



BGS ID: 16094288 : BGS Reference: TQ54NE264

British National Grid (27700) : 558860,146220

FOUNDATION ENGINEERING
Ltd.

BOREHOLE LOG

LOCATION : J. SAINSBURY LTD.
TONBRIDGE

BOREHOLE DIA. : 6"

DATE (Start) : 19.7.68

BOREHOLE No. : 1

GROUND LEVEL :

WATER LEVEL : See Table & Note.

Dates	Description	Thickness	Depth	Sample	Remarks
	MADE GROUND (Firm brown & grey clay & brick rubble)	3'0"	0'-0"		
	Firm brown and grey mottled CLAY	3'6"	3'0"	1	
	Soft grey & brown mottled CLAY	6'0"	6'6"	2	Water sample taken.
	Compact c.m.f. SAND & GRAVEL	5'6"	12'6"	3	
	Hard grey fissured CLAY	18'0"	18'0"	4	
				5	
				6	34 blows/ft
				7	
				8	
				9	
				10	
				11	
				12	
				13	
				14	

TABLE

Date	Time of Day	Depth to Water	Depth Hole	Depth Cased
19.7.68	6pm	6'6"	6'6"	4'0"
20.7.68	8am	5'0"	6'6"	4'0"
" "	2pm	30'0"	36'0"	19'0"

NOTE:- Water first met
at 6'6".

BOREHOLE COMPLETE

BOREHOLE SCALE : 1" = 5' • : DISTURBED SAMPLE I : UNDISTURBED SAMPLE + STANDARD PENETRATION TEST



BGS ID: 16094289 : BGS Reference: TQ54NE265

British National Grid (27700) : 558840,146200

FOUNDATION ENGINEERING

Ltd.

BOREHOLE LOG

LOCATION : J. SAINSBURY LTD

BOREHOLE No. : 2

BOREHOLE DIA. : 6"

GROUND LEVEL :

DATE (Start) : 19.7.68

WATER LEVEL : See Table + Note

Dates	Description	Thickness	Depth	Sample	Remarks
	MADE GROUND (Firm brown and grey clay + rubble)	3'0"	0'-0"		
	Firm brown + grey mottled CLAY	3'6"	3'0"	1	
	Soft grey + brown mottled CLAY	6'6"	6'6"	2	Water sample taken.
	Soft grey + brown mottled CLAY	6'6"	13'0"	3	
	Compact c.m.f. SAND, and clayey gravel.	5'6"	18'6"	4	U4 Failed
	Hard grey fissured CLAY.	13'0"	36'6"	5	
				6	U4 Failed
				7	
				8	
				9	
				10	
				11	
				12	
				13	
				14	
				15	

TABLE

Date	Time of Day	Depth to Water	Depth H ₂ O	Depth used
19.7.68	1pm	21'0"	28'0"	22'0"
"	1:30	20'0"	28'0"	22'0"
"	3:30	5'0"	36'6"	~

NOTE:- Water first met
at 6'6" and
again at 13'0".

BOREHOLE COMPLETE

BOREHOLE SCALE : 1" = 5' • : DISTURBED SAMPLE I : UNDISTURBED SAMPLE + STANDARD PENETRATION TEST

APPENDIX III

APPENDIX III – GROUND INVESTIGATION

Introduction

This Appendix, together with Sections 2 to 5 of the report, forms the Ground Investigation Report for the development described in the report, in compliance with the requirements of BS 5930:2015+A1:2020, BS EN1997-1:2004(2007) and BS EN1997-2:2007(2007).

The site operations were carried out on 8th February 2021 under the supervision of a geotechnical/geoenvironmental engineer from Crossfield Consulting Limited. The scope and rationale for the design of the investigation is presented in Table III-1.

The ground investigation was designed and supervised by qualified and experienced geotechnical/geoenvironmental specialists from Crossfield Consulting Limited. Where appropriate, and as outlined below, specialist drilling/sampling equipment was procured together with trained and experienced operators. Unless otherwise indicated, sampling and logging remained the responsibility of trained staff from Crossfield Consulting Limited and field records were prepared on site, during or immediately following drilling/sampling or in situ measurements/tests. The results of in situ tests are presented on the relevant record sheets in this Appendix.

