH11
Sample Number				1
Depth (m)				0.20-0.40
Date Sampled				01/11/2021
Time Taken				None Supplied
Analytical Parameter (Leachate Analysis)	Units	Limit of detection	Accreditation Status	

Monoaromatics & Oxygenates

	µg/l	1	ISO 17025	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C6 - C8	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C8 - C10	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10

TPH-CWG - Aromatic >C5 - C7	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C7 - C8	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C8 - C10	µg/l	1	ISO 17025	< 1.0
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10

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



Analytical Report Number : 21-20757
Project / Site name: Bicester Golf Course, Bicester

* 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 *
2071457	BH11	1	0.20-0.40	Brown loam and clay with gravel and vegetation.
2071458	BH11	2	0.70-0.90	Brown clay and sand with gravel.
2071459	BH12	1	0.20-0.40	Brown loam and clay with gravel.

Analytical Report Number : 21-20757
Project / Site name: Bicester Golf Course, Bicester

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
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
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in leachate	Determination of boron in leachate. Sample acidified and followed by ICP-OES.	In-house method based on MEWAM	L039-PL	W	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 leachate	Determination of hexavalent chromium in leachate by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	ISO 17025
Hexavalent chromium in soil (Lower Level)	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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in leachate - LOW LEVEL 1 ug/l	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
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 leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L102B-PL	W	NONE
Speciated WAC-17 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. MCERTS accredited except Coronene.	L064-PL	D	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
pH at 20oC in leachate	Determination of pH in leachate by electrometric measurement.	In house method.	L005-PL	W	ISO 17025
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025

Analytical Report Number : 21-20757
Project / Site name: Bicester Golf Course, Bicester

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
Total sulphate (as SO ₄ 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
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	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
Dissolved Organic Carbon in leachate	Determination of dissolved organic carbon in leachate by the measurement on a non-dispersive infrared analyser of carbon dioxide released by acidification.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L023-PL	W	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
BTEX and MTBE in leachates (Monoaromatics)	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Cr (III) in leachate	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Total cyanide in leachate - 1µg/l	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	ISO 17025
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
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

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.

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.



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Analytical Report Number : 21-22175

Project / Site name:	Bicester Golf Course Bicester	Samples received on:	29/10/2021
Your job number:	CG39017	Samples instructed on/ Analysis started on:	08/11/2021
Your order number:		Analysis completed by:	22/11/2021
Report Issue Number:	1	Report issued on:	22/11/2021
Samples Analysed:	8 soil samples		

Signed: 

Joanna Wawrzeczko
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: 21-22175

Project / Site name: Bicester Golf Course Bicester

Lab Sample Number	2078916	2078917	2078918	2078919	2078920			
Sample Reference	BH03	BH03	BH03	BH04	BH04			
Sample Number	1	2	6	1	3			
Depth (m)	0.20-0.30	0.50-0.70	3.70	1.50	2.10-2.50			
Date Sampled	25/10/2021	25/10/2021	25/10/2021	27/10/2021	27/10/2021			
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	80	58	99	< 0.1	99
Moisture Content	%	0.01	NONE	7.8	13	1.4	7.0	0.37
Total mass of sample received	kg	0.001	NONE	0.70	0.70	0.20	0.20	0.20

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4	8.4	9.0	8.8	9.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	1000	1500	780	740
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.030	-	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	29	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.011	0.025	0.0064	0.0078
Total Sulphur	mg/kg	50	MCERTS	-	470	1700	340	350

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

Analytical Report Number: 21-22175
 Project / Site name: Bicester Golf Course Bicester

Lab Sample Number				2078921	2078922	2078923
Sample Reference				BH04	BH05	BH05
Sample Number				6	5	3
Depth (m)				6.50	4.00	0.80-0.90
Date Sampled				27/10/2021	26/10/2021	26/10/2021
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	53
Moisture Content	%	0.01	NONE	5.6	10	9.2
Total mass of sample received	kg	0.001	NONE	0.20	0.20	0.70

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.4	8.3
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1900	2100	1100
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	-	-	-
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.039	0.30	0.016
Total Sulphur	mg/kg	50	MCERTS	1700	11000	510

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

Analytical Report Number : 21-22175

Project / Site name: Bicester Golf Course Bicester

* 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 *
2078916	BH03	1	0.20-0.30	Brown clay with stones.
2078917	BH03	2	0.50-0.70	Brown clay and sand with stones.
2078918	BH03	6	3.7	Non Soil**
2078919	BH04	1	1.5	Light brown sand with gravel.
2078920	BH04	3	2.10-2.50	Non Soil**
2078921	BH04	6	6.5	Light grey clay.
2078922	BH05	5	4	Brown loam and clay with gravel.
2078923	BH05	3	0.80-0.90	Brown clay and sand with stones.

**Non MCERTS Matrix

Analytical Report Number : 21-22175
 Project / Site name: Bicester Golf Course Bicester

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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/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
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 Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	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.

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.

APPENDIX I

Geotechnical Laboratory Testing Results



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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



Environmental Science

4041

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

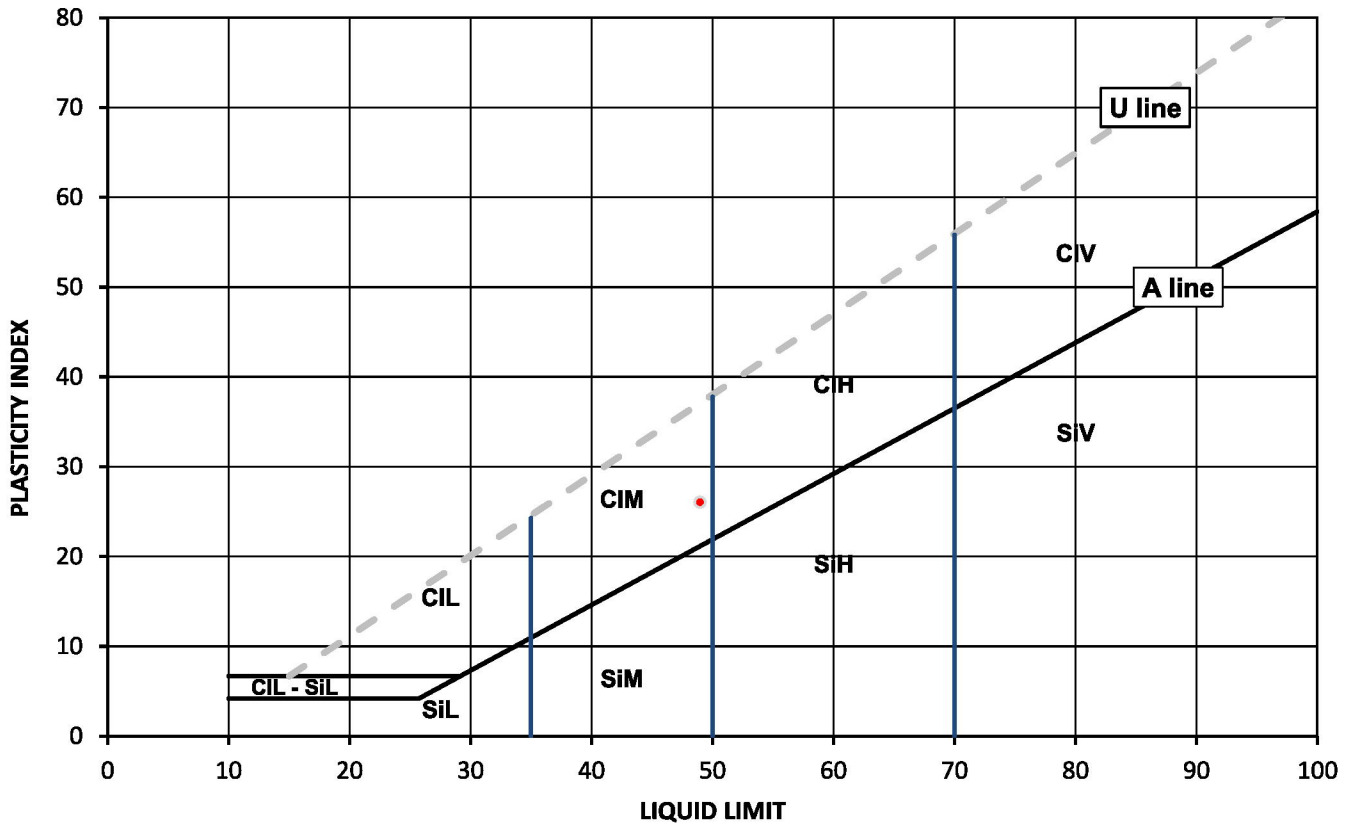
Test Results:

Laboratory Reference: 2062011
Hole No.: BH06
Sample Reference: 1
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 0.40
Depth Base [m]: 0.60
Sample Type: B

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
13	49	23	26	65



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

Anna Dudzinska
Deputy Head of Geo Office 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.

