Analytical Report Number : 22-12888
Project / Site name: Kenley Campus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
GC	Gas Chromatography				
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))				
CU	Clean-up - e.g. by Florisil®, silica gel				
1D	GC - Single coil/column gas chromatography				
2D	GC-GC - Double coil/column gas chromatography				
Total	Aliphatics & Aromatics				
AL	Aliphatics				
AR	Aromatics				
#1	EH_2D_Total but with humics mathematically subtracted				
#2	EH_2D_Total but with fatty acids mathematically subtracted				
_	Operator - understore to separate acronyms (exception for +)				
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total				

Analytical Report Number : 22-12888

Project / Site name: Kenley Campus

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP10	ES1	S	2530761	c	Total cyanide in soil	L080-PL	c
TP5	ES1	S	2530763	c	Total cyanide in soil	L080-PL	c
TP7	ES1	S	2530762	c	Total cyanide in soil	L080-PL	c

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Analytical Report Number : 23-11045

Project / Site name:	Kenley campus	**Samples received on:**	10/01/2023
Your job number:	CG 39415	**Samples instructed on/ Analysis started on:**	10/01/2023
Your order number:	12254	**Analysis completed by:**	16/01/2023
Report Issue Number:	1	**Report issued on:**	16/01/2023
Samples Analysed:	2 water samples		

Signed:

Dominika Warjan
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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Analytical Report Number: 23-11045
Project / Site name: Kenley campus

Your Order No: 12254

Lab Sample Number				2549848	2549849
Sample Reference				WS1	WS5
Sample Number				None Supplied	None Supplied
Depth (m)				1.45	3.90
Date Sampled				09/01/2023	09/01/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
General Inorganics					
pH	pH Units	N/A	ISO 17025	7.5	7.2
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0
Sulphate as SO4	µg/l	45	ISO 17025	47000	80700
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	25	59
Dissolved Organic Carbon (DOC)	mg/l	0.1	ISO 17025	2.9	3.99
Hardness - Total	mgCaCO3/l	1	ISO 17025	288	306
Total Phenols					
Total Phenols (monohydric)	µg/l	1	ISO 17025	1.8	1.6
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	ISO 17025	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01
Total PAH					
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16
Heavy Metals / Metalloids					
Boron (dissolved)	µg/l	10	ISO 17025	98	28
Calcium (dissolved)	mg/l	0.012	ISO 17025	100	110
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0
Magnesium (dissolved)	mg/l	0.005	ISO 17025	7.7	5

Analytical Report Number: 23-11045
Project / Site name: Kenley campus

Your Order No: 12254

Lab Sample Number				2549848	2549849
Sample Reference				WS1	WS5
Sample Number				None Supplied	None Supplied
Depth (m)				1.45	3.90
Date Sampled				09/01/2023	09/01/2023
Time Taken				None Supplied	None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Antimony (dissolved)	µg/l	0.4	ISO 17025	0.5	0.5
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.27	0.32
Barium (dissolved)	µg/l	0.06	ISO 17025	39	48
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2
Copper (dissolved)	µg/l	0.5	ISO 17025	1.9	1.9
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	< 0.5	1.8
Selenium (dissolved)	µg/l	0.6	ISO 17025	4.7	4.8
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.4	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.7	5.3
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	1	ISO 17025	< 1.0	< 1.0
Petroleum Hydrocarbons					
TPH-CWG - Aliphatic >C5 - C6 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0*	< 1.0*
TPH-CWG - Aliphatic >C6 - C8 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0*	< 1.0*
TPH-CWG - Aliphatic >C8 - C10 $_{HS\_1D\_AL}$	µg/l	1	NONE	< 1.0*	< 1.0*
TPH-CWG - Aliphatic >C10 - C12 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH\_1D\_AL\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS\_1D\_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH\_1D\_AR\_MS}$	µg/l	10	NONE	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and therefore may be unreliable.

Analytical Report Number : 23-11045
Project / Site name: Kenley campus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water - LOW LEVEL 1 ug/l	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Dissolved Organic Carbon in water	Determination of dissolved inorganic carbon in water by TOC/DOC NDIR Analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE

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Analytical Report Number : 23-11045
Project / Site name: Kenley campus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

APPENDIX J

Geotechnical Analysis Results

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e: reception@i2analytical.com

Analytical Report Number : 23-10535

Project / Site name:	Kenley Campus	**Samples received on:**	12/12/2022
Your job number:	CG 39415	**Samples instructed on/ Analysis started on:**	06/01/2023
Your order number:	POP012227	**Analysis completed by:**	12/01/2023
Report Issue Number:	1	**Report issued on:**	12/01/2023
Samples Analysed:	9 soil samples		

Signed: Izabela Wójcik

Izabela Wójcik
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-10535
Project / Site name: Kenley Campus
Your Order No: POP012227

Lab Sample Number				2547068	2547069	2547070	2547071	2547072
Sample Reference				TP2	TP2	TP5	TP4	TP6
Sample Number				1	2	2	2	2
Depth (m)				0.20	0.50	2.90	2.30	1.80
Date Sampled				07/12/2022	07/12/2022	06/12/2022	07/12/2022	06/12/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	14	25	16	16
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.3	8.2	8.8	7.8	8.3
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.01	0.0062	0.01	0.01	0.013
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	10	6.2	10	10	13
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0051	0.0031	0.0051	0.005	0.0067

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-10535
Project / Site name: Kenley Campus
Your Order No: POP012227

Lab Sample Number				2547073	2547074	2547075	2547076
Sample Reference				TP9	WS2	WS5	WS9
Sample Number				1	1	2	2
Depth (m)				0.20	0.10	0.40	1.20
Date Sampled				06/12/2022	09/12/2022	08/12/2022	08/12/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	13	15	21
Total mass of sample received	kg	0.001	NONE	1	1	0.9	1

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.8	9.3	10.2	8.5
Water Soluble Sulphate (Soil Equivalent)	g/kg	0.0025	MCERTS	0.28	0.14	0.81	0.13
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	280	140	810	130
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.14	0.069	0.4	0.066

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-10535
Project / Site name: Kenley Campus

* 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 *
2547068	TP2	1	0.2	Brown loam and sand with gravel and chalk.
2547069	TP2	2	0.5	Brown clay and sand with gravel.
2547070	TP5	2	2.9	Light brown clay and sand with chalk.
2547071	TP4	2	2.3	Brown clay and sand.
2547072	TP6	2	1.8	Brown clay and sand.
2547073	TP9	1	0.2	Beige clay with gravel and chalk.
2547074	WS2	1	0.1	Brown loam and sand with gravel and vegetation.
2547075	WS5	2	0.4	Beige clay with gravel and chalk.
2547076	WS9	2	1.2	Brown clay with gravel.

Analytical Report Number : 23-10535
Project / Site name: Kenley Campus

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

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
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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.

Analytical Report Number : 23-10535
Project / Site name: Kenley Campus

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP2	1	S	2547068	c	pH in soil (automated)	L099-PL	c
TP2	2	S	2547069	c	pH in soil (automated)	L099-PL	c
TP4	2	S	2547071	c	pH in soil (automated)	L099-PL	c
TP5	2	S	2547070	c	pH in soil (automated)	L099-PL	c
TP6	2	S	2547072	c	pH in soil (automated)	L099-PL	c
TP9	1	S	2547073	c	pH in soil (automated)	L099-PL	c
WS2	1	S	2547074	c	pH in soil (automated)	L099-PL	c
WS5	2	S	2547075	c	pH in soil (automated)	L099-PL	c
WS9	2	S	2547076	c	pH in soil (automated)	L099-PL	c

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

UKAS TESTING
4041

Environmental Science

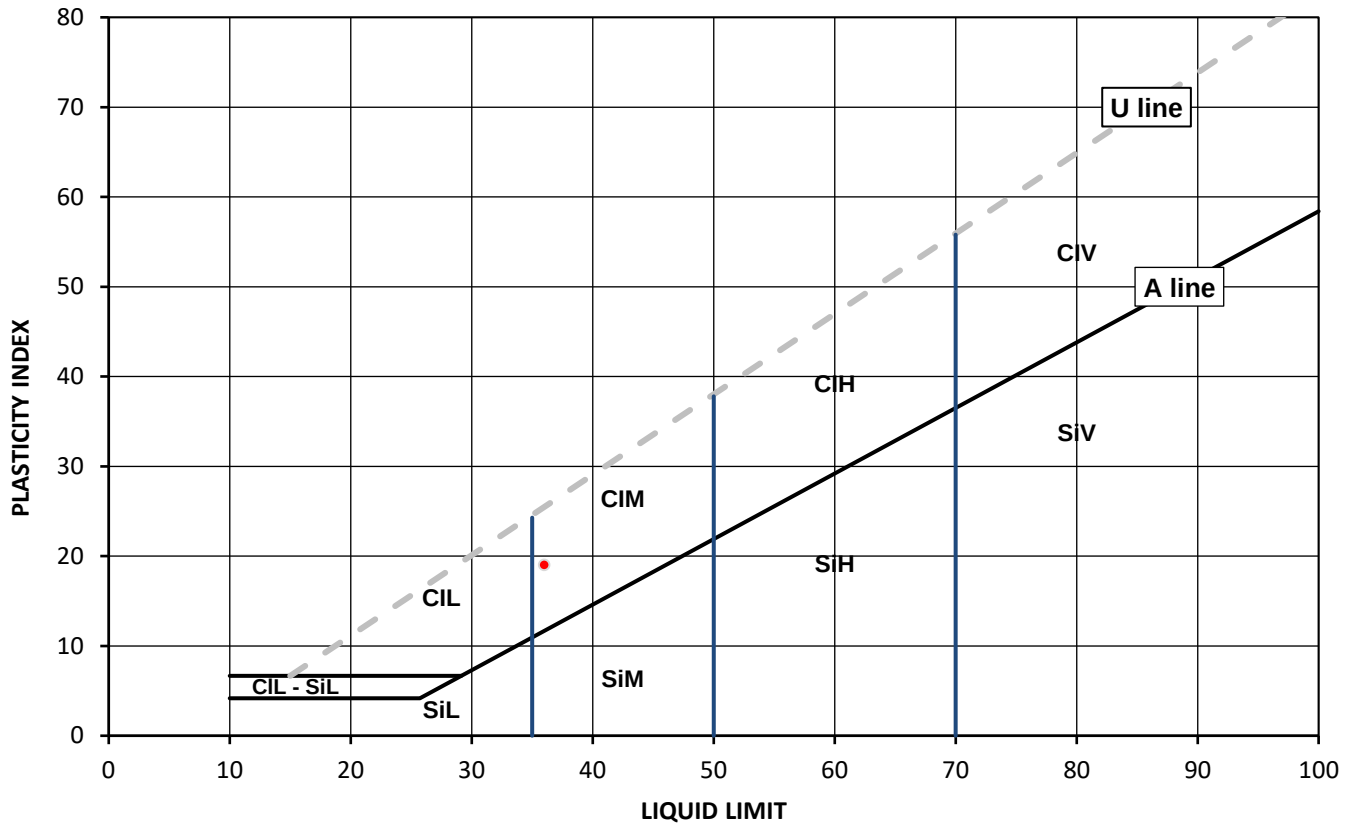
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539038	Depth Top [m]:	1.50
Hole No.:	WS5	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
19	36	17	19	75



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

UKAS TESTING
4041

Environmental Science

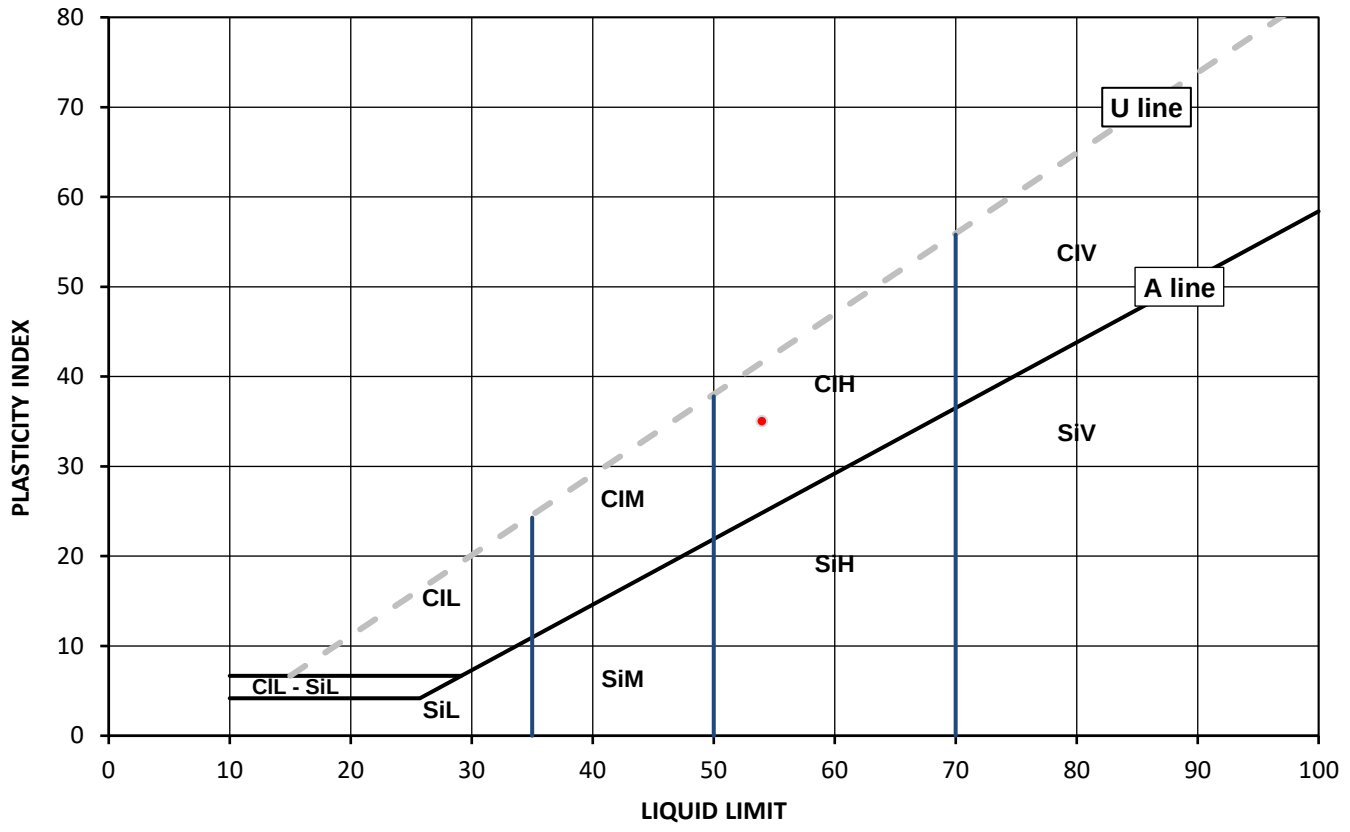
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539039	Depth Top [m]:	2.50
Hole No.:	WS5	Depth Base [m]:	Not Given
Sample Reference:	3	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
24	54	19	35	94



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
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Date Reported: 04/01/2023

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
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UKAS TESTING
4041

Environmental Science

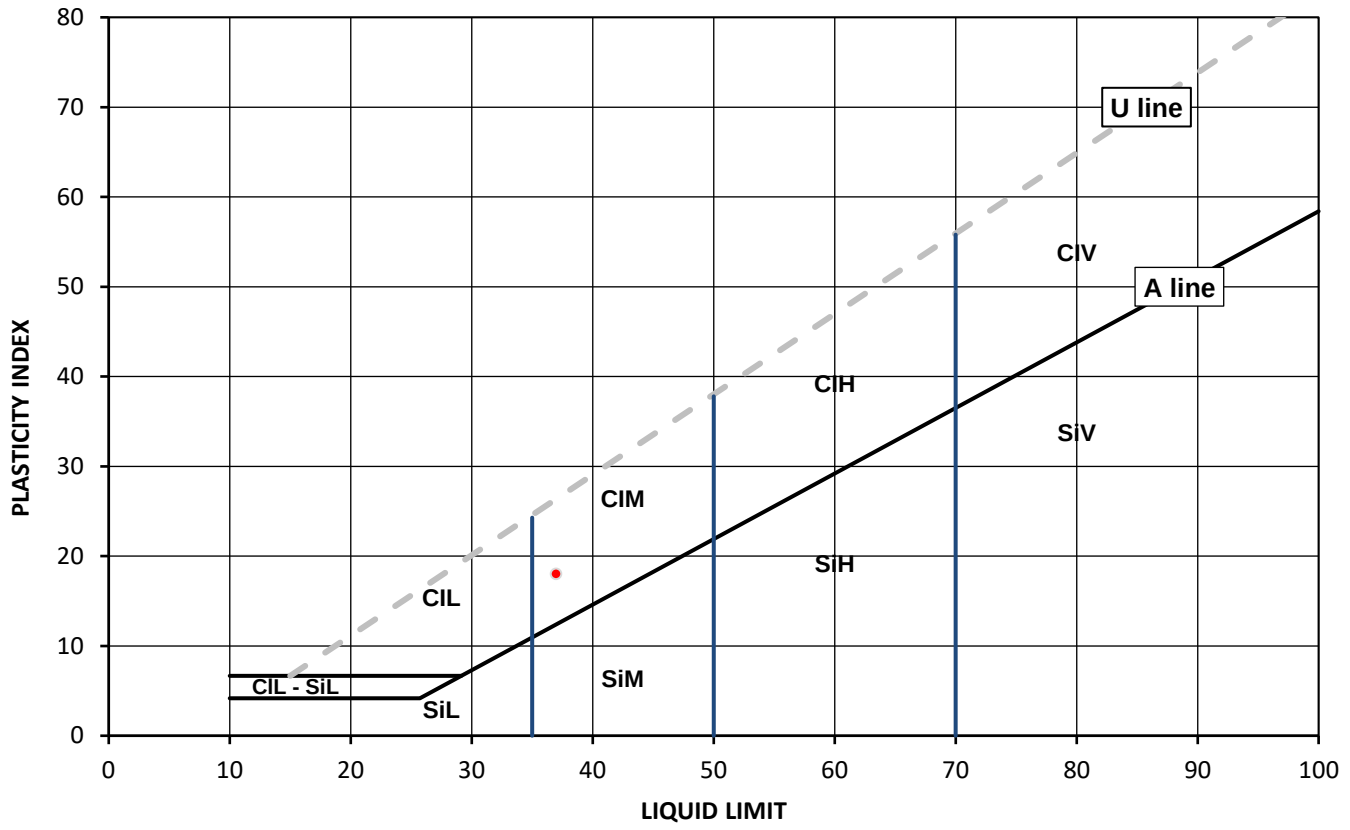
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539040	Depth Top [m]:	3.70
Hole No.:	WS5	Depth Base [m]:	Not Given
Sample Reference:	5	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
22	37	19	18	99