An exploratory hole location plan is presented as Figure III-1.

Windowless Sampling

Five windowless sampling boreholes, denoted as WS1 to WS5, were sunk by Regional Drilling Limited, on 8th February to 5.0 m depth. Dynamic/driven open-tube soil sampling/boring was undertaken using a Premier Compact rig. Using a 1.0 m long thick-walled open-tube sampler (with plastic liner), Category A and B samples were recovered (sample disturbance being influenced by the specific soils encountered). Where appropriate, small disturbed sub-samples were recovered from the materials recovered in the open-tube sampler.

In situ hand vane tests were carried out on fine-grained soils, where appropriate, to provide undrained shear strength data representative of the tested horizon. The tests were carried out using Pilcon hand vane test equipment (with extension rods, where necessary).

Standard Penetration Tests (SPT) were carried out at regular intervals to provide data on the in situ density of coarse-grained strata and an indication of strength within fine-grained strata. The SPTs were carried out in accordance with BS EN ISO 22476-3:2005(2007).

The records from the investigation are presented in this Appendix. These records include the descriptions and depths of the strata encountered, together with sample depths, in situ test results (uncorrected values), groundwater observations, details of installations/backfill within exploratory holes and other pertinent comments.

Soil Samples

All samples for analytical testing were collected in appropriate containers, stored in cool boxes (where appropriate) and sent to the testing laboratory overnight. The sample containers, storage and handling procedures were all compatible with the relevant recommendations of the UKAS accredited testing laboratory for the specific testing proposed.

Samples designated for geotechnical testing were collected, stored and transported in accordance with the published requirements for the specific tests scheduled, such that moisture content and soil structure integrity was maintained, as necessary for the test requirements.

Analytical Laboratory Testing

The rationale for the analytical testing is set out in Table III-2.

Selected samples of the soils encountered were submitted for screening analysis of the following determinands:

- Arsenic (Total)
- Chromium (Total)
- Lead (Total)
- Nickel (Total)
- Selenium (Total)
- Cyanide (Total)
- Sulphate (Water soluble)
- pH
- Asbestos (Fibre & ACM Screen)
- Cadmium (Total)
- Copper (Total)
- Mercury (Total)
- Zinc (Total)
- Boron (Water soluble)
- Sulphide (Total)
- Phenols (Total-monohydric)
- Total Organic Carbon
- Asbestos (Quantification)

Note: Total determinands are based on an aqua-regia extract.

- Total Petroleum Hydrocarbons – aromatic/aliphatic split and carbon number banding, using GC-FID techniques
- Polyaromatic Hydrocarbons – using GC-MS techniques

The analyses were carried out by i2 Analytical, a UKAS accredited laboratory, and the results are presented in this Appendix. Soil testing was undertaken in accordance with the Environment Agency's Monitoring Certification Scheme (MCERTS).

Geotechnical Laboratory Testing

The rationale for the geotechnical laboratory testing is set out in the Table III-3.

Selected samples of the soils encountered were submitted for analysis for the following tests:

- pH value
- Water soluble sulphate
- Moisture content
- Atterberg Limits

The analyses were carried out by i2 Analytical, a UKAS accredited laboratory, and the results are presented in this Appendix.

TABLE III-1

RATIONALE FOR THE DESIGN OF THE GROUND INVESTIGATION

The scope of the ground investigation was designed with reference to the published geology and ground conditions indicated in the desk study information.

In compliance with the guidance published in BS EN 1997-2:2007, the ground investigation was designed to verify the preliminary ground model, established from the desk study information and to characterise the ground conditions within influencing distance of the proposed structures. In this regard, the exploratory holes were targeted within relevant areas of the site to provide information on the strata profile.

In compliance with the guidance published in BS 10175:2011+A2:2017 and BS 5930:2015+A1:2020, the layout of the exploratory holes and sampling regime also considers the Conceptual Site Model and potential pollutant linkages, such that the spatial arrangement of the investigation provides the necessary information to support a risk assessment of the identified potential pollutant linkages.