4041

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 04/11/2021
Sampled By: Not Given

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

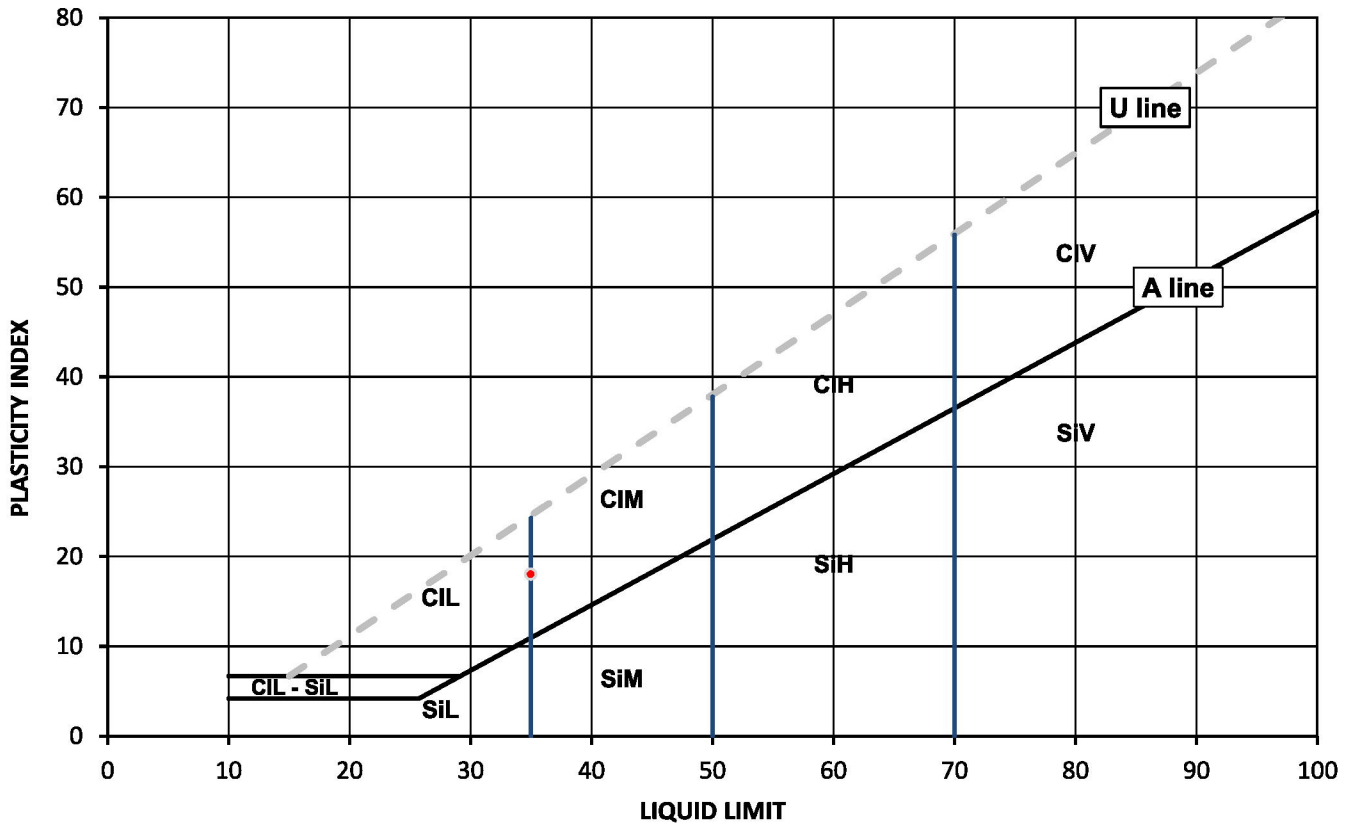
Test Results:

Laboratory Reference: 2062013
Hole No.: BH06
Sample Reference: 1
Sample Description: Yellowish brown gravelly sandy CLAY

Depth Top [m]: 1.30
Depth Base [m]: Not Given
Sample Type: C

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
16	35	17	18	64



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

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DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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Environmental Science

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Sigford Road, Exeter,
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Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 04/11/2021
Sampled By: Not Given

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

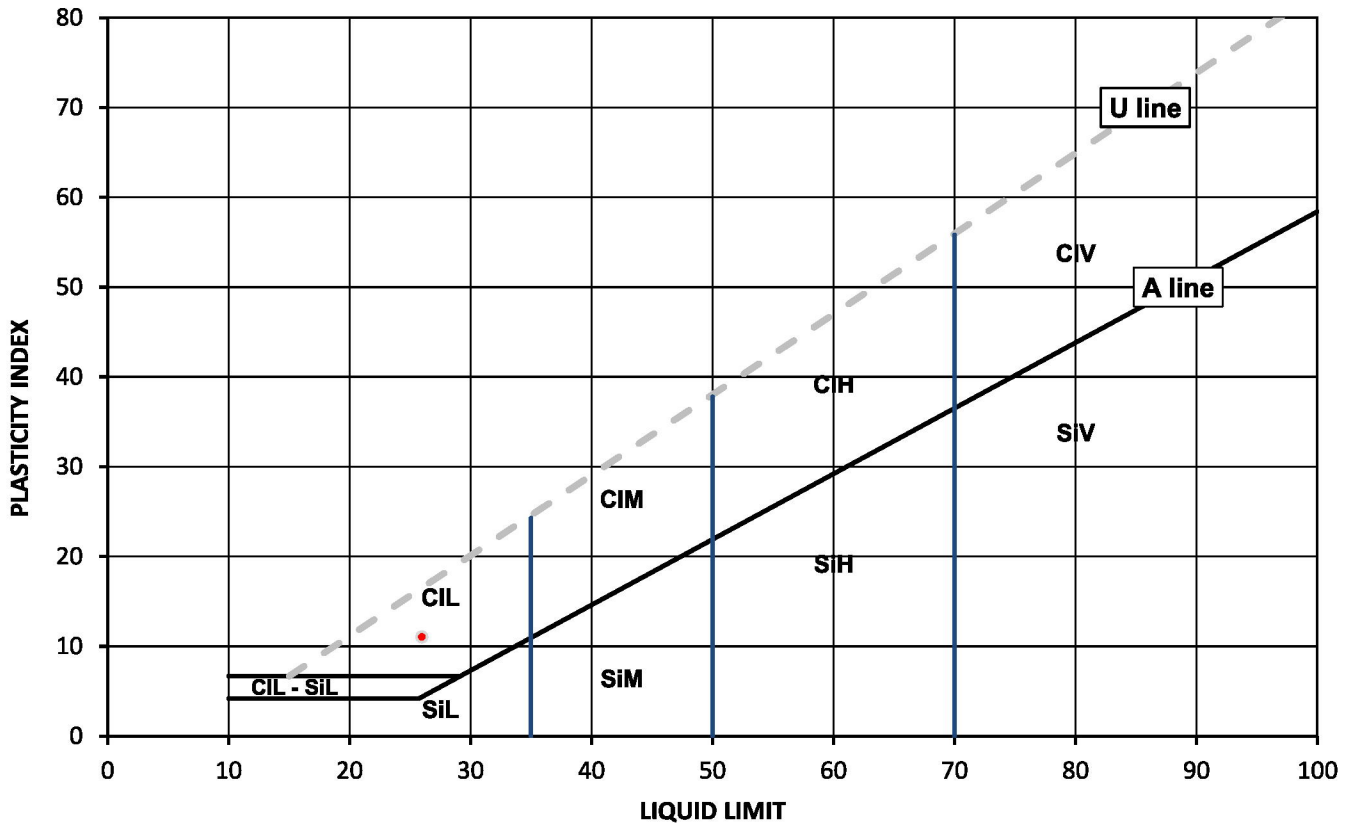
Test Results:

Laboratory Reference: 2062014
Hole No.: BH06
Sample Reference: 2
Sample Description: Grey very sandy CLAY

Depth Top [m]: 2.10
Depth Base [m]: Not Given
Sample Type: C

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
11	26	15	11	100



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

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Deputy Head of Geo Office Section
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Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 04/11/2021
Sampled By: Not Given