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
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Date Reported: 04/01/2023

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

i2 Analytical Ltd
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Northampton NN4 7EB

UKAS TESTING
4041

Environmental Science

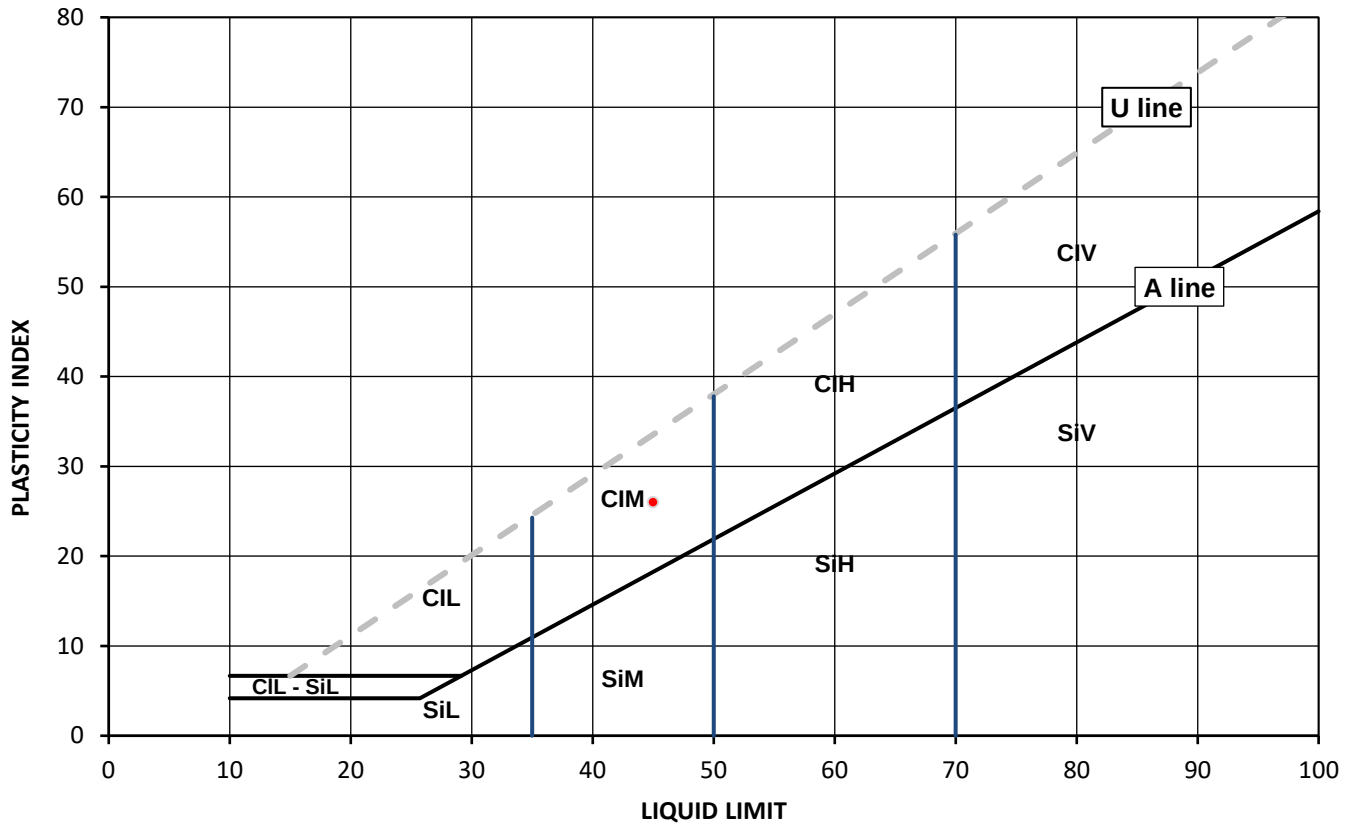
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539041	Depth Top [m]:	1.50
Hole No.:	WS2	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Yellowish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
23	45	19	26	100



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

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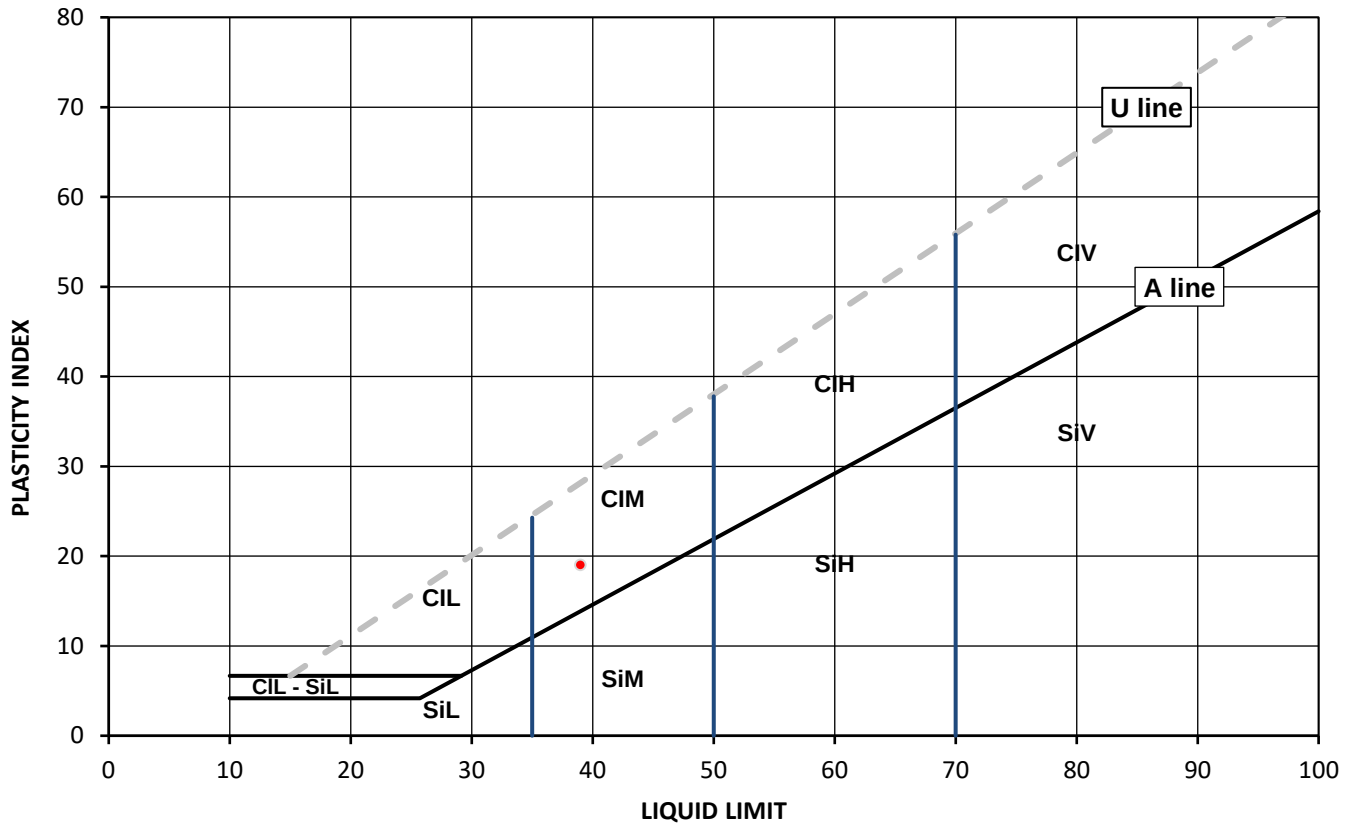
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539042	Depth Top [m]:	2.00
Hole No.:	WS2	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	D
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
22	39	20	19	100



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

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DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

4041

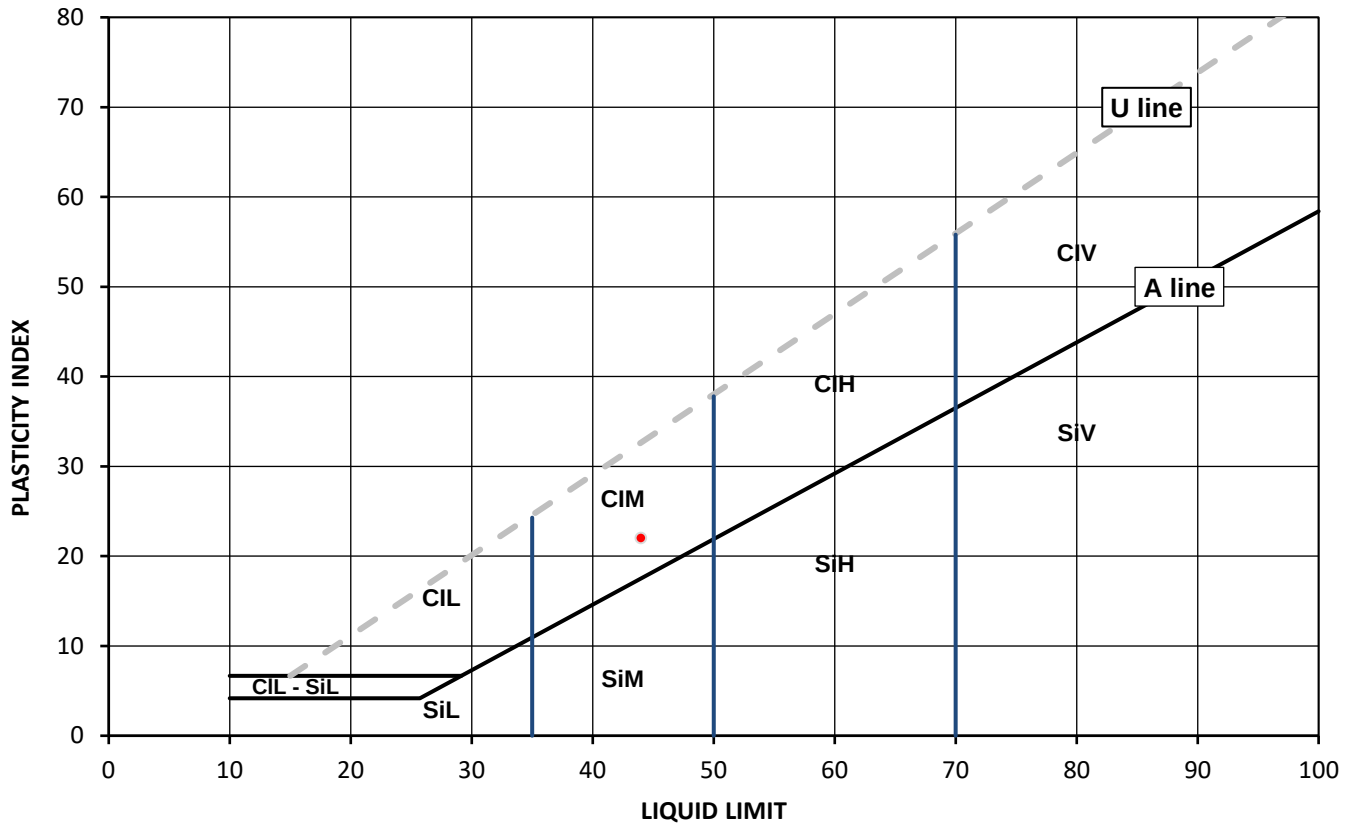
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539043	Depth Top [m]:	2.50
Hole No.:	WS2	Depth Base [m]:	Not Given
Sample Reference:	3	Sample Type:	D
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	44	22	22	100



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

 Date Reported: 04/01/2023 **GF 236.12**

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DETERMINATION OF LIQUID AND PLASTIC LIMITS
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i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING
4041

Environmental Science

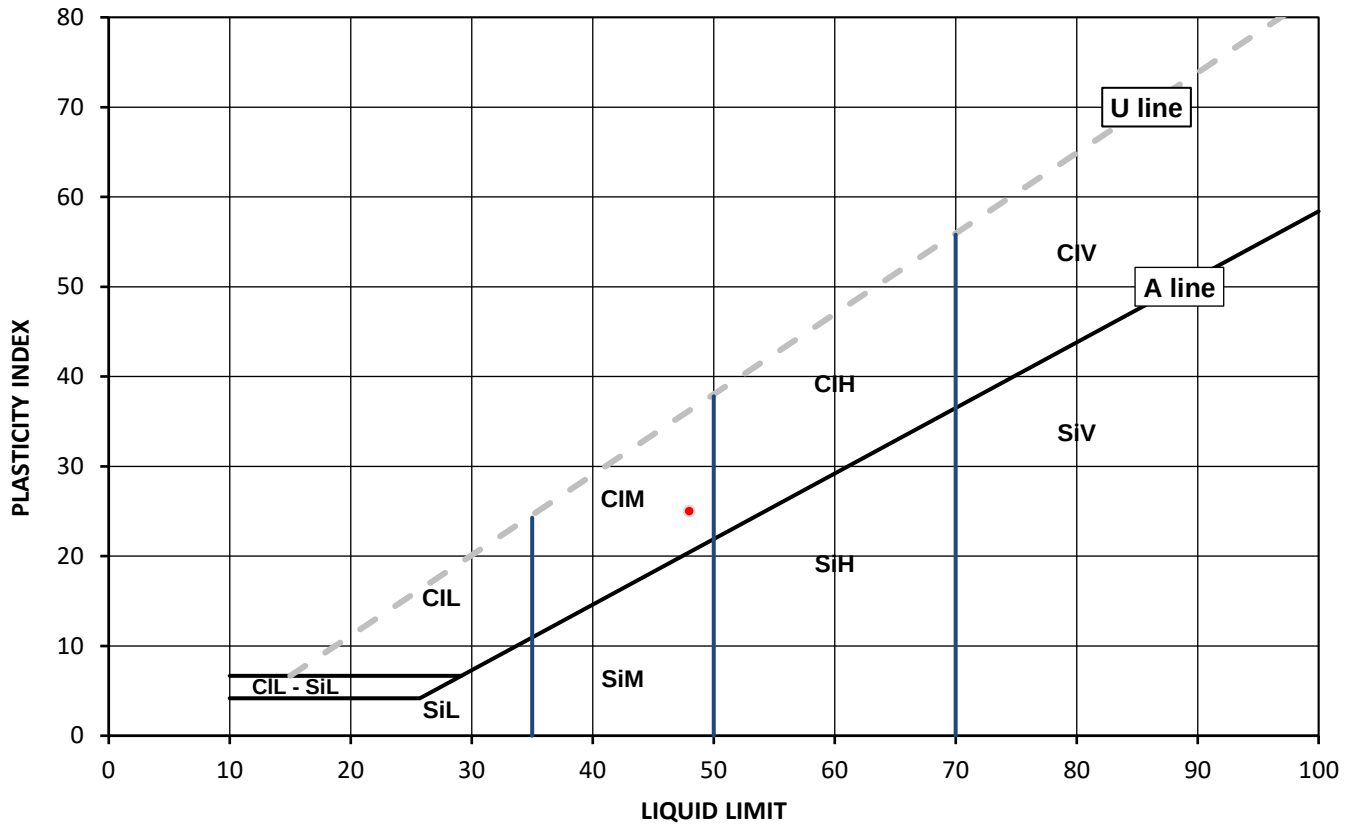
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539044	Depth Top [m]:	1.50
Hole No.:	WS7	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	48	23	25	83



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

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

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

Remarks:

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PL Deputy Head of Reporting Team
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Date Reported: 04/01/2023