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

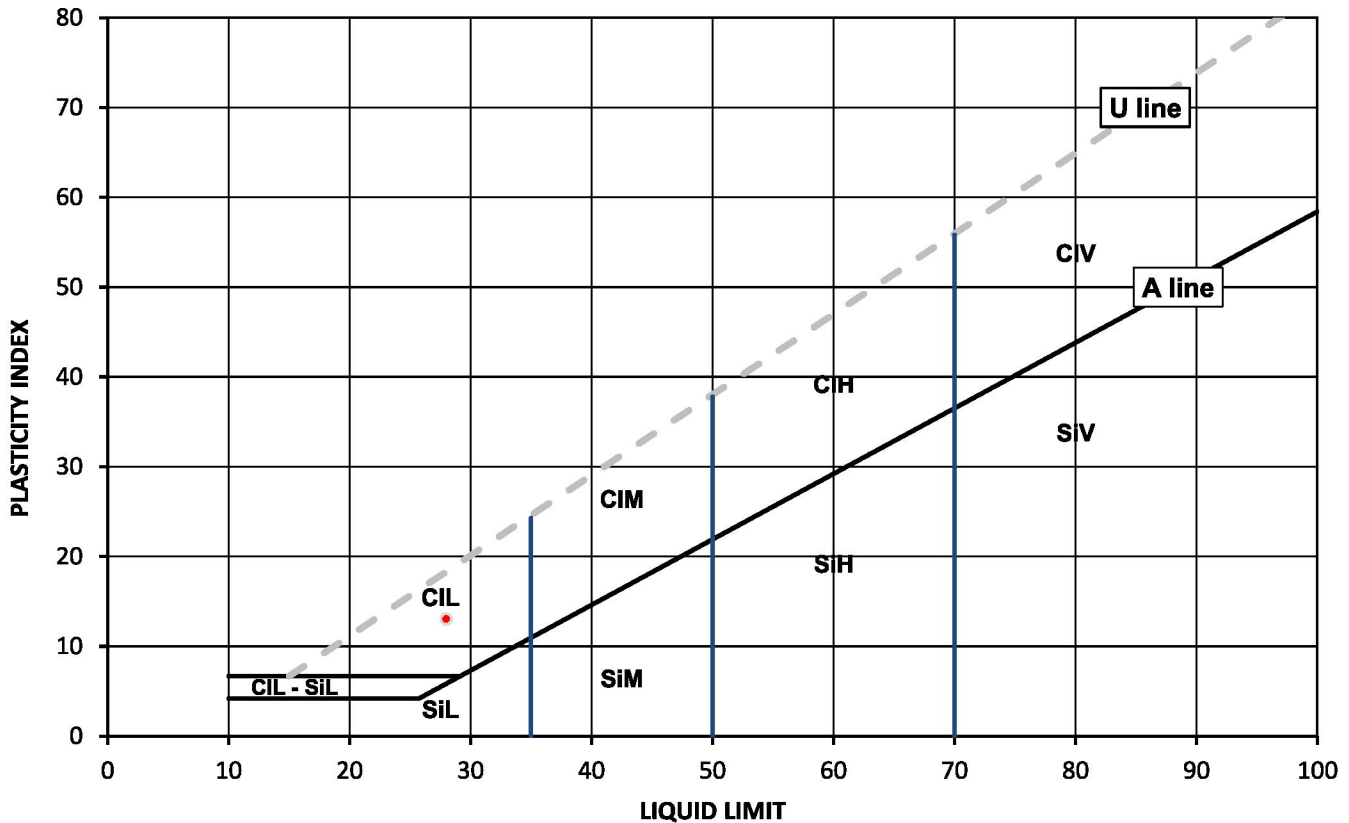
Test Results:

Laboratory Reference: 2062019
Hole No.: BH06
Sample Reference: 3
Sample Description: Grey very sandy CLAY

Depth Top [m]: 4.20
Depth Base [m]: Not Given
Sample Type: C

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
9.9	28	15	13	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:

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EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 19/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

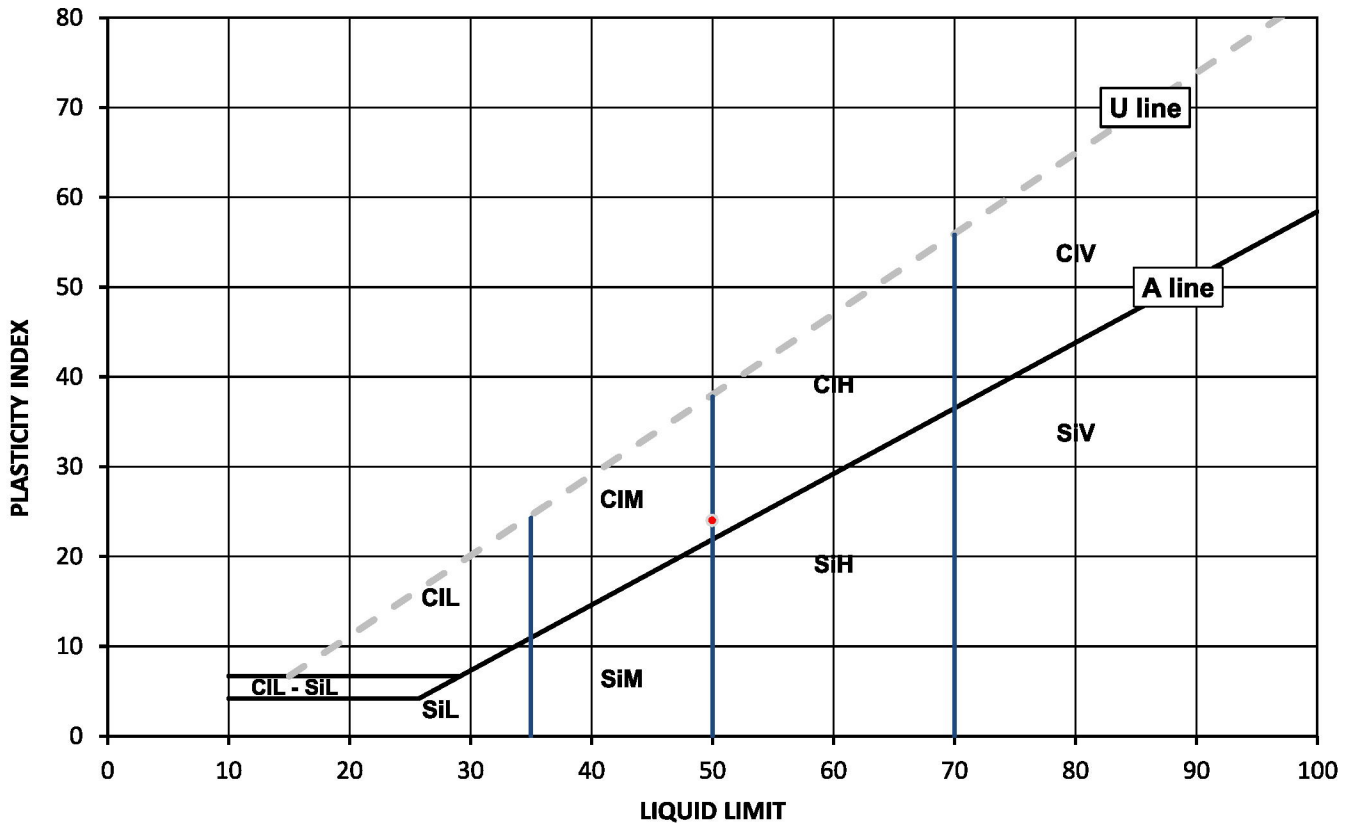
Test Results:

Laboratory Reference: 2062023
Hole No.: BH08
Sample Reference: 1
Sample Description: Brown sandy very clayey GRAVEL with cobbles

Depth Top [m]: 0.40
Depth Base [m]: 0.60
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
17	50	26	24	54



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

CI	Clay	Plasticity	Liquid Limit
Si	Silt	L	below 35
		M	35 to 50
		H	50 to 70
		V	exceeding 70
		O	append to classification for organic material (eg CIHO)

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

Remarks:

Signed:

Anna Dudzinska
Deputy Head of Geo Office Section
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Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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Environmental Science

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Client: Card Geotechnics Ltd
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EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 19/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

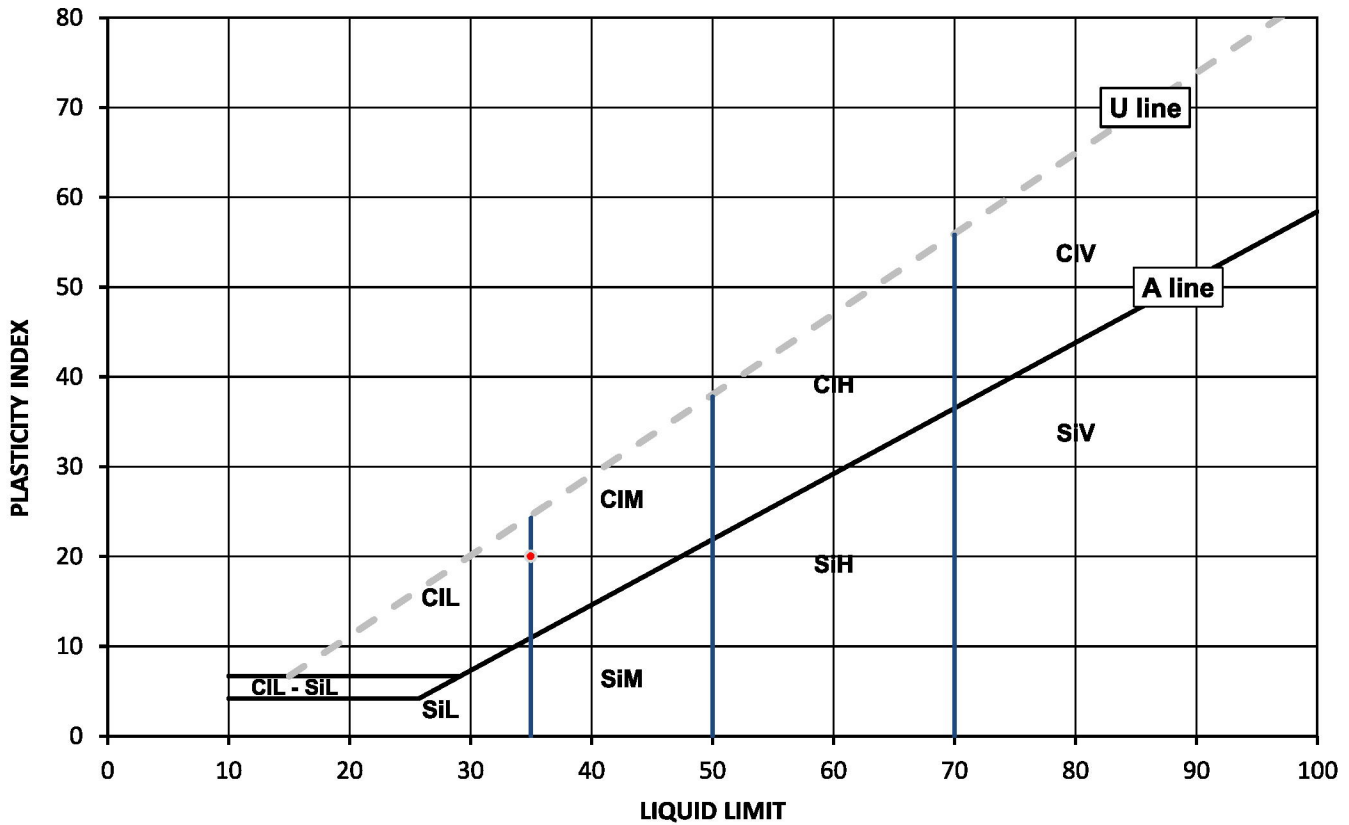
Test Results:

Laboratory Reference: 2062025
Hole No.: BH08
Sample Reference: 1
Sample Description: Cream colour gravelly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: 1.60
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
14	35	15	20	61



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

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4041

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 04/11/2021
Sampled By: Not Given

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

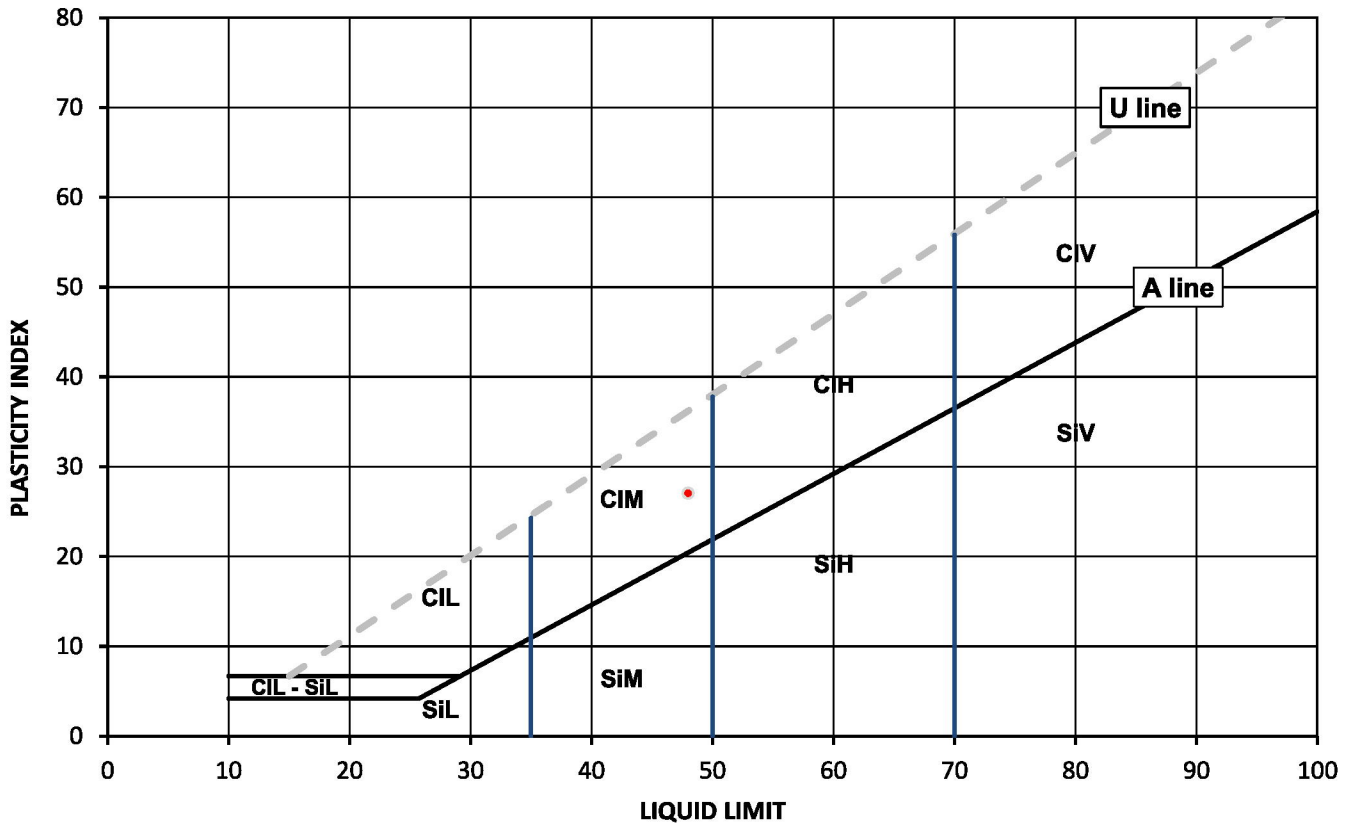
Test Results:

Laboratory Reference: 2062026
Hole No.: BH08
Sample Reference: 1
Sample Description: Brownish grey gravelly slightly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: C

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	48	21	27	70



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

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

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

Remarks:

Signed:

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Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 04/11/2021
Sampled By: Not Given

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

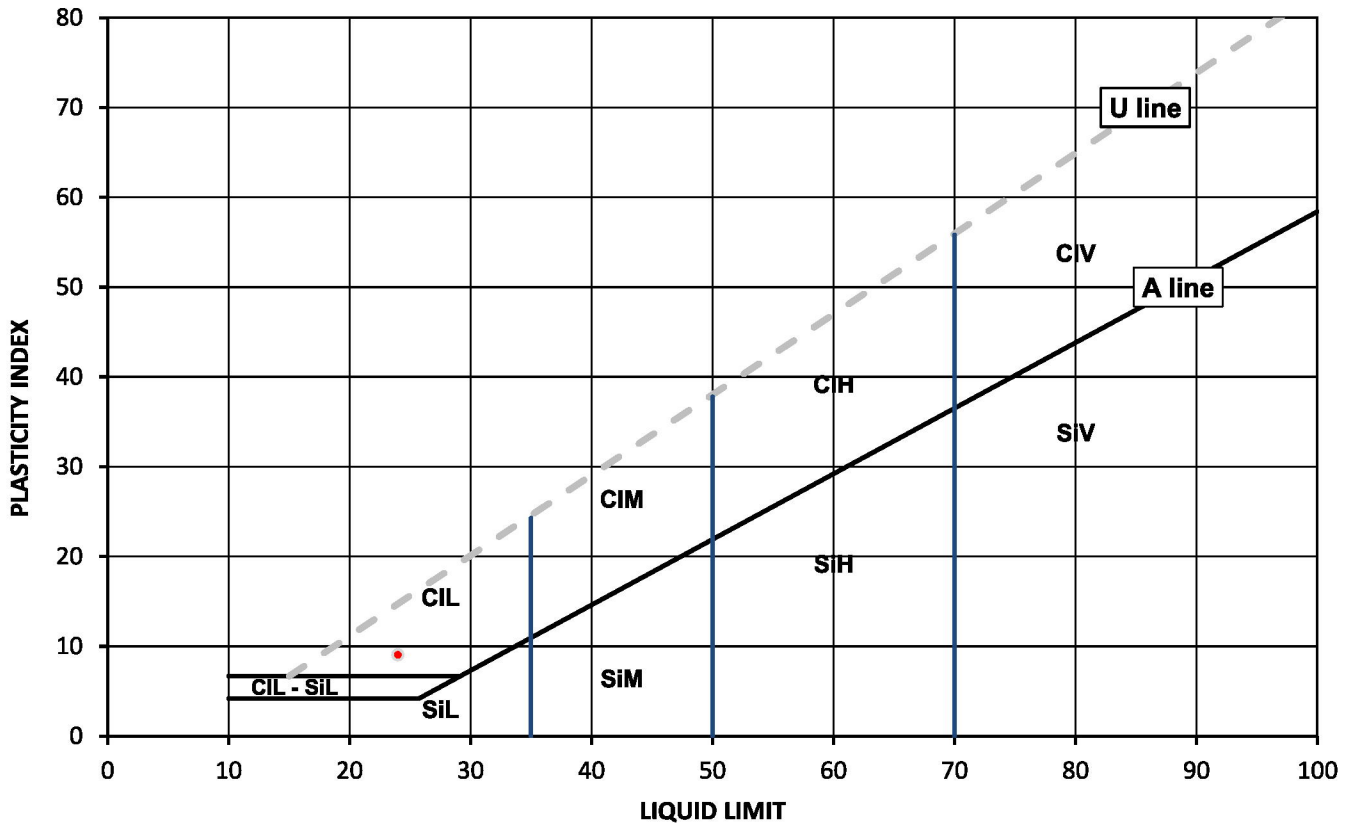
Test Results:

Laboratory Reference: 2062028
Hole No.: BH08
Sample Reference: 2
Sample Description: Grey slightly gravelly slightly clayey SAND

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

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
15	24	15	9	92



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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



Environmental Science

4041

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL

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

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 19/10 - 20/10/2021
Date Received: 22/10/2021
Date Tested: 02/11 - 04/11/2021
Sampled By: Not Given

Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W] %	Water Content [W] %	Atterberg				Density			Total Porosity# %	
		Reference	Depth Top m	Depth Base m	Type					% Passing 425um	WL %	Wp %	Ip %	bulk Mg/m3	dry Mg/m3	PD Mg/m3		
2062011	BH06	1	0.40	0.60	B	Brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	13		65	49	23	26					
2062013	BH06	1	1.30	Not Given	C	Yellowish brown gravelly sandy CLAY	Atterberg 1 Point	16		64	35	17	18					
2062014	BH06	2	2.10	Not Given	C	Grey very sandy CLAY	Atterberg 1 Point	11		100	26	15	11					
2062019	BH06	3	4.20	Not Given	C	Grey very sandy CLAY	Atterberg 1 Point	9.9		100	28	15	13					
2062023	BH08	1	0.40	0.60	B	Brown sandy very clayey GRAVEL with cobbles	Atterberg 1 Point	17		54	50	26	24					
2062026	BH08	1	1.20	Not Given	C	Brownish grey gravelly slightly sandy CLAY	Atterberg 1 Point	19		70	48	21	27					
2062025	BH08	1	1.20	1.60	D	Cream colour gravelly sandy CLAY	Atterberg 1 Point	14		61	35	15	20					
2062028	BH08	2	2.50	Not Given	C	Grey slightly gravelly slightly clayey SAND	Atterberg 1 Point	15		92	24	15	9					

Note: # Non accredited; NP - Non plastic

Comments:

Signed:



Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Particle Size Distribution

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



Tested in Accordance with: BS 1377-2: 1990

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 20/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

Test Results:

Laboratory Reference: 2062012

Hole No.: BH06

Sample Reference: 2

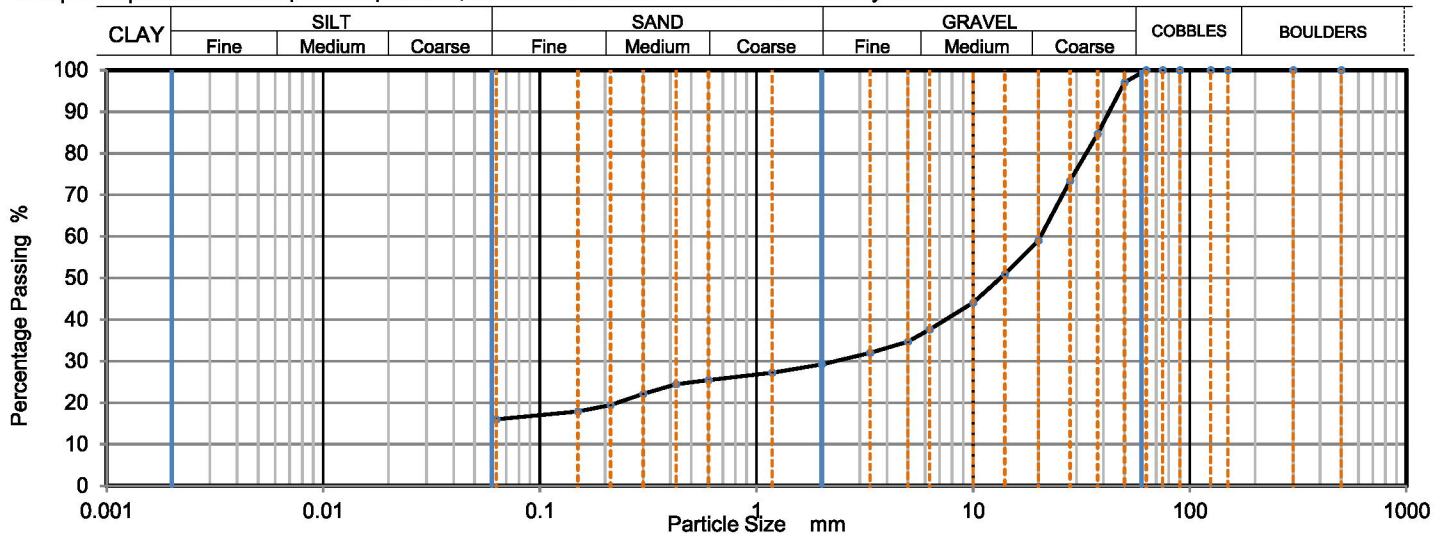
Sample Description: Brown sandy clayey GRAVEL

Sample Preparation: Sample was quartered, oven dried at 109.0 °C and broken down by hand.

Depth Top [m]: 0.60

Depth Base [m]: 0.80

Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	97		
37.5	85		
28	73		
20	59		
14	51		
10	44		
6.3	38		
5	35		
3.35	32		
2	29		
1.18	27		
0.6	25		
0.425	24		
0.3	22		
0.212	19		
0.15	18		
0.063	17		

Sample Proportions	% dry mass
Very coarse	0
Gravel	71
Sand	12
Fines <0.063mm	17

Grading Analysis	
D100	63
D60	20.5
D30	2.33
D10	
Uniformity Coefficient	> 320
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Particle Size Distribution

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



Tested in Accordance with: BS 1377-2: 1990

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 19/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

Test Results:

Laboratory Reference: 2062023

Hole No.: BH08

Sample Reference: 1

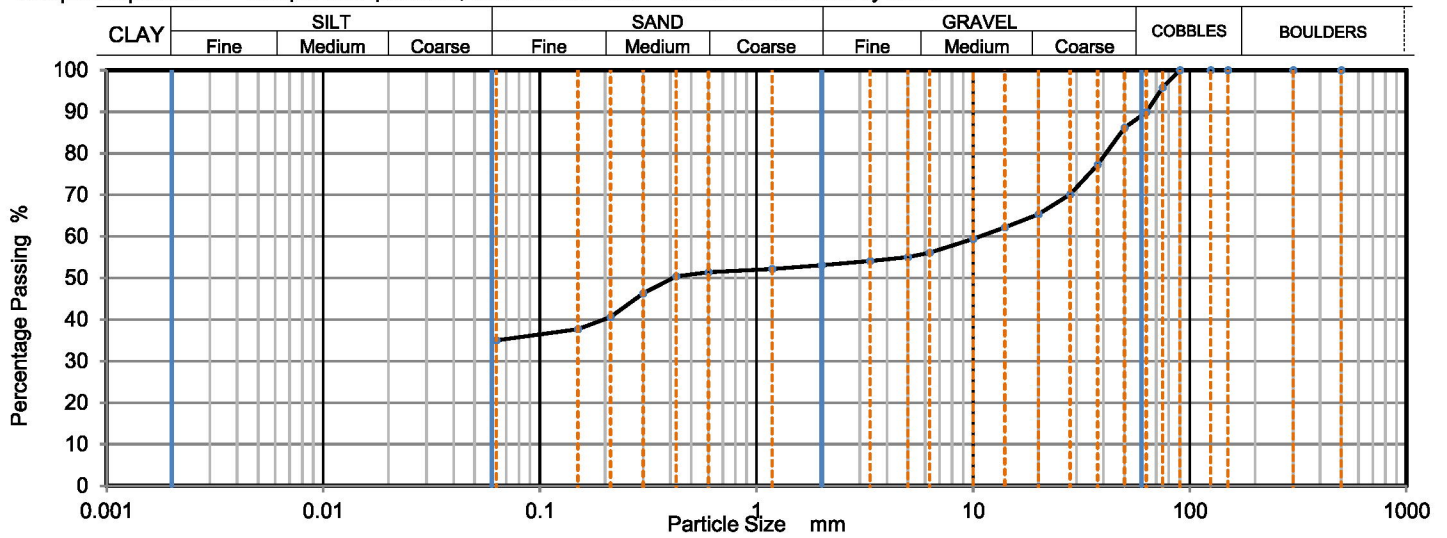
Sample Description: Brown sandy very clayey GRAVEL with cobbles

Sample Preparation: Sample was quartered, oven dried at 106.1 °C and broken down by hand.