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

4041

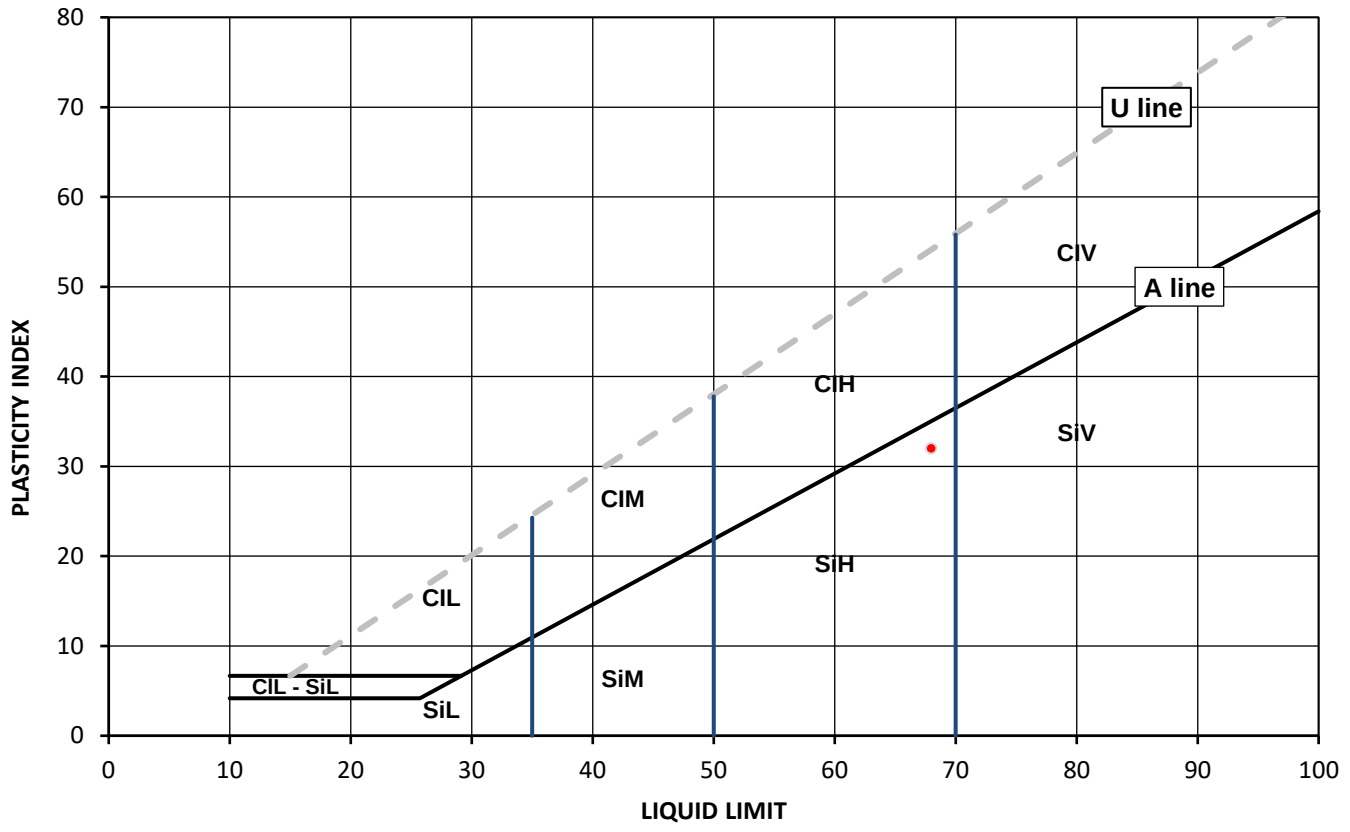
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539045	Depth Top [m]:	2.00
Hole No.:	WS7	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	D
Sample Description:	Orangish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
34	68	36	32	90



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

 Date Reported: 04/01/2023 **GF 236.12**

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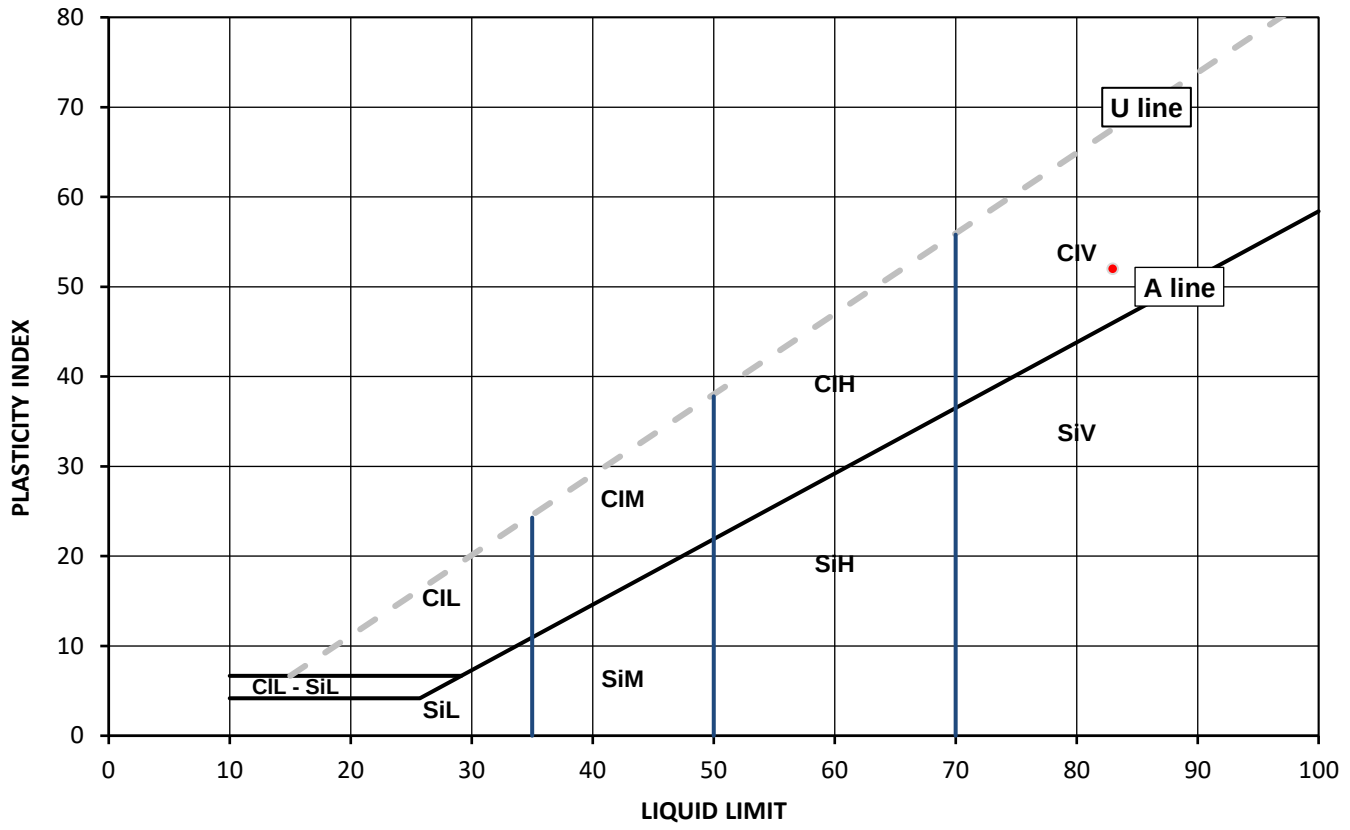
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	08/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539046	Depth Top [m]:	2.40
Hole No.:	WS7	Depth Base [m]:	Not Given
Sample Reference:	3	Sample Type:	D
Sample Description:	Orangish brown CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
36	83	31	52	100



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

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

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

Remarks:

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Anna Dudzinska
PL Deputy Head of Reporting Team
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Date Reported: 04/01/2023

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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Northampton NN4 7EB

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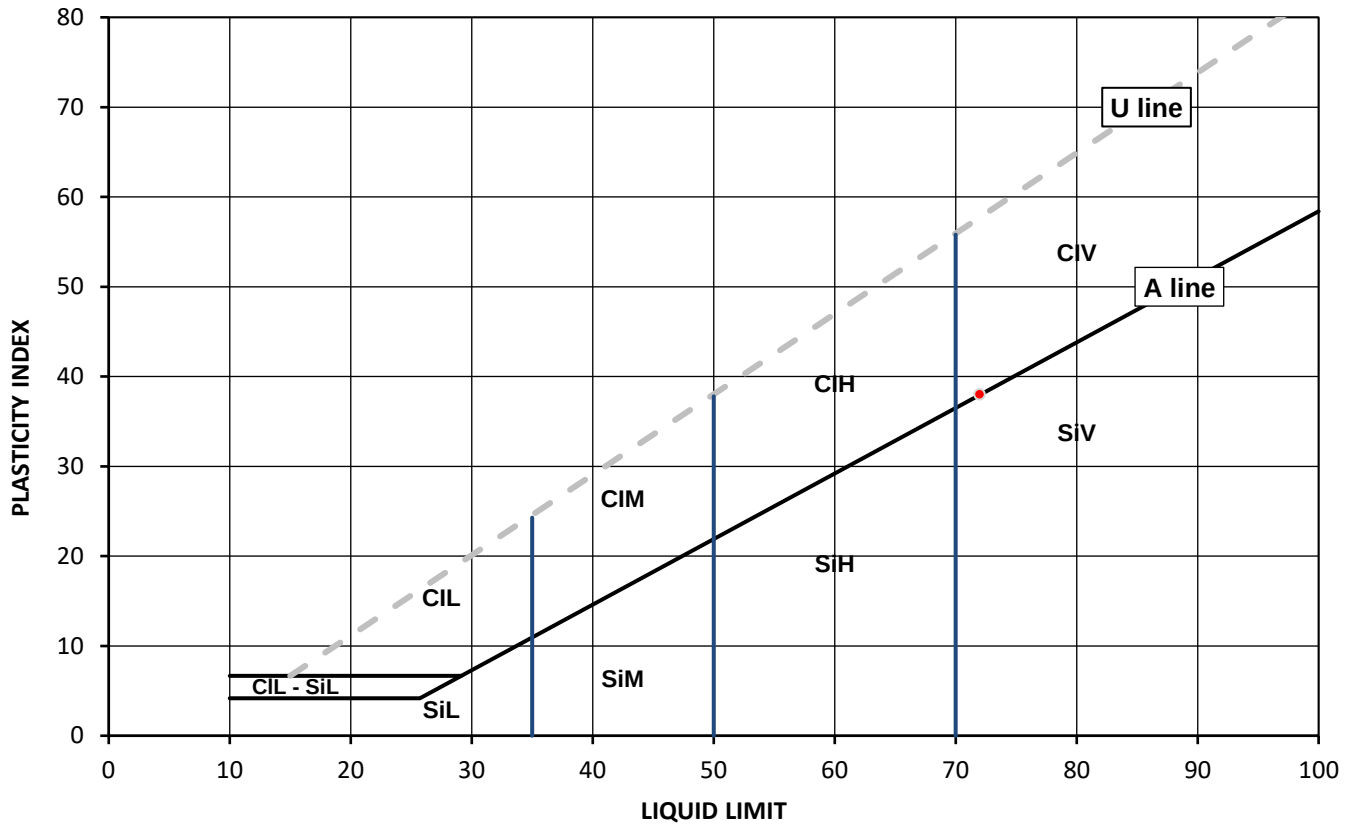
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539047	Depth Top [m]:	1.40
Hole No.:	WS4	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Orangish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
37	72	34	38	67



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

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

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

Remarks:

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Anna Dudzinska
PL Deputy Head of Reporting Team
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Date Reported: 04/01/2023

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TEST CERTIFICATE

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Northampton NN4 7EB

4041

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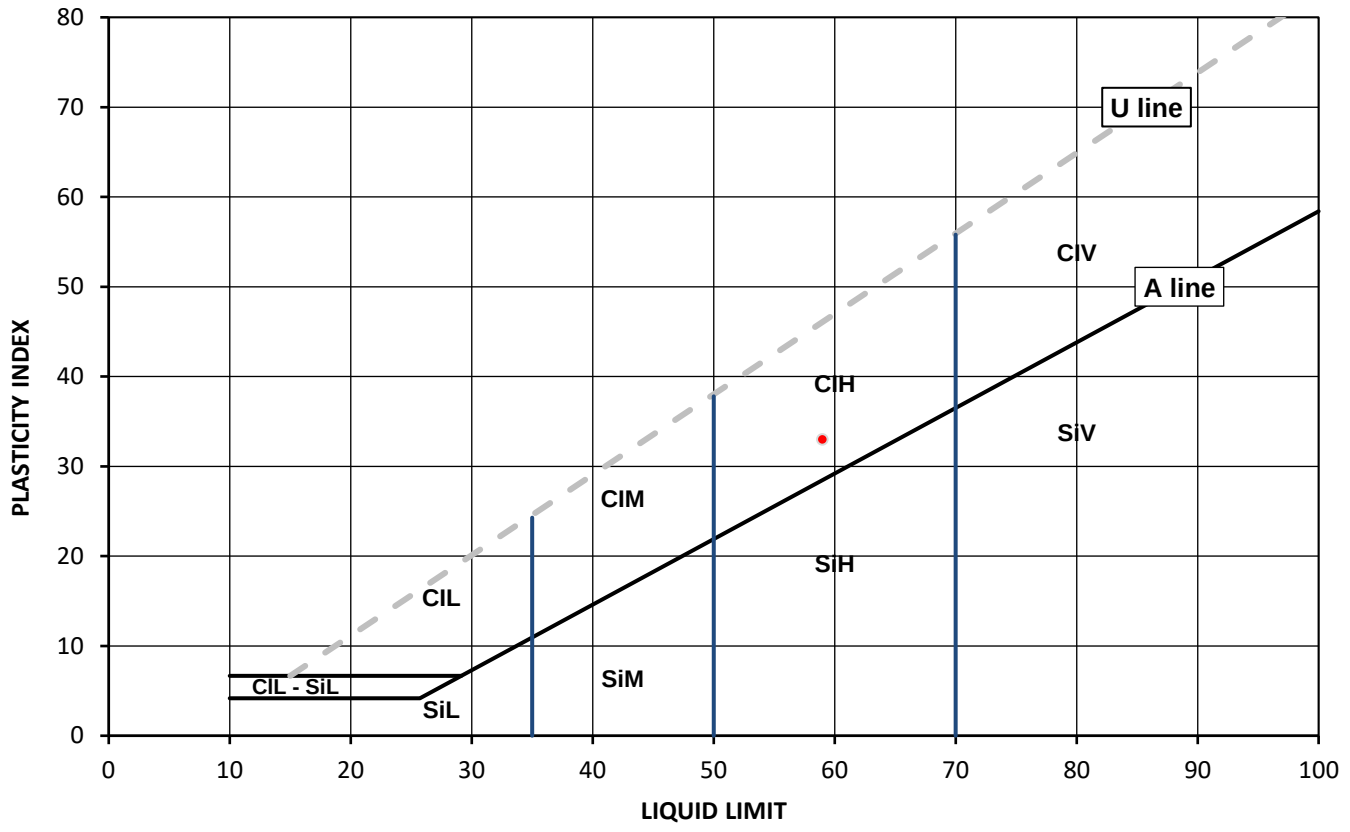
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539048	Depth Top [m]:	2.40
Hole No.:	WS4	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
23	59	26	33	64



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

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

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

Remarks:

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PL Deputy Head of Reporting Team
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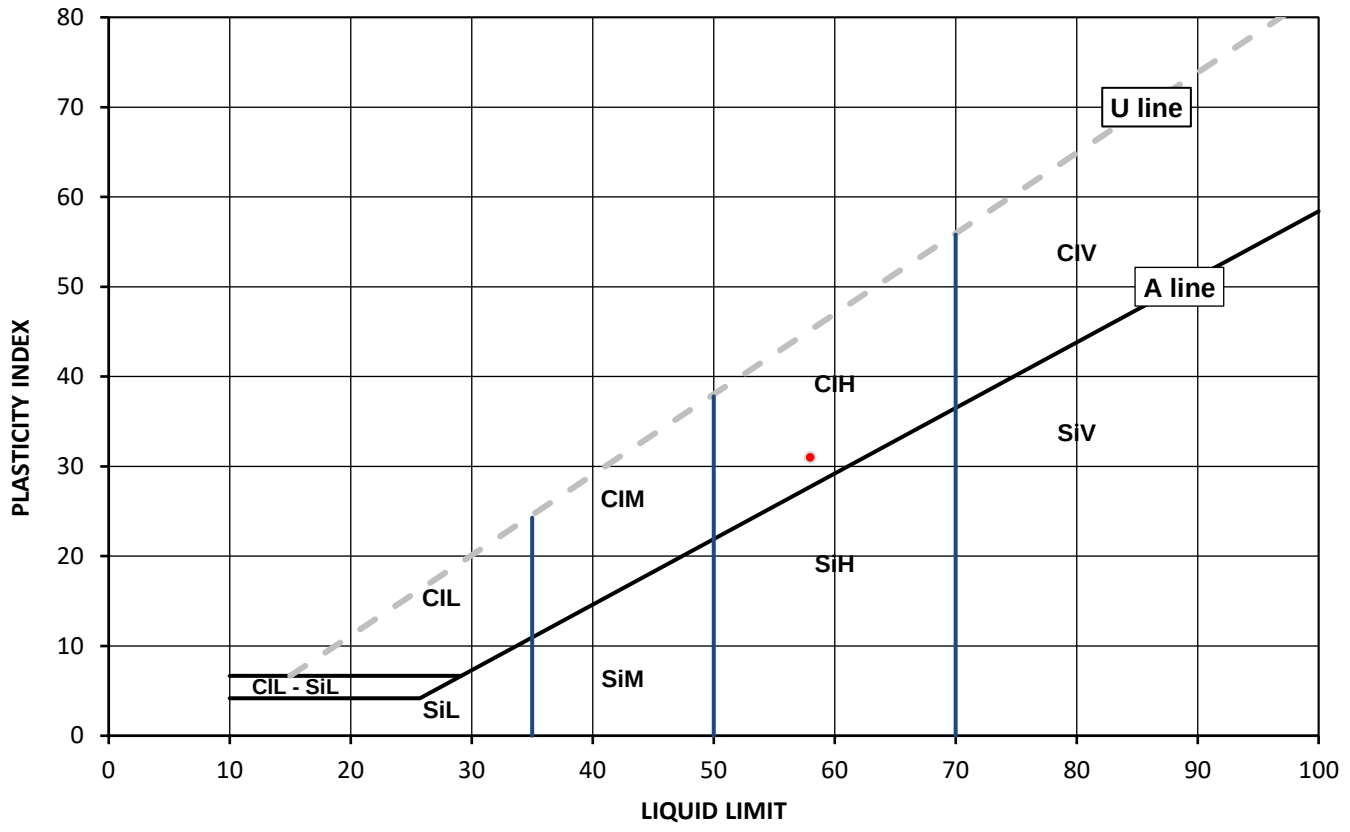
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539049	Depth Top [m]:	3.00
Hole No.:	WS4	Depth Base [m]:	Not Given
Sample Reference:	3	Sample Type:	D
Sample Description:	Orangish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
23	58	27	31	95



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

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

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

Remarks:

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Anna Dudzinska
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for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

UKAS TESTING
4041

Environmental Science

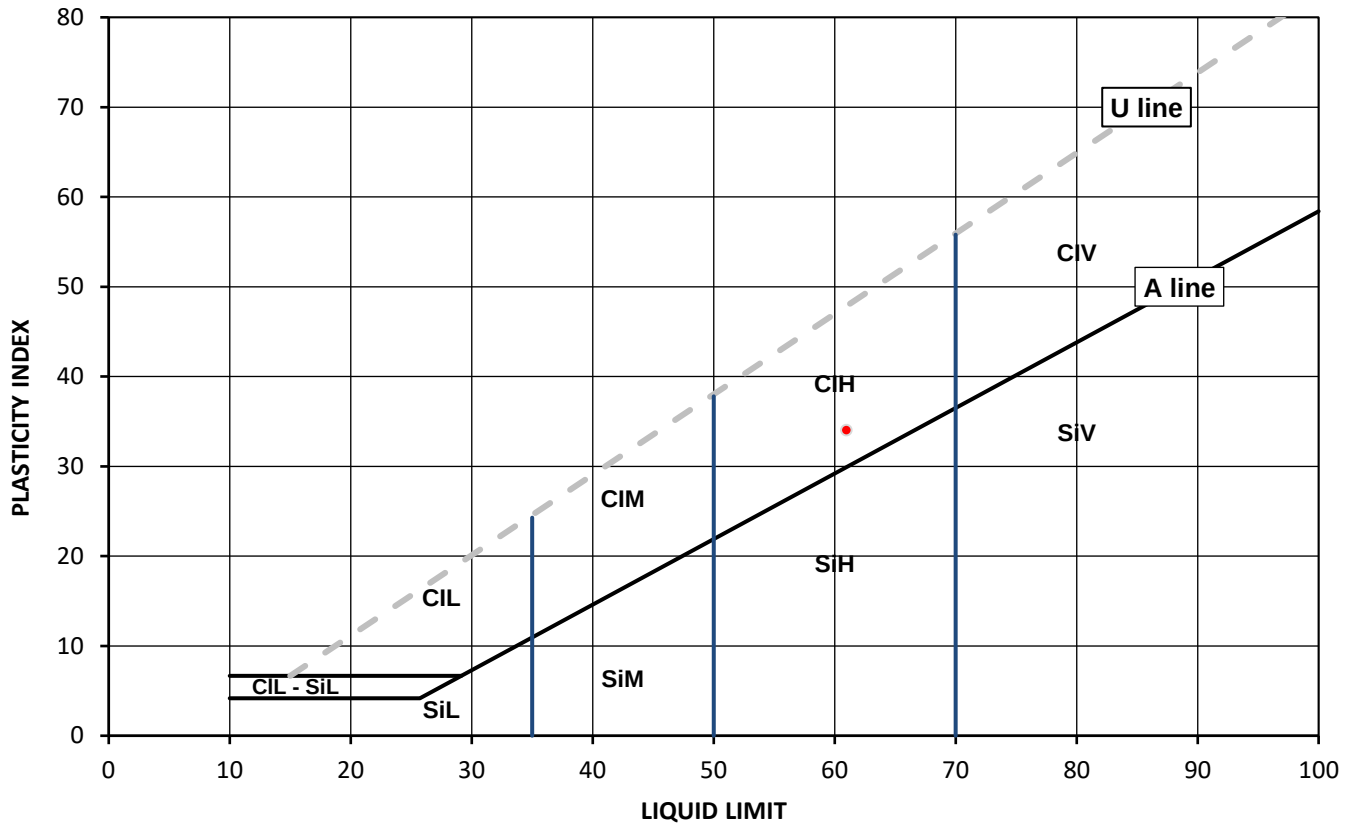
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539050	Depth Top [m]:	1.50
Hole No.:	WS11	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Orangish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
28	61	27	34	93



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

4041

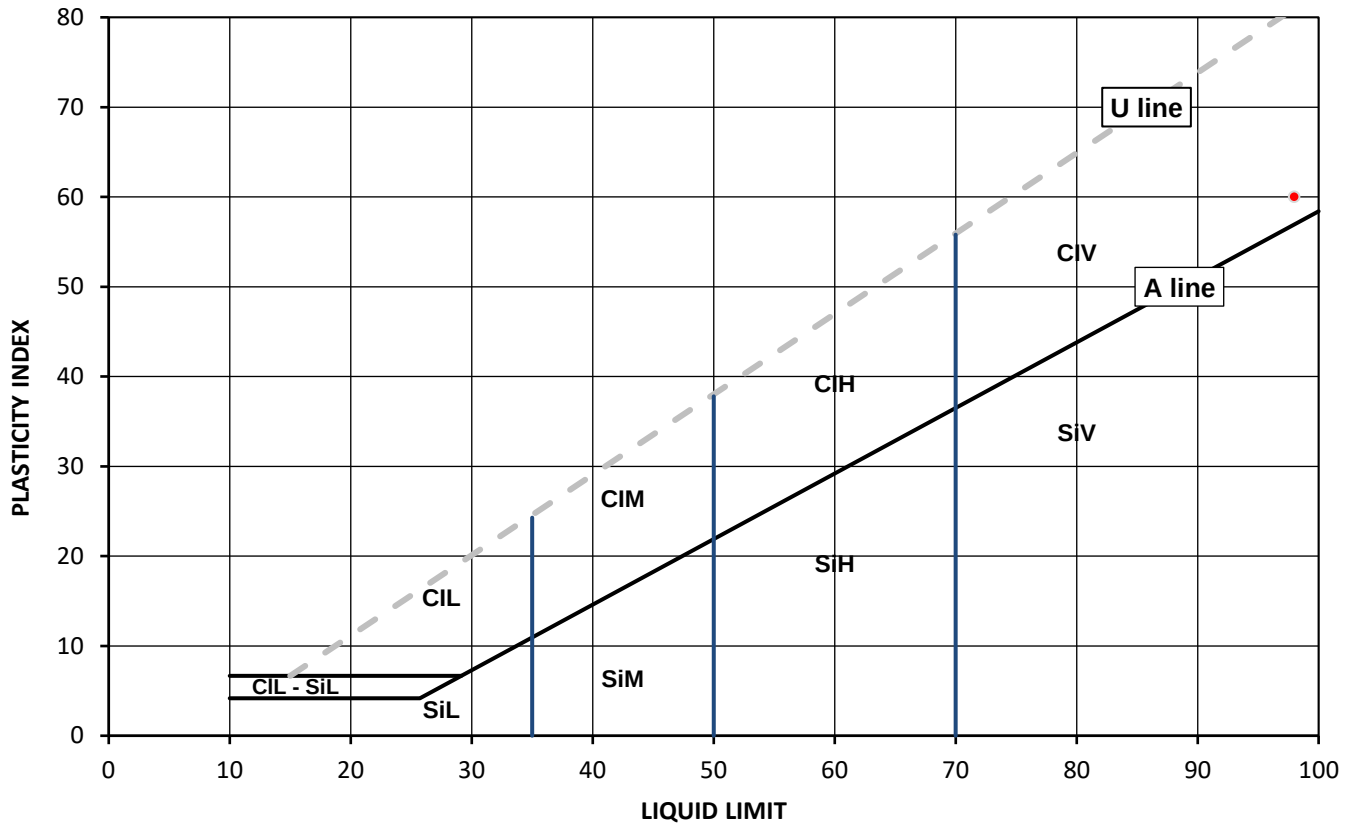
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539051	Depth Top [m]:	2.50
Hole No.:	WS11	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	D
Sample Description:	Yellowish brown CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
44	98	38	60	100



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

4041

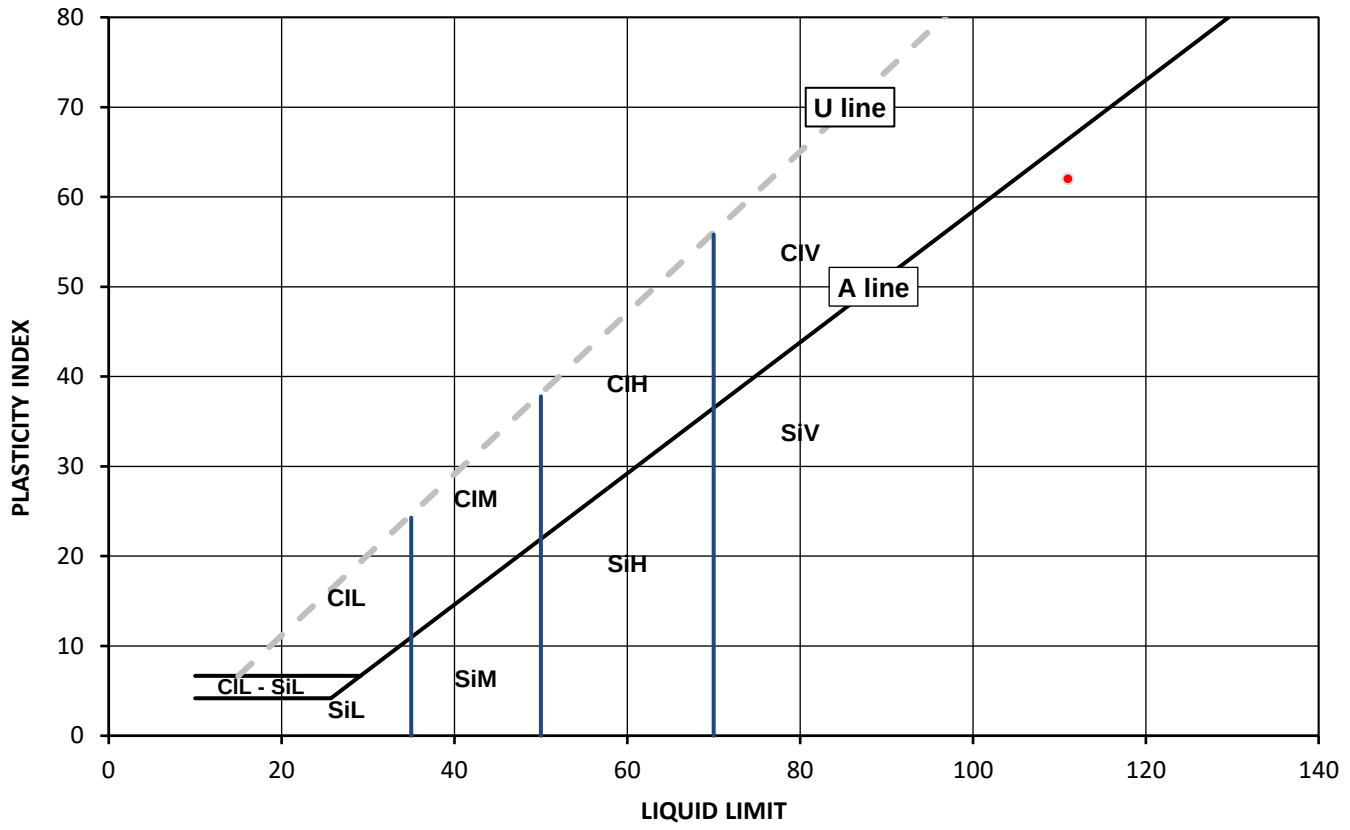
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539052	Depth Top [m]:	3.50
Hole No.:	WS11	Depth Base [m]:	Not Given
Sample Reference:	3	Sample Type:	D
Sample Description:	Orangish brown to dark brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
40	111	49	62	90



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

4041

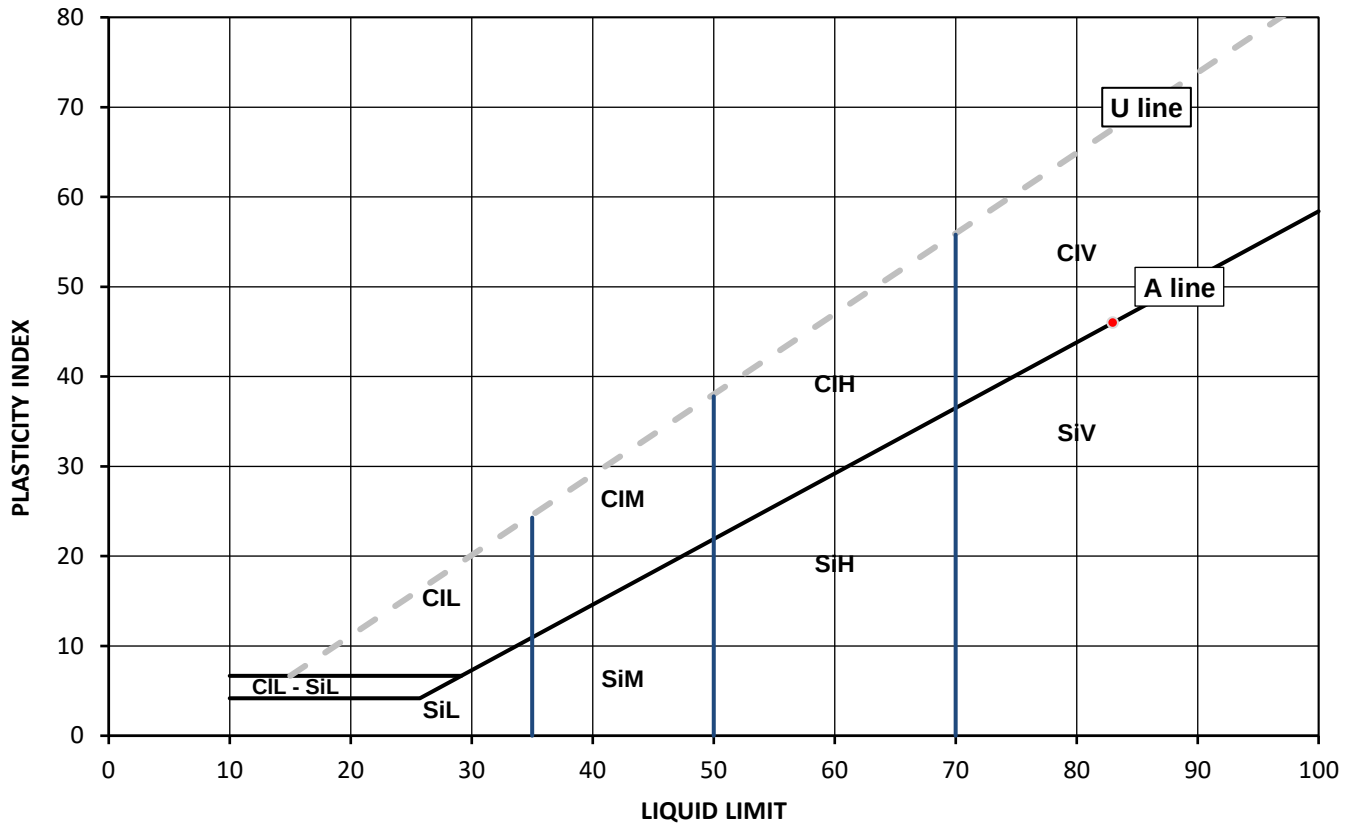
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	06/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539053	Depth Top [m]:	1.00
Hole No.:	TP5	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
42	83	37	46	94