Depth Top [m]: 0.40

Depth Base [m]: 0.60

Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	96		
63	90		
50	86		
37.5	77		
28	70		
20	65		
14	62		
10	59		
6.3	56		
5	55		
3.35	54		
2	53		
1.18	52		
0.6	51		
0.425	50		
0.3	46		
0.212	41		
0.15	38		
0.063	36		

Sample Proportions	% dry mass
Very coarse	10
Gravel	37
Sand	18
Fines <0.063mm	35

Grading Analysis	
D100	mm 90
D60	mm 10.8
D30	mm
D10	mm
Uniformity Coefficient	> 170
Curvature Coefficient	

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
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TEST CERTIFICATE

Particle Size Distribution

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



Tested in Accordance with: BS 1377-2: 1990

Client: Card Geotechnics Ltd
Client Address: Palatine House, Unit 2,
Sigford Road, Exeter,
EX2 8NL
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
Job Number: 21-18985
Date Sampled: 19/10/2021
Date Received: 22/10/2021
Date Tested: 02/11/2021
Sampled By: Not Given

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

Test Results:

Laboratory Reference: 2062024

Hole No.: BH08

Sample Reference: 3

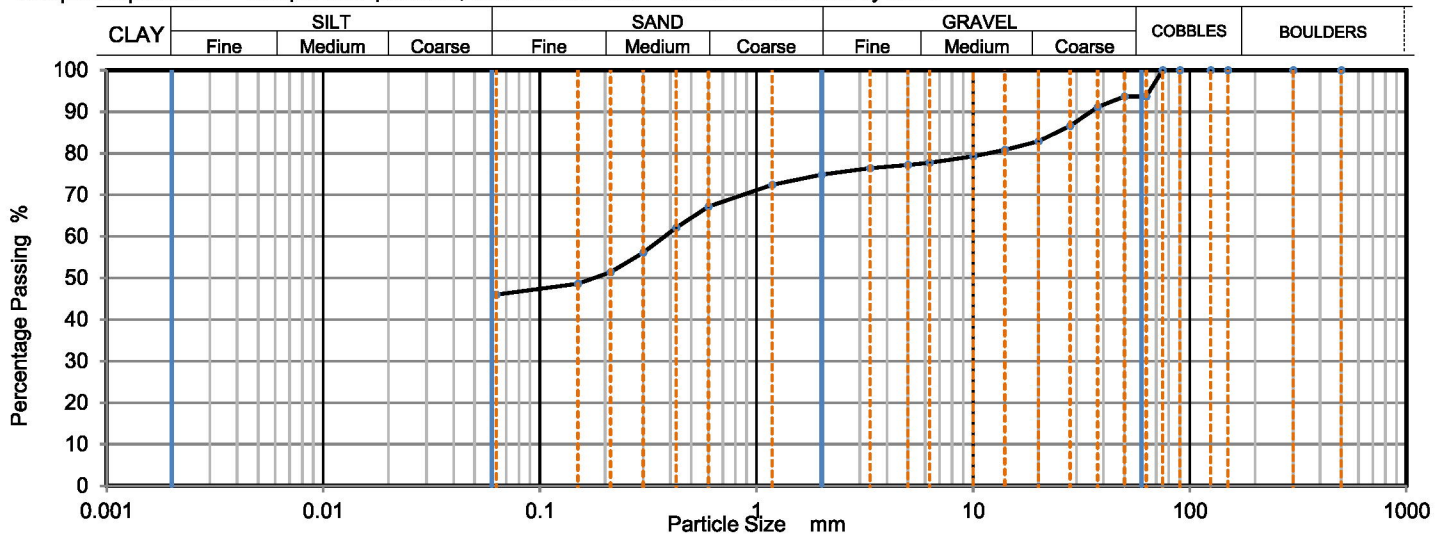
Sample Description: Brown gravelly very sandy CLAY with cobbles

Sample Preparation: Sample was quartered, oven dried at 106.1 °C and broken down by hand.

Depth Top [m]: 0.90

Depth Base [m]: 1.10

Sample Type: B



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	94		
50	94		
37.5	91		
28	87		
20	83		
14	81		
10	79		
6.3	78		
5	77		
3.35	76		
2	75		
1.18	72		
0.6	67		
0.425	62		
0.3	56		
0.212	51		
0.15	49		
0.063	46		

Sample Proportions	% dry mass
Very coarse	6
Gravel	19
Sand	29
Fines <0.063mm	46

Grading Analysis		
D100	mm	75
D60	mm	0.377
D30	mm	
D10	mm	
Uniformity Coefficient		> 6
Curvature Coefficient		

Uniformity Coefficient and Coefficient of Curvature calculated in accordance with BS EN ISO 14688-2: 2004 + A1: 2013

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

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TEST CERTIFICATE
Unconsolidated Undrained
Triaxial Compression
 Tested in Accordance with:
 BS 1377-7: 1990: Clause 8

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



Client: Card Geotechnics Ltd
 Client Address: Palatine House, Unit 2,
 Sigford Road, Exeter,
 EX2 8NL
 Contact: Amir Abbasi
 Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
 Job Number: 21-18985
 Date Sampled: 20/10/2021
 Date Received: 22/10/2021
 Date Tested: 04/11/2021
 Sampled By: Not Given

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

Test Results:

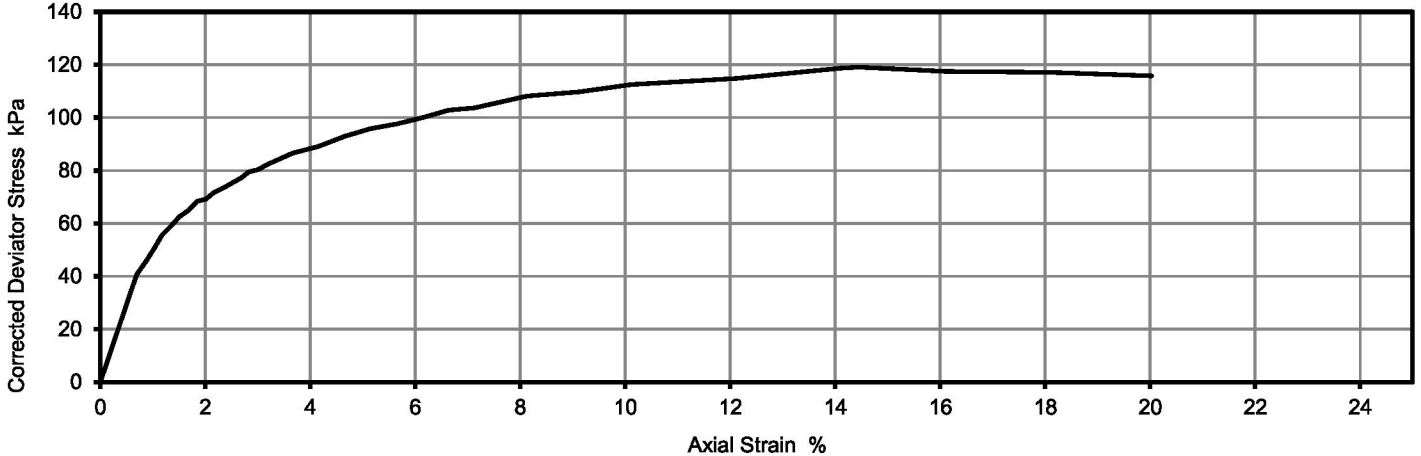
Laboratory Reference: 2062027
 Hole No.: BH08
 Sample Reference: 2
 Sample Description: Grey CLAY

Depth Top [m]: 2.40
 Depth Base [m]: Not Given
 Sample Type: C

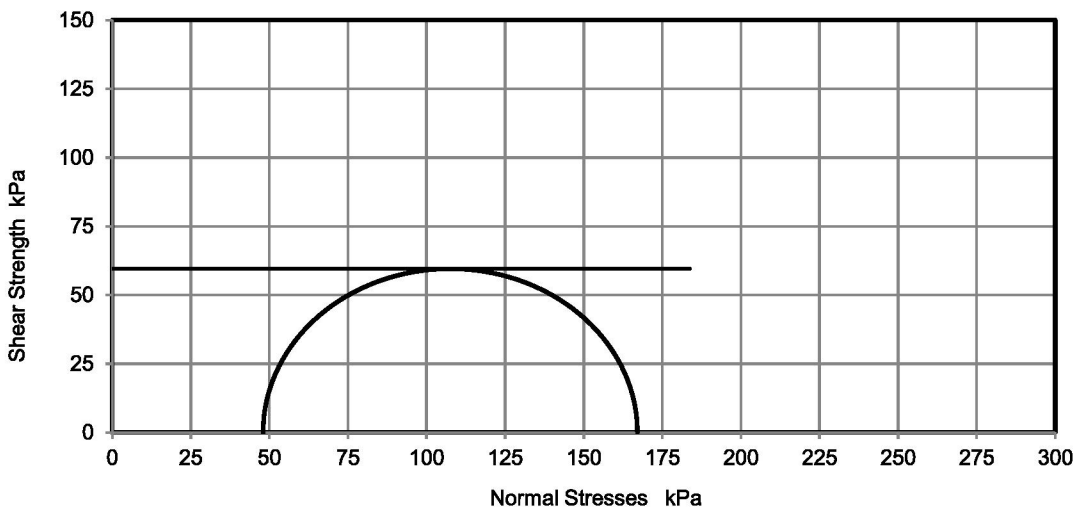
Test Number	1
Length	101.06 mm
Diameter	49.81 mm
Bulk Density	1.99 Mg/m ³
Moisture Content	23 %
Dry Density	1.61 Mg/m ³
Membrane Correction	1.24 kPa

Rate of Strain	2.00 %/min
Cell Pressure	48 kPa
Axial Strain at failure	14.4 %
Deviator Stress, (σ ₁ - σ ₃) _f	119 kPa
Undrained Shear Strength, c _u	60 kPa ½(σ ₁ - σ ₃) _f
Mode of Failure	Compound
Membrane thickness	0.21 mm

Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed:

Anna Dudzinska
 Deputy Head of Geo Office Section
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TEST CERTIFICATE
Unconsolidated Undrained
Triaxial Compression
 Tested in Accordance with:
 BS 1377-7: 1990: Clause 8

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



Client: Card Geotechnics Ltd
 Client Address: Palatine House, Unit 2,
 Sigford Road, Exeter,
 EX2 8NL
 Contact: Amir Abbasi
 Site Address: Bicester Golf Course Bicester

Client Reference: CG39017
 Job Number: 21-18985
 Date Sampled: 20/10/2021
 Date Received: 22/10/2021
 Date Tested: 04/11/2021
 Sampled By: Not Given

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

Test Results:

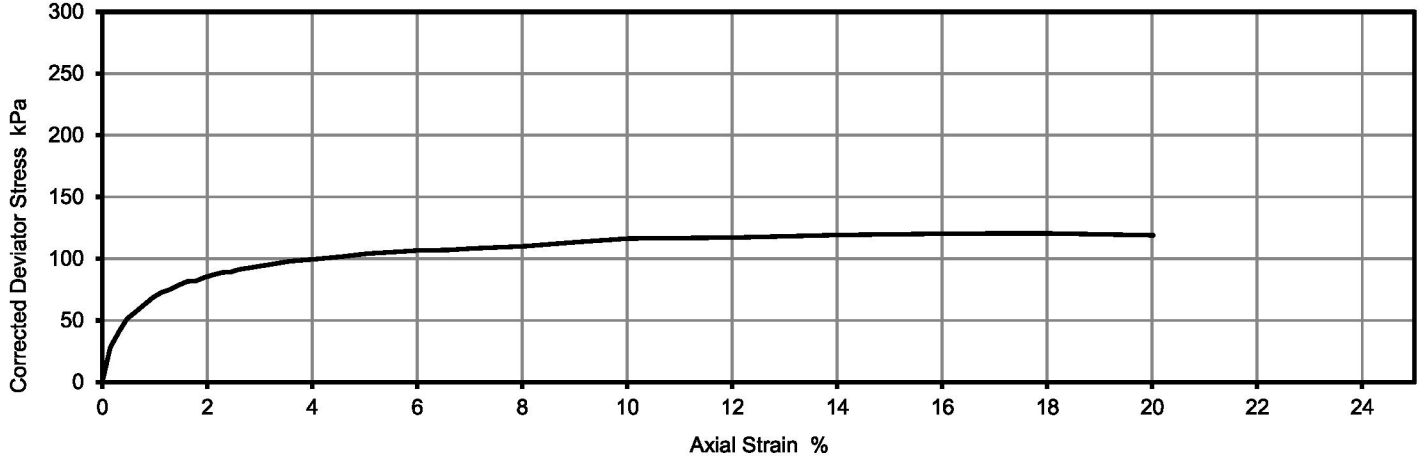
Laboratory Reference: 2062029
 Hole No.: BH08
 Sample Reference: 2
 Sample Description: Grey CLAY

Depth Top [m]: 3.00
 Depth Base [m]: Not Given
 Sample Type: C

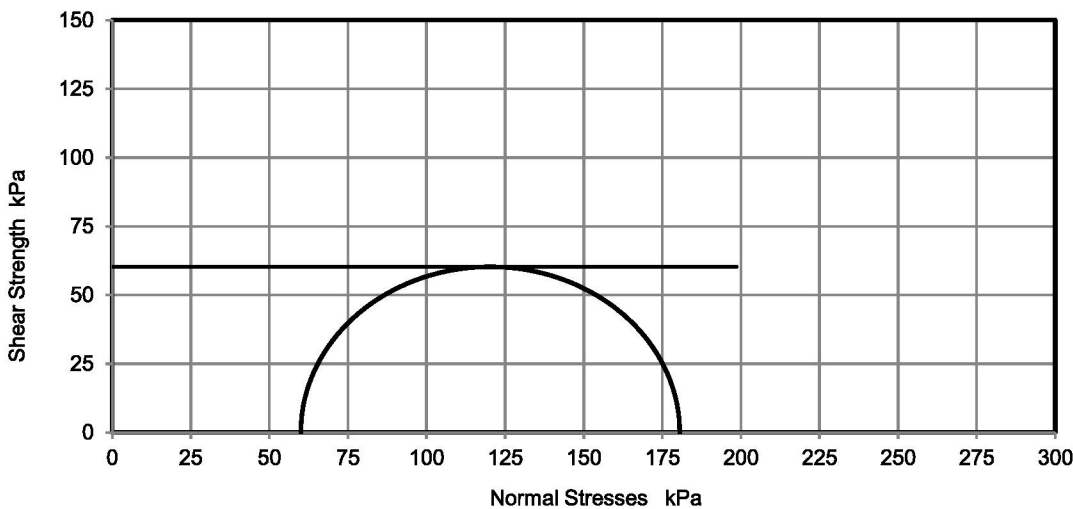
Test Number	1
Length	100.52 mm
Diameter	49.68 mm
Bulk Density	1.96 Mg/m ³
Moisture Content	30 %
Dry Density	1.51 Mg/m ³
Membrane Correction	1.64 kPa

Rate of Strain	2.00 %/min
Cell Pressure	60 kPa
Axial Strain at failure	17.2 %
Deviator Stress, (σ ₁ - σ ₃) _f	121 kPa
Undrained Shear Strength, c _u	60 kPa ½(σ ₁ - σ ₃) _f
Mode of Failure	Compound
Membrane thickness	0.24 mm

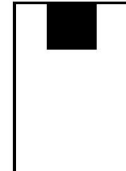
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

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4041

Client: Card Geotechnics Ltd
 Client Address: Palatine House, Unit 2,
 Sigford Road, Exeter,
 EX2 8NL
 Contact: Amir Abbasi
 Site Address: Bicester Golf Course Bicester

SUMMARY REPORT

Summary of Point Load Strength Index Tests Results

Tested in Accordance with: ISRM: 2007, pages 125-132

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



Environmental Science

Client Reference: CG39017
 Job Number: 21-18985
 Date Sampled: 20/10/2021
 Date Received: 22/10/2021
 Date Tested: 08/11/2021
 Sampled By: Not Given

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks # (including water content if measured)	Specimen Reference	Test Type see ISRM		Failure Valid (Y/N)	Dimensions				Force P kN	Equivalent diameter, De mm	Point Load Strength Index	
		Reference	Depth Top m	Depth Base m	Type				Type (D, A, I, B)	Direction (L, P or U)		Lne mm	W mm	Dps mm	Dps' mm			Is MPa	Is(50) MPa
2062016	BH06	2	2.70	Not Given	C	Light brown SANDSTONE	WC = 2.7%	1	A	U	YES	-	87.9	87.0	80.0	3.0	94.6	0.33	0.44
2062016	BH06	2	2.70	Not Given	C	Light brown SANDSTONE	WC = 2.7%, Shape not suitable for Diametral - tested as Irregular.	2	I	U	YES	35.2	87.6	44.0	41.0	0.6	67.6	0.13	0.15
2062018	BH06	3	4.00	Not Given	C	Light grey MARL	WC = 1.3%	1	A	U	YES	-	89.6	88.0	76.0	4.0	93.1	0.46	0.60
2062018	BH06	3	4.00	Not Given	C	Light grey MARL	WC = 1.3%, Shape not suitable for Diametral - tested as Irregular.	2	I	U	YES	44.2	89.3	54.0	48.0	3.3	73.9	0.60	0.72
2062022	BH06	3	5.00	Not Given	C	Light grey MARL	WC = 4.2%	2	D	U	YES	56.7	89.0	86.0	83.0	0.7	85.9	0.09	0.11
2062020	BH06	3	4.30	Not Given	C	Light grey MARL	WC = 2.6%	1	A	U	YES	-	90.0	78.0	46.0	9.9	72.6	1.88	2.22
2062020	BH06	3	4.30	Not Given	C	Light grey MARL	WC = 2.6%	2	D	U	YES	118.5	89.5	88.0	86.0	2.6	87.7	0.33	0.43
2062021	BH06	3	4.50	Not Given	C	Light grey MARL	WC = 3.7%	1	A	U	YES	-	89.6	89.0	85.0	2.6	98.5	0.27	0.36
2062021	BH06	3	4.50	Not Given	C	Light grey MARL	WC = 3.7%, Shape not suitable for Diametral - tested as Irregular.	2	I	U	YES	41.2	37.6	34.0	30.0	0.9	37.9	0.63	0.55
2062022	BH06	3	5.00	Not Given	C	Light grey MARL	WC = 4.2%	1	A	U	YES	-	89.9	64.0	58.0	1.2	81.5	0.17	0.22

Note: # non accredited; Test Type: D - Diametral, A - Axial, I - Irregular Lump, B - Block; Direction: L - parallel to planes of weakness, P - perpendicular to planes of weakness, U - unknown or random;
 Dimensions: Dpe - Distance between platens (platen separation), Dps' - at failure (see ISRM note 8), Lne - Length from platens to nearest free end W - Width of shortest dimension perpendicular to load, P;
 Detailed legend for test and dimensions, based on ISRM, is shown above; Size factor, F = (De/50)0.45 for all tests