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

 Date Reported: 04/01/2023 **GF 236.12**

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

UKAS TESTING
4041

Environmental Science

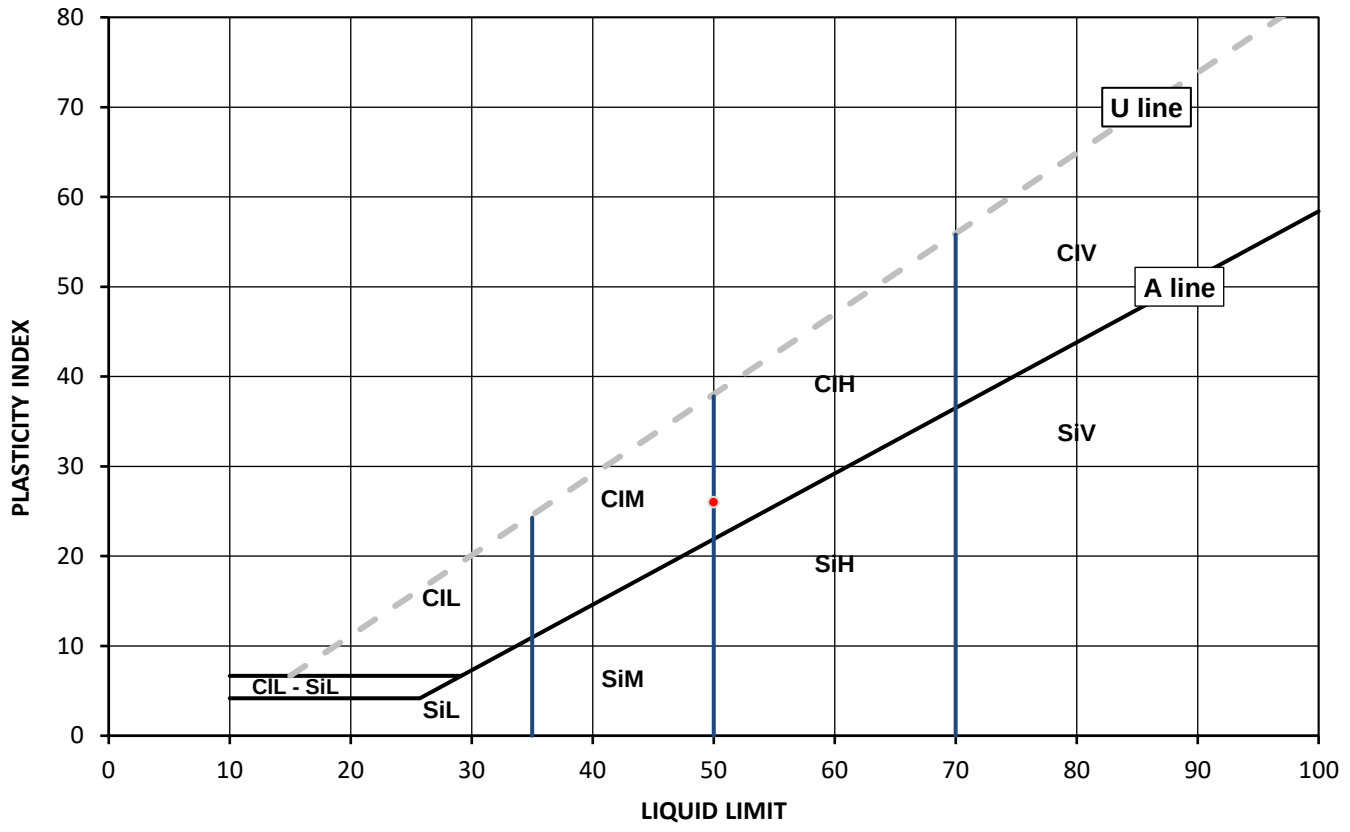
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	06/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539054	Depth Top [m]:	1.10
Hole No.:	TP9	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Orangish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	50	24	26	99



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.3 and 5

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

UKAS TESTING
4041

Environmental Science

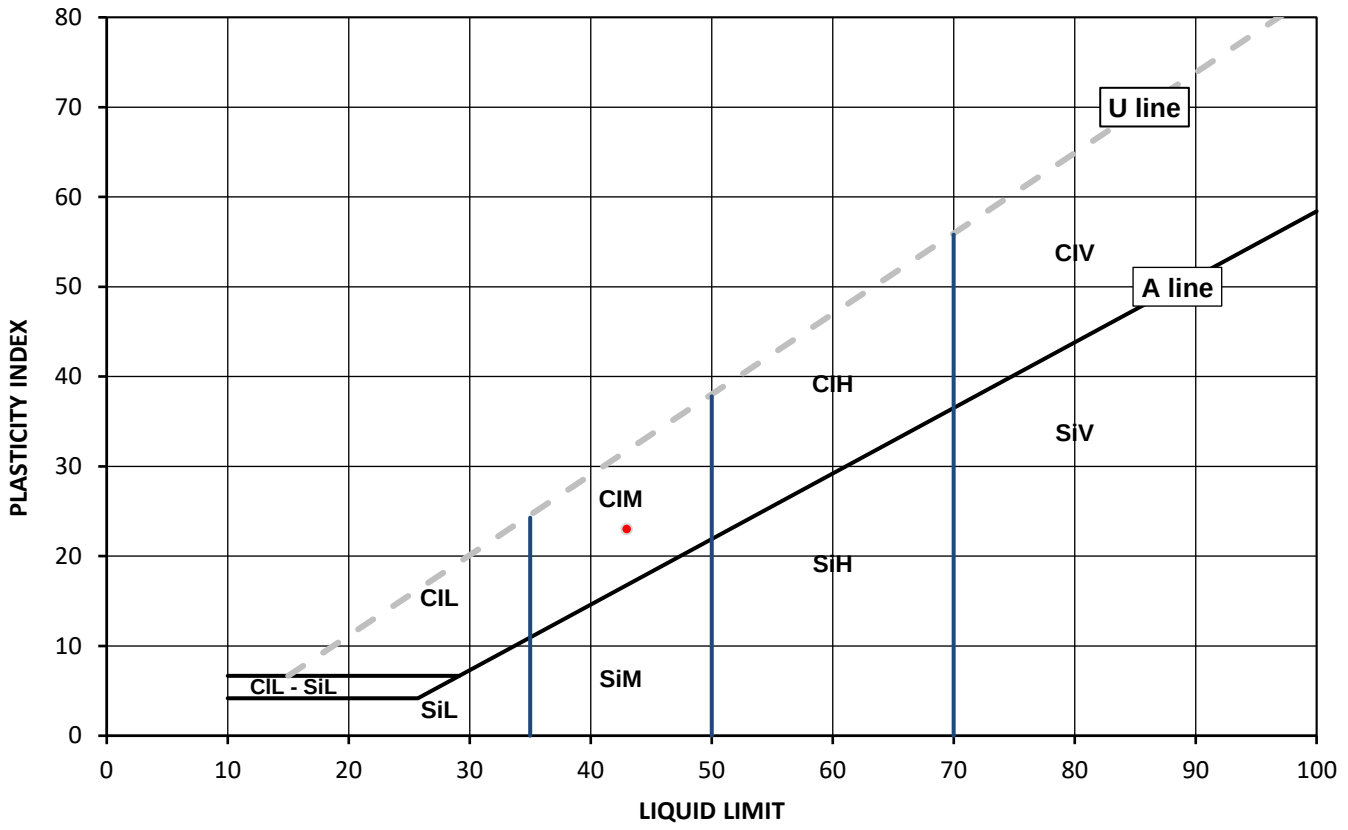
Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	07/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539055	Depth Top [m]:	2.30
Hole No.:	TP4	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	D
Sample Description:	Yellowish brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
23	43	20	23	98



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

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

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

Remarks:

Signed: Dudzińska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 236.12

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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

4041

Client: Card Geotechnics Ltd

Client Address: 4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW

Contact: Andrew Bond

Site Address: Kenley Campus

Water Content by BS 1377-2:1990: Clause 3.2; 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: CG 39415
Job Number: 22-14123
Date Sampled: 08/12 - 09/12/2022
Date Received: 08/12/2022
Date Tested: 28/12/2022
Sampled By: Client - ADB

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-2 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2539038	WS5	1	1.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19		75	36	17	19						
2539039	WS5	3	2.50	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	24		94	54	19	35						
2539040	WS5	5	3.70	Not Given	D	Yellowish brown slightly gravelly sandy CLAY	Atterberg 4 Point	22		99	37	19	18						
2539041	WS2	1	1.50	Not Given	D	Yellowish brown slightly sandy CLAY	Atterberg 4 Point	23		100	45	19	26						
2539042	WS2	2	2.00	Not Given	D	Yellowish brown sandy CLAY	Atterberg 4 Point	22		100	39	20	19						
2539043	WS2	3	2.50	Not Given	D	Yellowish brown sandy CLAY	Atterberg 4 Point	26		100	44	22	22						
2539044	WS7	1	1.50	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	20		83	48	23	25						
2539045	WS7	2	2.00	Not Given	D	Orangish brown slightly gravelly CLAY	Atterberg 4 Point	34		90	68	36	32						
2539046	WS7	3	2.40	Not Given	D	Orangish brown CLAY	Atterberg 4 Point	36		100	83	31	52						
2539047	WS4	1	1.40	Not Given	D	Orangish brown slightly gravelly CLAY	Atterberg 4 Point	37		67	72	34	38						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 238.14

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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

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

4041

Client: Card Geotechnics Ltd

Client Address: 4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW

Contact: Andrew Bond

Site Address: Kenley Campus

Client Reference: CG 39415
Job Number: 22-14123
Date Sampled: 06/12 - 09/12/2022
Date Received: 08/12/2022
Date Tested: 28/12/2022
Sampled By: Client - ADB

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-2 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2539048	WS4	2	2.40	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	23		64	59	26	33						
2539049	WS4	3	3.00	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	23		95	58	27	31						
2539050	WS11	1	1.50	Not Given	D	Orangish brown slightly gravelly CLAY	Atterberg 4 Point	28		93	61	27	34						
2539051	WS11	2	2.50	Not Given	D	Yellowish brown CLAY	Atterberg 4 Point	44		100	98	38	60						
2539052	WS11	3	3.50	Not Given	D	Orangish brown to dark brown slightly gravelly CLAY	Atterberg 4 Point	40		90	111	49	62						
2539053	TP5	1	1.00	Not Given	D	Yellowish brown slightly gravelly CLAY	Atterberg 4 Point	42		94	83	37	46						
2539054	TP9	1	1.10	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	26		99	50	24	26						
2539055	TP4	1	2.30	Not Given	D	Yellowish brown slightly gravelly sandy CLAY	Atterberg 4 Point	23		98	43	20	23						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 238.14

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

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

4041

Client: Card Geotechnics Ltd

Client Address: 4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW

Contact: Andrew Bond

Site Address: Kenley Campus

Client Reference: CG 39415
Job Number: 22-14123
Date Sampled: 08/12 - 09/12/2022
Date Received: 08/12/2022
Date Tested: 28/12/2022
Sampled By: Client - ADB

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2539038	WS5	1	1.50	Not Given	D	Brown slightly gravelly sandy CLAY		19	Sample was quartered, oven dried at 106.2 °C			
2539039	WS5	3	2.50	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY		24	Sample was quartered, oven dried at 106.2 °C			
2539040	WS5	5	3.70	Not Given	D	Yellowish brown slightly gravelly sandy CLAY		22	Sample was quartered, oven dried at 106.2 °C			
2539041	WS2	1	1.50	Not Given	D	Yellowish brown slightly sandy CLAY		23	Sample was quartered, oven dried at 106.2 °C			
2539042	WS2	2	2.00	Not Given	D	Yellowish brown sandy CLAY		22	Sample was quartered, oven dried at 106.2 °C			
2539043	WS2	3	2.50	Not Given	D	Yellowish brown sandy CLAY		26	Sample was quartered, oven dried at 106.2 °C			
2539044	WS7	1	1.50	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY		20	Sample was quartered, oven dried at 106.2 °C			
2539045	WS7	2	2.00	Not Given	D	Orangish brown slightly gravelly CLAY		34	Sample was quartered, oven dried at 106.2 °C			
2539046	WS7	3	2.40	Not Given	D	Orangish brown CLAY		36	Sample was quartered, oven dried at 106.2 °C			
2539047	WS4	1	1.40	Not Given	D	Orangish brown slightly gravelly CLAY		37	Sample was quartered, oven dried at 106.2 °C			

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 099.16

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

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

4041

Client: Card Geotechnics Ltd

Client Address: 4 Godalming Business Centre, Woolsack Way,
Godalming, Surrey,
GU7 1XW

Contact: Andrew Bond

Site Address: Kenley Campus

Client Reference: CG 39415
Job Number: 22-14123
Date Sampled: 06/12 - 09/12/2022
Date Received: 08/12/2022
Date Tested: 28/12/2022
Sampled By: Client - ADB

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2539048	WS4	2	2.40	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY		23	Sample was quartered, oven dried at 107.9 °C			
2539049	WS4	3	3.00	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY		23	Sample was quartered, oven dried at 106.2 °C			
2539050	WS11	1	1.50	Not Given	D	Orangish brown slightly gravelly CLAY		28	Sample was quartered, oven dried at 106.2 °C			
2539051	WS11	2	2.50	Not Given	D	Yellowish brown CLAY		44	Sample was quartered, oven dried at 107 °C			
2539052	WS11	3	3.50	Not Given	D	Orangish brown to dark brown slightly gravelly CLAY		40	Sample was quartered, oven dried at 106.2 °C			
2539053	TP5	1	1.00	Not Given	D	Yellowish brown slightly gravelly CLAY		42	Sample was quartered, oven dried at 106.8 °C			
2539054	TP9	1	1.10	Not Given	D	Orangish brown slightly gravelly slightly sandy CLAY		26	Sample was quartered, oven dried at 106.2 °C			
2539055	TP4	1	2.30	Not Given	D	Yellowish brown slightly gravelly sandy CLAY		23	Sample was quartered, oven dried at 106.2 °C			

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 099.16

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

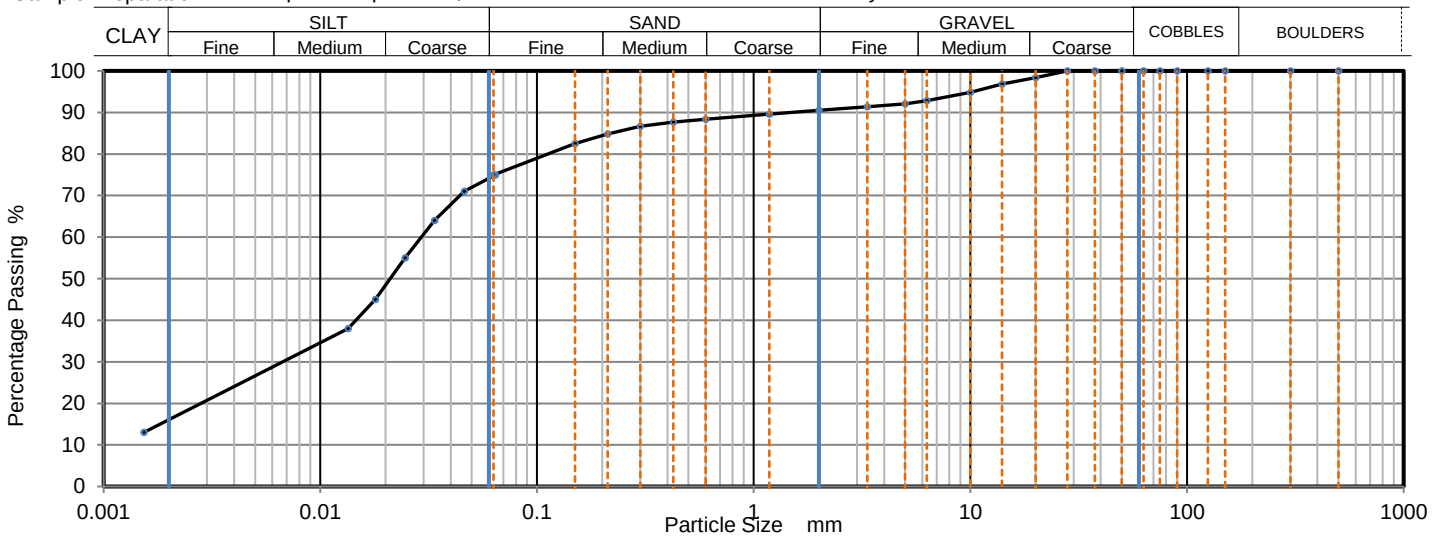
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	06/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539031	Depth Top [m]:	0.60
Hole No.:	TP6	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	B
Sample Description:	Yellowish brown silty CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0642	75
300	100	0.0461	71
150	100	0.0336	64
125	100	0.0246	55
90	100	0.0180	45
75	100	0.0134	38
63	100	0.0015	13
50	100		
37.5	100		
28	100		
20	98		
14	97		
10	95		
6.3	93		
5	92		
3.35	91	Particle density	(assumed)
2	91	2.65	Mg/m3
1.18	90		
0.6	88		
0.425	88		
0.3	87		
0.212	85		
0.15	83		
0.063	75		

Sample Proportions	% dry mass
Very coarse	0
Gravel	9
Sand	15
Silt	60
Clay	16

Grading Analysis		
D100	mm	28
D60	mm	0.0295
D30	mm	0.00684
D10	mm	
Uniformity Coefficient		> 19
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

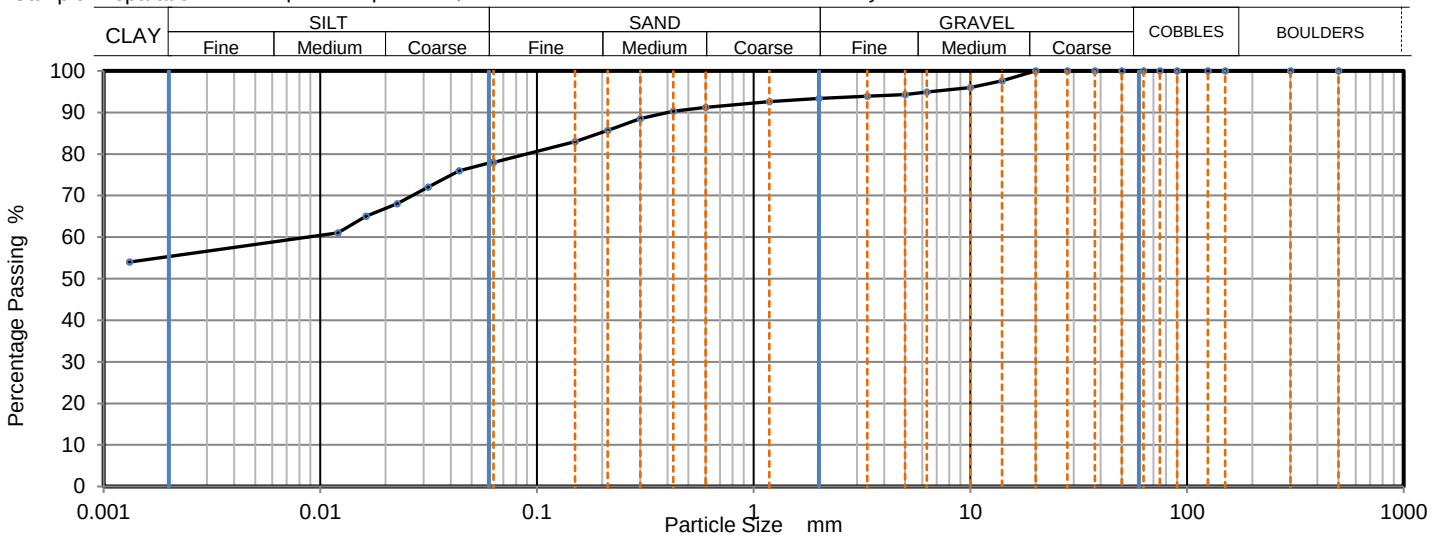
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	07/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539032	Depth Top [m]:	2.10
Hole No.:	TP3	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	B
Sample Description:	Orangish brown silty CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0614	78
300	100	0.0438	76
150	100	0.0315	72
125	100	0.0226	68
90	100	0.0162	65
75	100	0.0120	61
63	100	0.0013	54
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	95		
5	94		
3.35	94	Particle density	(assumed)
2	93	2.65	Mg/m3
1.18	93		
0.6	91		
0.425	90		
0.3	89		
0.212	86		
0.15	83		
0.063	78		

Sample Proportions	% dry mass
Very coarse	0
Gravel	7
Sand	16
Silt	22
Clay	55

Grading Analysis		
D100	mm	20
D60	mm	0.00921
D30	mm	
D10	mm	
Uniformity Coefficient		> 7
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

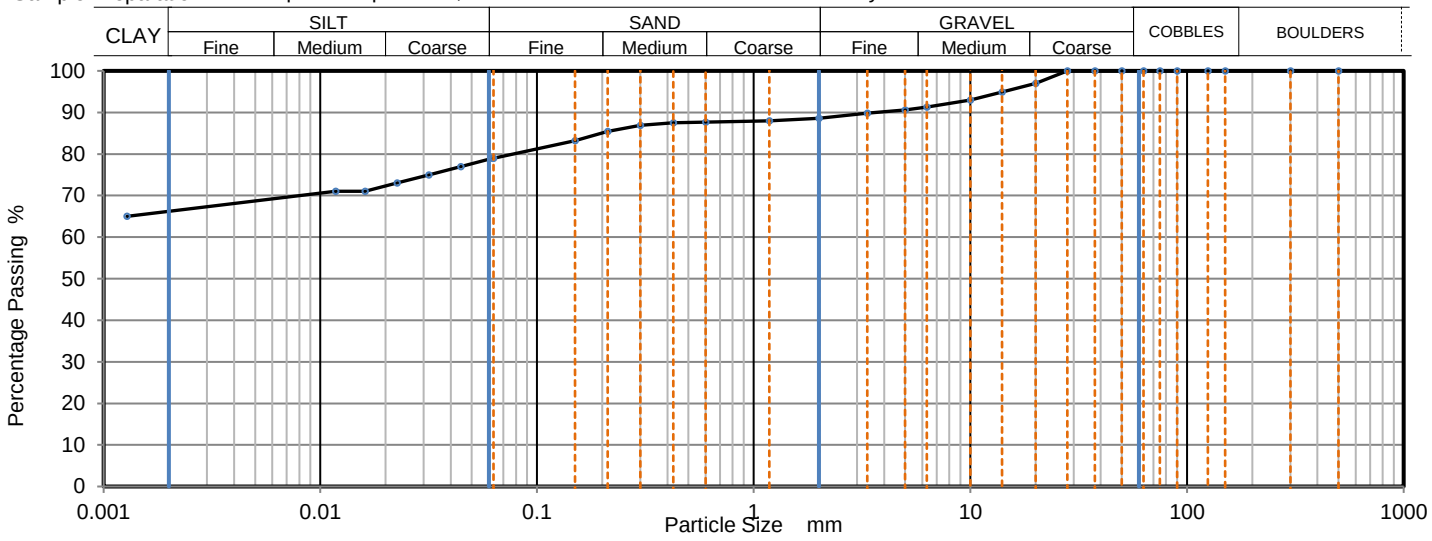
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	07/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539033	Depth Top [m]:	2.00
Hole No.:	TP11	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	B
Sample Description:	Yellowish brown CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0623	79
300	100	0.0444	77
150	100	0.0317	75
125	100	0.0226	73
90	100	0.0161	71
75	100	0.0117	71
63	100	0.0013	65
50	100		
37.5	100		
28	100		
20	97		
14	95		
10	93		
6.3	91		
5	91		
3.35	90	Particle density	(assumed)
2	89	2.65	Mg/m3
1.18	88		
0.6	88		
0.425	88		
0.3	87		
0.212	85		
0.15	83		
0.063	79		

Sample Proportions	% dry mass
Very coarse	0
Gravel	11
Sand	9
Silt	14
Clay	66

Grading Analysis		
D100	mm	28
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		N/A
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

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

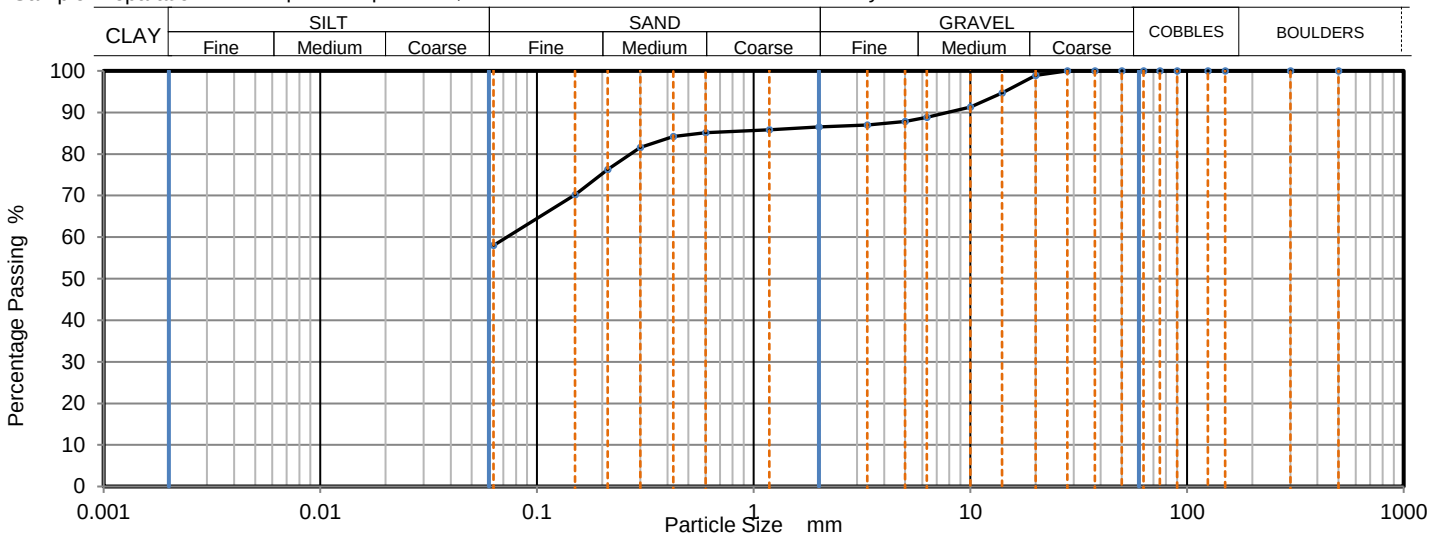
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	07/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539034	Depth Top [m]:	2.90
Hole No.:	TP2	Depth Base [m]:	Not Given
Sample Reference:	1	Sample Type:	B
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



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	100		
37.5	100		
28	100		
20	99		
14	95		
10	91		
6.3	89		
5	88		
3.35	87		
2	87		
1.18	86		
0.6	85		
0.425	84		
0.3	82		
0.212	76		
0.15	70		
0.063	58		

Sample Proportions	% dry mass
Very coarse	0
Gravel	13
Sand	28
Fines <0.063mm	58

Grading Analysis		
D100	mm	28
D60	mm	0.0709
D30	mm	
D10	mm	
Uniformity Coefficient		> 1.1
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

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

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

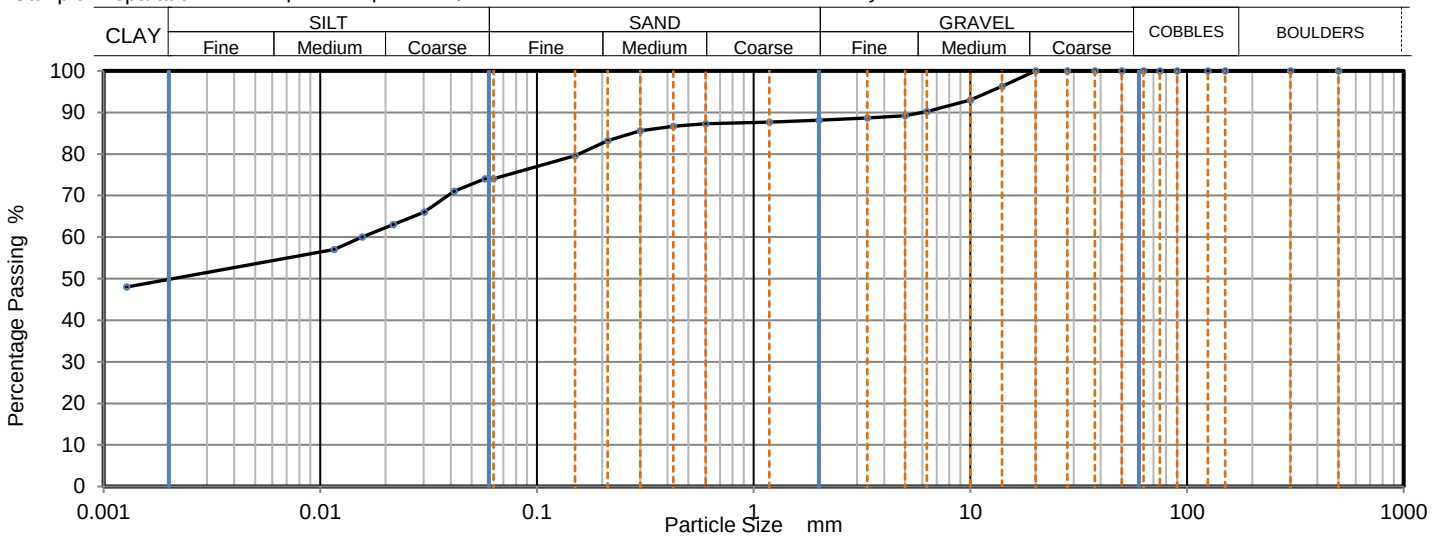
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	07/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539035	Depth Top [m]:	3.00
Hole No.:	TP1	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	B
Sample Description:	Yellowish brown CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0575	74
300	100	0.0415	71
150	100	0.0301	66
125	100	0.0217	63
90	100	0.0156	60
75	100	0.0116	57
63	100	0.0013	48
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	93		
6.3	90		
5	89		
3.35	89	Particle density	(assumed)
2	88	2.65	Mg/m3
1.18	88		
0.6	87		
0.425	87		
0.3	86		
0.212	83		
0.15	80		
0.063	74		

Sample Proportions	% dry mass
Very coarse	0
Gravel	12
Sand	14
Silt	24
Clay	50

Grading Analysis		
D100	mm	20
D60	mm	0.0152
D30	mm	
D10	mm	
Uniformity Coefficient		> 12
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

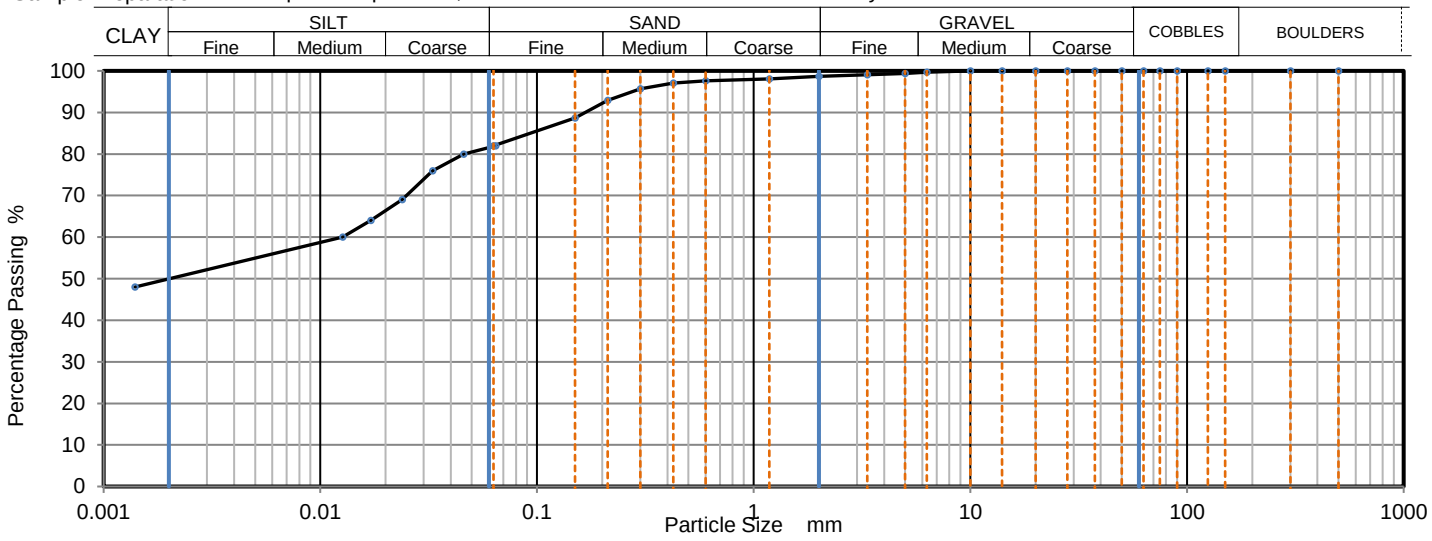
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	06/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539036	Depth Top [m]:	0.70
Hole No.:	TP8	Depth Base [m]:	Not Given
Sample Reference:	2	Sample Type:	B
Sample Description:	Orangish brown silty CLAY		
Sample Preparation:	Sample was quartered, oven dried at 107.9 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100	0.0644	82
300	100	0.0459	80
150	100	0.0330	76
125	100	0.0238	69
90	100	0.0171	64
75	100	0.0127	60
63	100	0.0014	48
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
3.35	99	Particle density	(assumed)
2	99	2.65	Mg/m3
1.18	98		
0.6	98		
0.425	97		
0.3	96		
0.212	93		
0.15	89		
0.063	82		

Sample Proportions	% dry mass
Very coarse	0
Gravel	1
Sand	16
Silt	33
Clay	50

Grading Analysis		
D100	mm	10
D60	mm	0.0131
D30	mm	
D10	mm	
Uniformity Coefficient		> 9.4
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clauses 9.2 and 9.5

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

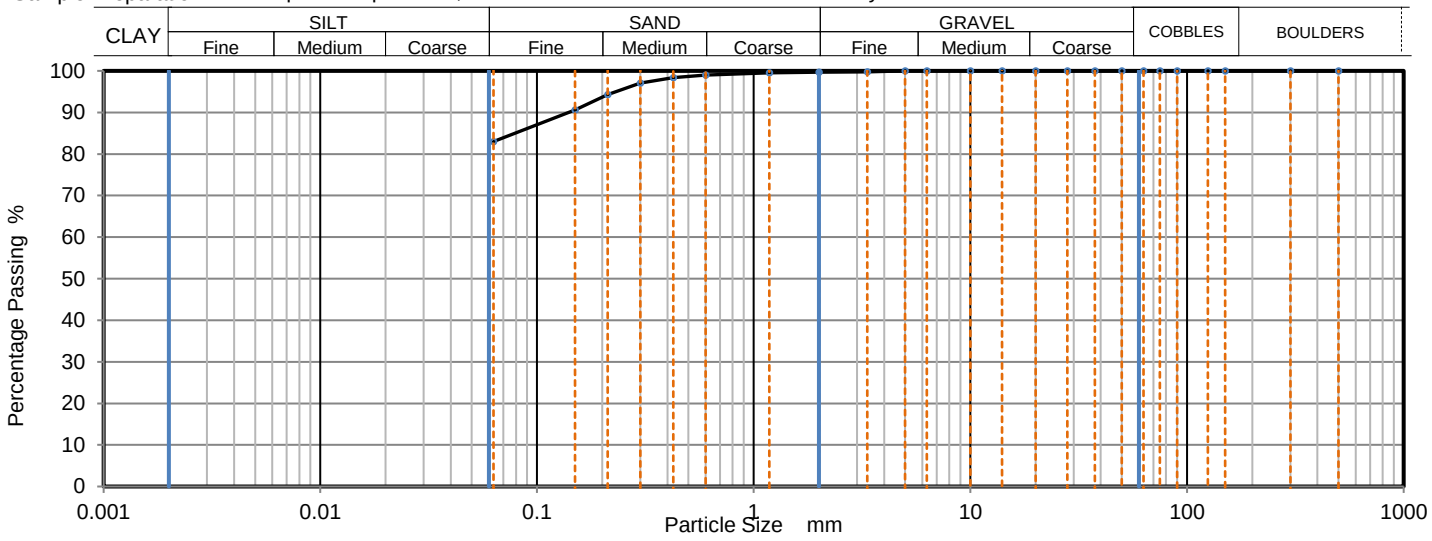
4041

Client:	Card Geotechnics Ltd	Client Reference:	CG 39415
Client Address:	4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW	Job Number:	22-14123
		Date Sampled:	09/12/2022
		Date Received:	08/12/2022
Contact:	Andrew Bond	Date Tested:	28/12/2022
Site Address:	Kenley Campus	Sampled By:	Client - ADB

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

Test Results:

Laboratory Reference:	2539037	Depth Top [m]:	2.70
Hole No.:	WS2	Depth Base [m]:	3.60
Sample Reference:	1	Sample Type:	B
Sample Description:	Yellowish brown CLAY		
Sample Preparation:	Sample was quartered, oven dried at 109.0 °C and broken down by hand.		