Comments:

Signed:

Anna Dudzinska
 Deputy Head of Geo Office Section
 for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

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



Environmental Science

4041

Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre, Woolsack Way,
Godalming, Surrey,
GU7 1XW
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Client Reference: CG39017
Job Number: 21-22172
Date Sampled: 25/10/2021
Date Received: 29/10/2021
Date Tested: 19/11/2021
Sampled By: Not Given

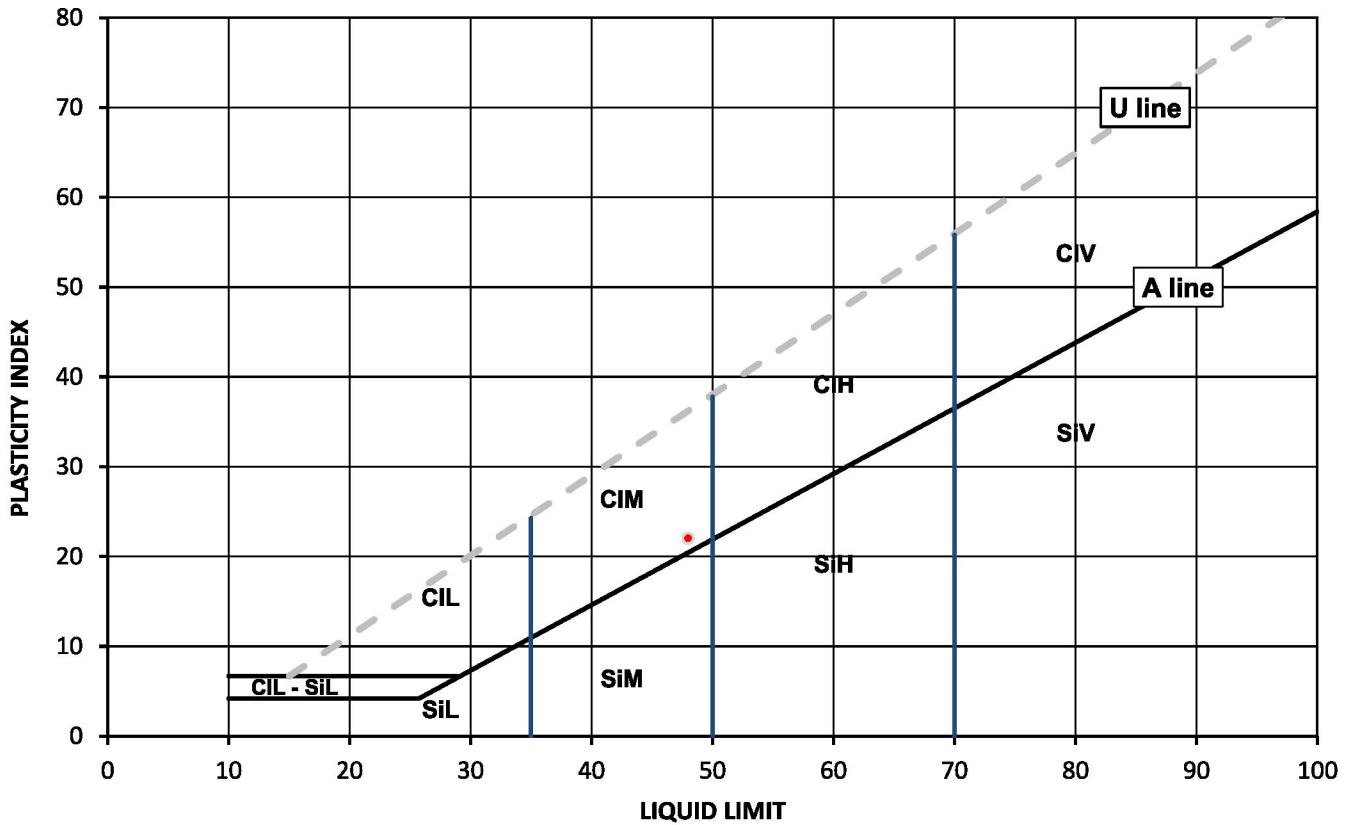
Test Results:

Laboratory Reference: 2078879
Hole No.: BH03
Sample Reference: 2
Sample Description: Brown sandy very clayey GRAVEL with cobbles

Depth Top [m]: 0.50
Depth Base [m]: 0.70
Sample Type: B

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
12	48	26	22	50



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

Anna Dudzinska
Deputy Head of Geo Office Section
for and on behalf of i2 Analytical Ltd

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Client: Card Geotechnics Ltd
Client Address: 4 Godalming Business Centre, Woolsack Way,
Godalming, Surrey,
GU7 1XW
Contact: Amir Abbasi
Site Address: Bicester Golf Course Bicester
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

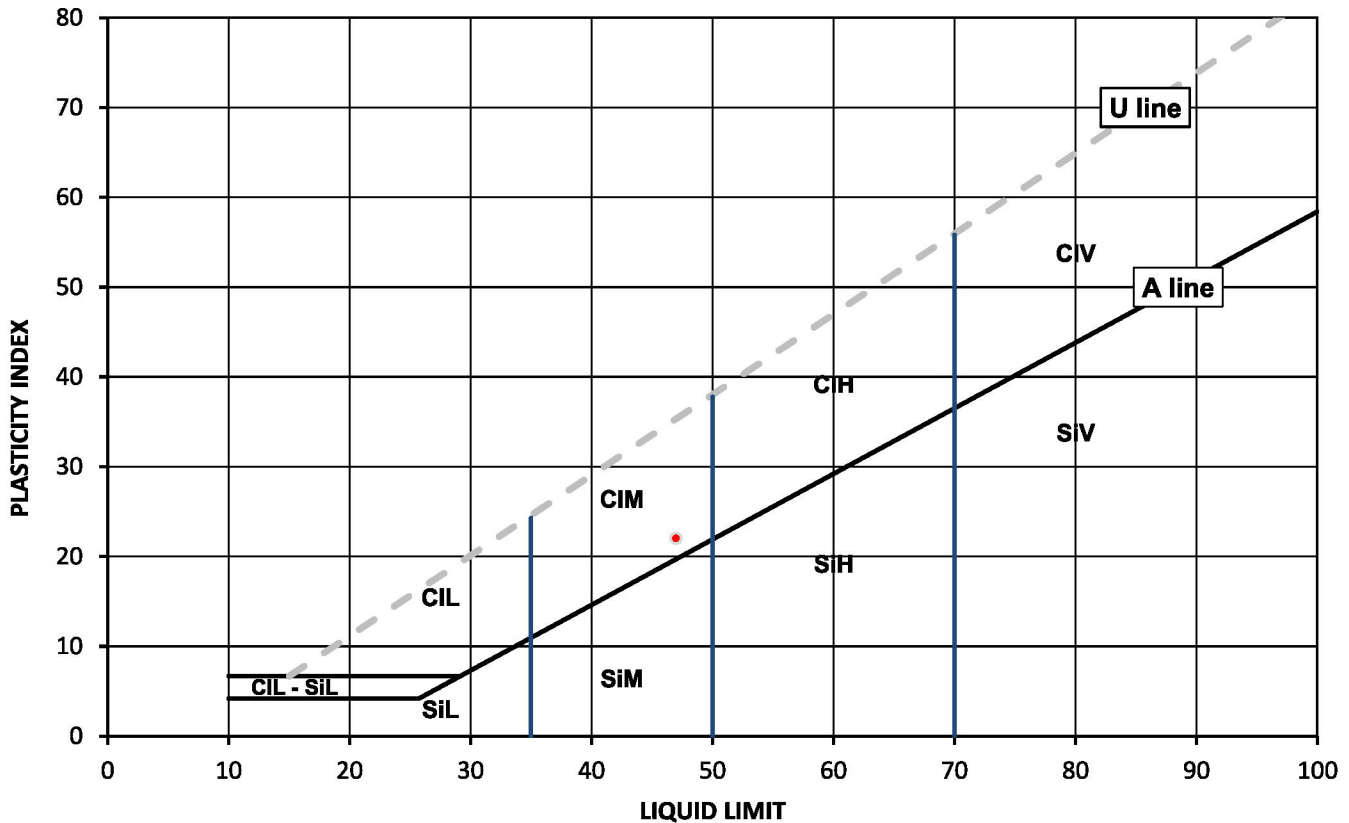
Client Reference: CG39017
Job Number: 21-22172
Date Sampled: 27/10/2021
Date Received: 29/10/2021
Date Tested: 19/11/2021
Sampled By: Not Given

Test Results:

Laboratory Reference: 2078885
Hole No.: BH04
Sample Reference: 2
Sample Description: Brown sandy clayey GRAVEL with cobbles
Sample Preparation: Tested after washing to remove >425um

Depth Top [m]: 0.50
Depth Base [m]: 0.60
Sample Type: B

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
12	47	25	22	29



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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:

Anna Dudzinska
Deputy Head of Geo Office Section
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