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	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	98		
0.3	97		
0.212	94		
0.15	91		
0.063	84		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	16
Fines <0.063mm	84

Grading Analysis		
D100	mm	6.3
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		N/A
Curvature Coefficient		

Uniformity Coefficient calculated in accordance with BS EN ISO 14688-2:2018

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

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 100.21

SUMMARY REPORT

METHOD FOR SATURATION MOISTURE CONTENT OF CHALK

Tested in Accordance with: BS 1377-2: 1990: Clause 3.3

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

4041

Client: Card Geotechnics Ltd

Client Address: 4 Godalming Business Centre, Woolsack Way, Godalming, Surrey, GU7 1XW

Contact: Andrew Bond

Site Address: Kenley Campus

Client Reference: CG 39415
Job Number: 22-14123
Date Sampled: 06/12 - 12/12/2022
Date Received: 08/12/2022
Date Tested: 28/12/2022
Sampled By: Client - ADB

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	SMC	Bulk density	Dry density	MC	Preparation
		Reference	Depth Top m	Depth Base m	Type			%	Mg/m3	Mg/m3	%	
2540493	BH101	Not Given	5.00	Not Given	B	White CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS1377:2 Clause 3.3.5.1	32	1.90	1.44	32	
2540492	BH101	Not Given	14.00	Not Given	B	White CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS1377:2 Clause 3.3.5.1	25	1.99	1.62	23	
2540491	BH101	Not Given	15.00	Not Given	B	White CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS1377:2 Clause 3.3.5.1	23	2.04	1.67	22	
2539030	TP12	2	3.50	Not Given	B	White mottled brown clayey CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS1377:2 Clause 3.3.5.1	25	2.01	1.62	24	
2539029	TP5	1	2.90	Not Given	B	White mottled brown clayey CHALK	Supplied lump of chalk fails to comply with volume requirements as per BS1377:2 Clause 3.3.5.1	27	1.97	1.56	26	

Note: SMC - Saturation Moisture Content; MC - Moisture Content

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 04/01/2023

GF 132.14

APPENDIX K

Contamination Assessments

ASSESSMENT CRITERIA

Table K1 below sets out CGL's rationale for generic assessment criteria (GAC) adoption in order to evaluate risks posed to potential receptors at The Barn Hotel, Ruislip from identified chemical contamination. Potential receptors have been identified with reference to the Part IIA regime and associated DEFRA guidance. As with the Part IIA regime, under the planning regime all receptors (humans, controlled waters, ecology, crops/livestock and buildings) have been considered if there is the potential for them to be adversely affected by exposure to contamination. The results of the assessment for The Barn Hotel, Ruislip are then presented in Tables K2 to K7 of this appendix.

Table K1. Rationale for Assessment Criteria Adoption

Source / Media	CGL's Approach & Rationale
Risks to Human Health (long-term chronic risks)	
Soil contaminants	• Laboratory test results have been compared against Generic Assessment Criteria (GACs) derived in-house by CGL using the Contaminated Land Exposure Assessment (CLEA) model and version 1.071 of the CLEA software. Where Soil Guideline Values (SGVs) have been published previously by the Environment Agency, the CGL GACs have updated these based on current exposure parameters (e.g. updated inhalation rates). • The GACs have been generated assuming a sandy loam soil type and a Soil Organic Material of 6% for the Made Ground (measured range 2.3 – 7.4%) and 2.5% for the natural soils (measured <1.7 – 4.6%). • In the event impacts are identified on a site above the GAC level for arsenic, cadmium, chromium VI, benzene or benzo(a)pyrene, the results have been compared to the applicable Category 4 Screening Level (C4SL) published by DEFRA to further assess risks. • The exception to the above relates to lead. The SGV for lead has been withdrawn and the C4SL for lead is used by CGL directly as a first tier of assessment. • The CGL GACs represent conservative screening criteria (set at acceptable or minimal risk) and have generally been calculated using the default parameters for the standard land use scenarios set out in the CLEA technical report and toxicological inputs in line with the requirements of Science Report SC050021/SR2 and, in the case of petroleum hydrocarbons, Science Report P5-080/TR3. • Where a CGL GAC has not been derived alternative assessment criteria will be sourced from current commercially-available sources (including international standards where no suitable UK assessment criteria exists). • Concentrations of cyanide above the laboratory reporting limit are assessed against a Soil Screening Value (SSV) developed by Atkins. Atkins have based this assessment criteria on acute exposure to a 0 to 6 year old child. • Where the dataset is of appropriate size, assessment against the applicable GAC or C4SL is carried out at the 95th percentile of the sample mean (designated US_{95}), which is considered to represent a reasonable worst-case scenario. An assessment of the normality of the data has been undertaken. Where datasets are normally distributed the one sample t-test has been applied to calculate the US_{95}. In the case of non-parametric datasets, the Chebychev Theorem has been applied. The Grubbs Test has also been used to identify potential outliers within datasets. • It is noted that the British Geological Survey has published background levels for a number of organic and inorganic constituents. In the event that the C4SL or a GAC is found to be exceeded, the risk may still be considered to be low, unlikely to meet the definition of contaminated land under Part IIA and potentially suitable for use from a development perspective, if the contaminant concentrations are below local background levels, assuming no other contributing factors. • At this time an authoritative GAC is not available for asbestos fibres in soil. A positive identification of asbestos fibres in a soil sample by the laboratory is considered sufficient to warrant additional assessment of risks. Laboratory identification and quantification by microscopy may be required subject to source of material.
Dissolved contaminants	• Concentrations of organic constituents detected above the laboratory reporting limit in shallow groundwater or perched water have been assessed against groundwater vapour generic assessment criteria (GAC_{gwvap}) developed by the Society of Brownfield Remediation Risk Assessment (SoBRA). These assess chronic risks to human health via the indoor and outdoor air inhalation pathway only. The values assume a sand soil type, a soil organic matter of 1% and a depth below ground level of 650mm.

Source / Media	CGL's Approach & Rationale
Ground gas	• Concentrations and flow rates of carbon dioxide and methane in ground gas are converted to Gas Screening Values (GSVs) in accordance with CIRIA (2007). Potential risks associated with gas chemistry are evaluated in accordance with guidance presented in CIRIA (2007), NHBC (2007), BSI (2007).
Radon	• Risks from the radon content of soil gas are evaluated in accordance with BRE (2011).
Risks to Controlled Waters	
Soil contaminants	• Results from any eluted liquids have been directly compared to Environmental Quality Standards (EQS) and Drinking Water Values (DWV) as an initial screen of water quality. These are considered to be conservative screening criteria.
Dissolved contaminants	• Results have been directly compared to Environmental Quality Standards (EQS) and Drinking Water Values (DWV) as an initial screen of water quality. These are considered to be conservative screening criteria.
Risks to Buildings & Structures	
Water supply pipes	• The evaluation of water supply pipe requirements at the site has been undertaken in general accordance with guidance and criteria produced by the UK Water Industry (2011).
Sulfate & pH conditions	• The evaluation of risks to buried concrete has followed the guidance and criteria produced by BRE (2005).
Risks to Vegetation & Plants	
Soil contaminants	• Risks to plant growth (i.e. phytotoxicity) have been assessed for specific contaminants where the limits for phytotoxic effect proposed (e.g. by BS 3882) are significantly lower than the health GAC.

Table 2. Potential soil risks to human health from Made Ground							
Land Use Category:	**Residential with Home Grown Produce**			**SOM:**	6.00%		
Stratum:	**Made Ground**			**No. Samples**	11		
Determinand	**GAC** mg/kg	**Min recorded (mg/kg)**	**Max recorded (mg/kg)**	**No. Samples tested for determinand**	**No. Samples exceeding GAC**	**US_{95} (mg/kg)**	**US_{95} > GAC**
Arsenic (aqua regia extractable)	28	8.3	15	11	0	15.00	OK
Beryllium (aqua regia extractable)	1.72	0.59	5.3	11	2	5.15	EXCEED
Boron (Water Soluble)	290	0.3	3.7	11	0	3.15	OK
Cadmium (aqua regia extractable)	11	<0.2	2.3	11	0	2.15	OK
Chromium (III)	886	19	55	11	0	53.00	OK
Chromium (hexavalent)	2.93	<0.2	<1.2	11	0	<1.2	OK
Copper (aqua regia extractable)	4220	14	72	11	0	63.00	OK
Lead (aqua regia extractable)	200	15	190	11	0	155.00	OK
Mercury (aqua regia extractable)	43.3	<0.3	1.6	11	0	1.35	OK
Nickel (aqua regia extractable)	182	5.6	36	11	0	29.00	OK
Selenium (aqua regia extractable)	350	<1	5.1	11	0	2.05	OK
Vanadium (aqua regia extractable)	320	38	120	11	0	93.50	OK
Zinc (aqua regia extractable)	4590	25	240	11	0	220.00	OK
Benzene	0.384	<0.005	<0.005	11	0	<0.01	OK
Toluene	670	<0.005	<0.005	11	0	<0.01	OK
Ethylbenzene	422	<0.005	<0.005	11	0	<0.01	OK
o-Xylene	352	<0.005	<0.005	11	0	<0.01	OK
Total Phenols (monohydric)	1010	<1	1.4	11	0	1.35	OK
Total Cyanide	34	<1	1.4	11	0	0.20	OK
TPH-CWG - Aliphatic >EC5 - EC6	128	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aliphatic >EC6 - EC8	395	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aliphatic >EC8 - EC10	105	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aliphatic >EC10 - EC12	542	<1	<1	11	0	<1	OK
TPH-CWG - Aliphatic >EC12 - EC16	3310	<2	18	11	0	16.00	OK
TPH-CWG - Aliphatic >EC16 - EC21	128000	<8	68	11	0	46.50	OK
TPH-CWG - Aliphatic >EC21 - EC35	128000	<8	410	11	0	224.00	OK
TPH-CWG - Aromatic >EC5 - EC7	0.229	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aromatic >EC7 - EC8	670	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aromatic >EC8 - EC10	143	<0.001	<0.001	11	0	0.00	OK
TPH-CWG - Aromatic >EC10 - EC12	360	<1	11	11	0	8.95	OK
TPH-CWG - Aromatic >EC12 - EC16	647	<2	330	11	0	260.00	OK
TPH-CWG - Aromatic >EC16 - EC21	992	<10	2600	11	2	2100.00	EXCEED
TPH-CWG - Aromatic >EC21 - EC35	1710	<10	3600	11	2	3200.00	EXCEED
Naphthalene	13.1	0.16	5.1	11	0	4.60	OK
Acenaphthylene	902	<0.05	15	11	0	14.50	OK
Acenaphthene	1080	<0.05	51	11	0	35.50	OK
Fluorene	846	<0.05	55	11	0	42.00	OK
Phenanthrene	439	0.06	710	11	1	470.00	EXCEED
Anthracene	10600	<0.05	220	11	0	147.50	OK
Fluoranthene	892	0.13	910	11	1	670.00	OK
Pyrene	2030	0.12	750	11	0	555.00	OK
Benzo(a)anthracene	13.6	0.08	410	11	3	320.00	EXCEED
Chrysene	26.9	0.08	380	11	2	275.00	EXCEED
Benzo(b)fluoranthene	3.7	0.09	430	11	3	320.00	EXCEED
Benzo(k)fluoranthene	101	<0.05	150	11	1	121.00	EXCEED
Benzo(a)pyrene	2.99	0.05	380	11	3	275.00	EXCEED
Indeno(1,2,3-cd)pyrene	41.3	0.05	200	11	2	138.50	EXCEED
Di-benzo(a,h)anthracene	0.317	<0.05	49	11	3	35.00	EXCEED
Benzo(ghi)perylene	349	0.06	210	11	0	145.00	OK
Asbestos in Soil	DETECTED			10	1	0.55	
pH		7.1	10.7	11		10.10	
GAC relates to phenol (C_6H_5OH) only.							
Cyanide GAC based on acute exposure of 0<6 year old child (Atkins value).							

Table 3. Potential soil risks to human health from natural soils							
Land Use Category:	**Residential With Home Grown Produce**			**SOM:**	1.00%		
Stratum:	**Natural Soils**			**No. Samples**	7		
Determinand	**GAC** mg/kg	**Min recorded (mg/kg)**	**Max recorded (mg/kg)**	**No. Samples tested for determinand**	**No. Samples exceeding GAC**	**US_{95} (mg/kg)**	**US_{95} > GAC**
Arsenic (aqua regia extractable)	28	14	29	7	1	27.50	OK
Beryllium (aqua regia extractable)	1.72	0.58	1.3	7	0	1.27	OK
Boron (Water Soluble)	290	0.2	1.1	7	0	1.10	OK
Cadmium (aqua regia extractable)	11	<0.2	0.5	7	0	0.29	OK
Chromium (III)	886	28	87	7	0	81.30	OK
Chromium (hexavalent)	2.93	<1.2	<1.2	7	0	<1.2	OK
Copper (aqua regia extractable)	4220	10	58	7	0	48.70	OK
Lead (aqua regia extractable)	200	16	68	7	0	64.70	OK
Mercury (aqua regia extractable)	43.3	<0.3	<0.3	7	0	<0.3	OK
Nickel (aqua regia extractable)	182	8.7	27	7	0	26.10	OK
Selenium (aqua regia extractable)	350	<1	<1	7	0	<1	OK
Vanadium (aqua regia extractable)	320	48	130	7	0	127.00	OK
Zinc (aqua regia extractable)	4590	23	93	7	0	87.60	OK
Benzene	0.09	<0.005	<0.005	7	0	<0.01	OK
Toluene	129	<0.005	<0.005	7	0	<0.01	OK
Ethylbenzene	77	<0.005	<0.005	7	0	<0.01	OK
o-Xylene	64.3	<0.005	<0.005	7	0	<0.01	OK
Total Phenols (monohydric)	257	<1	<1	7	0	<1	OK
Total Cyanide	34	<1	<1	7	0	<1	OK
TPH-CWG - Aliphatic >EC5 - EC6	39.6	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aliphatic >EC6 - EC8	84.9	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aliphatic >EC8 - EC10	18.7	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aliphatic >EC10 - EC12	93.2	<1	<1	7	0	<1	OK
TPH-CWG - Aliphatic >EC12 - EC16	795	<2	<2	7	0	<2	OK
TPH-CWG - Aliphatic >EC16 - EC21	128000	<8	<8	7	0	<8	OK
TPH-CWG - Aliphatic >EC21 - EC35	128000	<8	<8	7	0	<8	OK
TPH-CWG - Aromatic >EC5 - EC7	0.0528	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aromatic >EC7 - EC8	129	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aromatic >EC8 - EC10	25.1	<0.001	<0.001	7	0	0.00	OK
TPH-CWG - Aromatic >EC10 - EC12	68.3	<1	1.4	7	0	0.68	OK
TPH-CWG - Aromatic >EC12 - EC16	137	<2	5.5	7	0	5.23	OK
TPH-CWG - Aromatic >EC16 - EC21	291	<10	24	7	0	13.80	OK
TPH-CWG - Aromatic >EC21 - EC35	1120	<10	41	7	0	32.60	OK
Naphthalene	2.32	0.14	0.8	7	0	0.69	OK
Acenaphthylene	169	<0.05	0.31	7	0	0.27	OK
Acenaphthene	206	<0.05	0.87	7	0	0.64	OK
Fluorene	165	<0.05	1	7	0	0.75	OK
Phenanthrene	95.8	<0.05	7.4	7	0	5.51	OK
Anthracene	2330	<0.05	1.8	7	0	1.31	OK
Fluoranthene	283	<0.05	11	7	0	8.54	OK
Pyrene	616	<0.05	9.9	7	0	7.68	OK
Benzo(a)anthracene	7.79	<0.05	5.6	7	0	4.31	OK
Chrysene	14.9	<0.05	5.3	7	0	4.10	OK
Benzo(b)fluoranthene	2.6	<0.05	5.8	7	1	4.63	EXCEED
Benzo(k)fluoranthene	77.4	<0.05	2.2	7	0	1.67	OK
Benzo(a)pyrene	2.23	<0.05	4.7	7	1	3.65	EXCEED
Indeno(1,2,3-cd)pyrene	27.4	<0.05	2.4	7	0	1.90	OK
Di-benzo(a,h)anthracene	0.254	<0.05	0.66	7	1	0.51	EXCEED
Benzo(ghi)perylene	316	<0.05	2.5	7	0	2.02	OK
Asbestos in Soil	NOT DETECTED	0	0	2	0	0.00	
pH		6	8.3	7		8.30	
GAC relates to phenol (C_6H_5OH) only.							
Cyanide GAC based on acute exposure of 0<6 year old child (Atkins value).							

Table 4. Data assessment summary – potential groundwater vapour risk to human health (Residential land use)

Contaminant	Residential GAC_{gwvap} (µg/l)	Measured range (µg/l)	No. of samples exceeding assessment criteria
Benzene	210	<1.0	0
Toluene	230,000	<1.0	0
Ethylbenzene	10,000	<1.0	0
Total Xylene	9,500	<1.0	0
Methyl tertiary butyl ether (MTBE)	83,000	<1.0	0
TPH aromatic >EC5 to EC7[1]	210,000	<1.0	0
TPH aromatic >EC7 to EC8	220,000	<1.0	0
TPH aromatic >EC8 to EC10	1,900	<1.0	0
TPH aromatic >EC10 to EC12	6,800	<10 to 35	0
TPH aromatic >EC12 to EC16	39,000	<10 to 200	0
TPH aliphatic EC5 to EC6	1,900	<1.0	0
TPH aliphatic >EC6 to EC8	1,500	<1.0	0
TPH aliphatic >EC8 to EC10	57	<1.0	0
TPH aliphatic >EC10 to EC12	37	<10	0
Acenaphthene	170,000 Error! Bookmark not defined.	<0.01	0
Acenaphthylene	220,000 Error! Bookmark not defined.	<0.01	0
Fluorene	210,000 Error! Bookmark not defined.	<0.01	0
Naphthalene	220	<0.01	0
Isopropylbenzene	850	-	-
Propylbenzene	2,700	-	-
Styrene	8,800	-	-
1,2,4-trimethylbenzene	24	-	-
Hexachlorobenzene	16 Error! Bookmark not defined.	-	-
Pentachlorobenzene	140	-	-
1,2,3,4-tetrachlorobenzene	240	-	-
1,2,3,5-tetrachlorobenzene	7	-	-
1,2,4,5-tetrachlorobenzene	8.1	-	-
1,2,3-trichlorobenzene	35	-	-
1,2,4-trichlorobenzene	68	-	-
1,3,5-trichlorobenzne	7.4	-	-
1,2-dichlorobenzene	2,000	-	-
1,3-dichlorobenzene	31	-	-
1,4-dichlorobenzene	5,000	-	-
Chlorobenzene	98	-	-
Hexachloroethane	8.5	-	-
1,1,1,2-tetrachloroethane	240	-	-

Contaminant	Residential GAC_{gwvap} (µg/l)	Measured range (µg/l)	No. of samples exceeding assessment criteria
1,1,2,2-tetrachloroethane	1,600	-	-
1,1,1-trichloroethane	3,000	-	-
1,1,2-trichloroethane	520	-	-
1,1-dichloroethane	2,700	-	-
1,2-dichloroethane	8.9	-	-
Chloroethane	10,000	-	-
Tetrachloroethene (TCE)	34	-	-
Trichloroethene	5.7	-	-
1,1-dichloroethene	160	-	-
Cis-1,2-dichloroethene	130	-	-
Trans-1,2-dichloroethene	160	-	-
Chloroethene (vinyl chloride)	0.62	-	-
1,2-dichloropropane	22	-	-
Bromobenzene	220	-	-
Bromodichloromethane	17	-	-
Bromoform (tribromomethane)	3,100	-	-
Tetrachloromethane (carbon tetrachloride)	5.3	-	-
Trichloromethane (chloroform)	790	-	-
Chloromethane	14	-	-
hexachlorobutadiene	1.7	-	-
2-chloronaphthalene	160	-	-
Biphenyl (limonene)	15,000[Error! Bookmark not defined.]	-	-
Carbon disulphide	56	-	-
Elemental mercury	1.1	<0.05 to <0.5	0

1. Assessment criteria for TPH Aromatic >EC5 to EC7 should also be compared to assessment criteria for benzene to account for genotoxic mutagenic affects.

Table 5. Data assessment summary – potential risk to controlled waters (groundwater) - freshwater

Contaminant	Freshwater EQS[1] (µg/l)	EC Drinking Water Value (µg/l)	Measured range (µg/l)	Bioavailable Concentration (µg/l)	No. of samples exceeding EQS	No. of samples exceeding Drinking Water Value
Arsenic	50	10	0.27 to 0.32	-	0	0
Cadmium	0.08 - 0.25[2]	5	<0.02 to 0.03	-	0	0
Chromium VI	3.4	50[3]	<5.0	-	0	0
Chromium III	4.7	50[3]	<5.0	-	0	0
Lead	1.2[4] (7.2[5])	10	<0.2	-	0	0
Mercury	0.07	1	<0.05	-	0	0
Selenium	*[6]	10	4.7 to 4.8	-	0	0
Boron	*	1,000	28 to 98	-	0	0
Copper	1[4]	2,000	1.9	0.11-0.16	0	0
Nickel	4[4]	20	<0.5 to 1.8	0.16-0.41	0	0
Zinc	10.9[4,7]	(5,000)[8]	2.7 to 5.3	1.36-2.42	0	0
Barium	*	(1,000)[8]	39 to 48	-	0	0
Beryllium	(15)[9]	*	<0.1	-	0	0
Phenols	7.7	(0.5)[8]	1.6 to 1.8	-	0	0
Free Cyanide	1	50[10]	<1.0	-	0	0
Sulphate (mg/l)	*	250	47 to 80.7	-	0	0
TPH	*	(10)[8]	<1.0-<10	-	0	0
PAH	*	0.1[11]	<0.16	-	0	0
Anthracene	0.1	*	<0.01	-	0	0
Benzo(a)pyrene	0.02 [0.00017][12]	0.01	<0.01	-	0	0
Fluoranthene	0.1 (0.0063)[12]	*	<0.01	-	0	0
Naphthalene	2	*	<0.01	-	0	0
Benzene	10	1	<0.1	-	0	0
Toluene	74	*	<0.1	-	0	0
Total ammonia/ ammoniacal nitrogen as NH_4	*	500	25-59	-	0	0
Hardness (mg $CaCO_3$/l)	*	*	288-306	-	-	-
pH	6.0 - 9.0	6.5 - 10.0	7.2-7.5	-	-	-

[1] Annual Averages prescribed within The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

[2] EQS varies with water hardness where range given. Evaluated against appropriate band.

[3] This value relates to total chromium.

[4] Screened against the bioavailable fraction of the dissolved concentration of copper, nickel and zinc. "bioavailable" means the fraction of the dissolved concentration of zinc, nickel and copper likely to result in toxic effects as determined using the UKTAG Metal Bioavailability Assessment Tool.

[5] Former EQS value for total lead

[6] * = No values defined or given.

[7] 10.9 µg/l bioavailable plus ambient background concentration (µg/l) dissolved. Ambient background concentrations for dissolved zinc in freshwaters in England and Wales to be used in conjunction with item 6.

[8] Concentration formerly prescribed within the Water Supply (Water Quality) Regulations 1989.

[9] Dutch Indication Level of Serious Contamination.

[10] Drinking water standard based on total cyanide.

[11] Sum concentration of 4 PAH comprising benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.

[12] The previous published value for benzo(a)pyrene and fluoranthene is given in the table, and the current published value is given in square brackets. The square brackets value must be used if the waters in question could feed into an area where fishery products are produced.

Table 6. Data assessment summary – potential risk to controlled waters (groundwater) - leachate

Contaminant	Freshwater EQS[1] (µg/l)	EC Drinking Water Value (µg/l)	Measured range (µg/l)	Bioavailable Concentration (µg/l)	No. of samples exceeding EQS	No. of samples exceeding Drinking Water Value
Arsenic	50	10	<1.0 to 3.8	-	0	0
Cadmium	0.08 - 0.25[2]	5	<0.08	-	0	0
Chromium VI	3.4	50[3]	<5.0	-	0	0
Chromium III	4.7	50[3]	<5.0 to 5.5	-	0	0
Lead	1.2[4] (7.2[5])	10	<1.0 to 4	-	0	0
Mercury	0.07	1	<0.5	-	0	0
Selenium	*[6]	10	<4.0 to 4.4	-	0	0
Boron	*	1,000	<10 to 15	-	0	0
Copper	1[4]	2,000	7.8 to 28	0.25-0.69	0	0
Nickel	4[4]	20	1.5 to 2.7	0.17-0.60	0	0
Zinc	10.9[4,7]	(5,000)[8]	8.5 to 19	0.76-3.58	0	0
Barium	*	(1,000)[8]	13 to 120	-	0	0
Beryllium	(15)[9]	*	<0.2	-	0	0
Phenols	7.7	(0.5)[8]	<1.0 to 4.5	-	0	5
Free Cyanide	1	50[10]		-	0	0
Sulphate (mg/l)	*	250	7.2 to 48.9	-	0	0
TPH	*	(10)[8]	<1.0 to 900	-	0	2
PAH	*	0.1[11]	<0.2 to 42	-	0	2
Anthracene	0.1	*	<0.01 to 2.0	-	0	0
Benzo(a)pyrene	0.02 [0.00017][12]	0.01	<0.01 to 0.9	-	0	1
Fluoranthene	0.1 (0.0063)[12]	*	<0.01 to 4.4	-	0	0
Naphthalene	2	*	<0.01 to 7.9	-	0	0
Benzene	10	1	-	-	0	0
Toluene	74	*	-	-	0	0
Total ammonia/ ammoniacal nitrogen as NH_4	*	500	-	-	0 0	0 0
Hardness (mg $CaCO_3$/l)	*	*	-	-	-	-
pH	6.0 - 9.0	6.5 - 10.0	7.0 to 8.0	-	-	-

[1] Annual Averages prescribed within The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.

[2] EQS varies with water hardness where range given. Evaluated against appropriate band.

[3] This value relates to total chromium.

[4] Screened against the bioavailable fraction of the dissolved concentration of copper, nickel and zinc. "bioavailable" means the fraction of the dissolved concentration of zinc, nickel and copper likely to result in toxic effects as determined using the UKTAG Metal Bioavailability Assessment Tool.

[5] Former EQS value for total lead

[6] * = No values defined or given.

[7] 10.9 µg/l bioavailable plus ambient background concentration (µg/l) dissolved. Ambient background concentrations for dissolved zinc in freshwaters in England and Wales to be used in conjunction with item 6.

[8] Concentration formerly prescribed within the Water Supply (Water Quality) Regulations 1989.

[9] Dutch Indication Level of Serious Contamination.

[10] Drinking water standard based on total cyanide.

[11] Sum concentration of 4 PAH comprising benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene and indeno(1,2,3-cd)pyrene.

[12] The previous published value for benzo(a)pyrene and fluoranthene is given in the table, and the current published value is given in square brackets. The square brackets value must be used if the waters in question could feed into an area where fishery products are produced.

Table 7. Data assessment summary – potential soil risk to vegetation and plants

Determinant	Assessment Criteria (mg/kg)	Measured range (mg/kg)	US_{95} (mg/kg)	US_{95} > Assessment Criteria? (Y/N) #- outlier detected
Copper[1]	135	10-72	60.10	N
Zinc[1]	200	23-240	206.00	Y
Nickel[1]	75	5.6-36	28.35	N
Boron (water soluble)[2]	5	0.2-3.7	2.76	N

[1] BSI, (2015). *Specification for topsoil and requirements for use. BS 3882:2015*. Values taken for pH 6-7

[2] Limit for phytotoxic effect. Nable, Banuelos and Paul, (1997). *Boron Toxicity*. Plant and Soil, Volume 193, pp 181-198

Table 8. Standard Water Supply Pipe Assessment

Test Group[1]	Testing Required?	PE threshold (mg/kg)	Metal Pipes / Barrier Pipe	Laboratory Detection Limit (mg/kg)	Testing UKAS accredited Y/N	Maximum concentration at proposed pipeline depth[2] (mg/kg)	Maximum site concentration[3] (mg/kg)	Locations and depths where concentrations exceed proposed pipeline threshold.
Total BTEX & MTBE	**Where Preliminary Risk Assessment (PRA) has identified land potentially affected by contamination**	**0.1**	**Pass**	<0.005	MCERTS (Y)	<0.03	<0.03	
EC5–EC10 aliphatic and aromatic hydrocarbons		**2**	**Pass**	<0.001 to <10	Y	<0.003	<0.003	
EC10-EC16 aliphatic and aromatic hydrocarbons		**10**	**Pass**	<0.06 to <10	MCERTS (Y)	<2.0	<360	TP10, 0.40mbgl; WS6, 0.20mbgl; WS5 0.20mbgl
EC16-EC40 aliphatic and aromatic hydrocarbons		**500**	**Pass**	<10	MCERTS (Y)	<36	6678	WS6, 0.20mbgl; WS5, 0.20mbgl
Phenols		**2**	**Pass**	<1.0	MCERTS (Y)	<1.0	1.4	
Corrosive	**Conductivity** **Redox** **pH**	**Pass**	**Note[4]**	0.99 to 1.06mS 75 to 92 mV 6 to 10.7	N N N	 8.3	 10.7	13 locations exceed or equal pH of 8

[1] Tests Groups as per Appendix G of UKWIR Guidance.

[2] Water pipes are normally laid 0.75-1.35 metres below finished ground level.

[3] State if liquid free product is present in soil or groundwater.

[4] Threshold: For wrapped steel, corrosive if pH<7 and conductivity >400 µs/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity >400 µs/cm. For copper, corrosive if pH<5 or>8 and Eh positive.

APPENDIX L

Preliminary Desiccation Assessment

Borehole ID	Depth	Mc	LL	PL	PI	MPI	%Passing	0.4*LL	Is Mc<0.4*LL?	PL+2	Is Mc < PL +2	Potentially Desiccated (Y/N)	Stratum
WS5	1.5	19	36	17	19	0.255	75	14.4	N	19	N	N	CWFL
WS5	2.5	24	54	19	35	0.475	94	21.6	N	21	N	N	CWFL
WS5	3.7	22	37	19	18	0.703	99	14.8	N	21	N	N	CWFL
WS2	1.5	23	45	19	26	0.285	100	18	N	21	N	N	CWFL
WS2	2	22	39	20	19	0.4	100	15.6	N	22	N	N	CWFL
WS2	2.5	26	44	22	22	0.55	100	17.6	N	24	N	N	CWFL
WS7	1.5	20	48	23	25	0.345	83	19.2	N	25	Y	N	CWFL
WS7	2	34	68	36	32	0.72	90	27.2	N	38	Y	N	CWFL
WS7	2.4	36	83	31	52	0.744	100	33.2	N	33	N	N	CWFL
WS4	1.4	37	72	34	38	0.476	67	28.8	N	36	N	N	CWFL
WS4	2.4	23	59	26	33	0.624	64	23.6	Y	28	Y	Y	CWFL
WS4	3	23	58	27	31	0.81	95	23.2	Y	29	Y	Y	CWFL
WS11	1.5	28	61	27	34	0.405	93	24.4	N	29	Y	N	CWFL
WS11	2.5	44	98	38	60	0.95	100	39.2	N	40	N	N	CWFL
WS11	3.5	40	111	49	62	1.715	90	44.4	Y	51	Y	Y	CWFL
TP5	1	42	83	37	46	0.37	94	33.2	N	39	N	N	CWFL
TP9	1.1	26	50	24	26	0.264	99	20	N	26	N	N	CWFL
TP4	2.3	23	43	20	23	0.46	98	17.2	N	22	N	N	CWFL

Client	Project	Job No
Daniel Watney LLP	Kenley Campus, Caterham, Surrey	CG/39415
CGL	Title: Preliminary Desiccation Assessment	Table 1