Exploratory Hole and Technique	Rationale for Hole Location	Depth (m)	Sampling/In Situ Testing and Monitoring
WS1 WS2 WS3 WS4 WS5	All exploratory holes located to provide information on possible contamination sources, Made Ground thickness, possible perched groundwater, and information on soil density/strength of shallow deposits	5 m	Representative samples of shallow soils recovered to assess for potential contamination. Samples of potential founding strata recovered for geotechnical testing. Standard Penetration Tests (SPTs) were carried out at regular intervals to provide data on the strength within fine grained strata.

Key

WS X Windowless Sample Borehole

TABLE III-2

RATIONALE FOR THE ANALYTICAL TESTING SUITE

Exploratory Hole and Samples	Selection Criteria	Analytical Tests
WS1 0.4 m WS2 0.5 m WS3 0.3 m WS4 0.4 m WS5 0.7 m	Representative samples of Made Ground to provide data on inorganic and organic substances identified in the Conceptual Site Model.	Screening tests for metals and metalloids, boron, cyanides, phenols (pH and total organic carbon also included to assist with risk assessments) Asbestos identification (and quantification, if applicable) Petroleum hydrocarbons Polyaromatic hydrocarbons

TABLE III-3

RATIONALE FOR THE GEOTECHNICAL TESTING SUITE

Exploratory Hole and Sample	Selection Criteria	Geotechnical Tests
WS1 1.1 m WS1 1.8 m WS3 1.4 m WS3 2.1 m WS4 0.9 m WS4 2.5 m WS5 3.5 m	Geotechnical tests undertaken to provide data for buried concrete design	pH Water soluble sulphate
WS1 0.9 m WS2 1.3 m WS2 1.6 m WS4 1.6 m	Geotechnical tests undertaken to provide soil classification and index properties for foundation design	Moisture content Atterberg Limits

WINDOWLESS SAMPLE RECORDS

KEY

Sampling

J	Disturbed Jar Sample
G	Jar Sample in Glass Container
g	Soil Sample in Glass Vial
W	Water Sample
IC	Nett sample recovery ratio (ratio of length of recovered sample to length of sample run)

In Situ Measurements









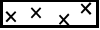
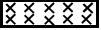
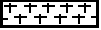



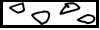
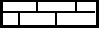

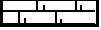


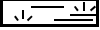

FVT	C_{fv}	Undrained Shear Strength (from hand vane shear vane test)
	C_{rv}	Undrained Remoulded Shear Strength (from hand vane shear vane test)
	C_{fv}^*	Hand Vane Shear Strength Test (on Category A: OS-TK/W soil sample recovered in window sampler)
	S	Standard Penetration Test (SPT: split spoon sampler)
	SPT(C)	SPT carried out with a 60° cone
	'N'	'N' Value from SPT test
	N_{10}	Dynamic Probe Test: Number of blows to drive 100 mm
DPH	N_{H10}	Dynamic Probe Test: Heavy (30 kg mass & 500 mm fall)
DPSH-A	N_{SHA10}	Dynamic Probe Test: Super-Heavy A (63.5 kg mass & 500 mm fall)
DPSH-B	N_{SHB10}	Dynamic Probe Test: Super-Heavy B (63.5 kg mass & 750 mm fall)
	$\frac{x}{y}$	x Blows per y Driving Distance (for non-standard SPT or DP driving distance)
	y mm	
	T	Torque (max) required to turn rods (unit: Nm, unless otherwise shown)

Notes:







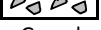

1. All measurement values on record sheets are uncorrected, unless otherwise indicated.
2. For corrected test values, refer to report.
3. Identification and classification of strata is based on the guidance published in the current edition of BS5930 together with BS EN ISO 14688-1:2002, BS EN ISO 14688-2:2004 and BS EN ISO 14689-1:2003
4. Consistency (soft, firm, stiff etc) relates to a manual test/inspection on site (in compliance with BS EN ISO 14688-1:2002 Section 5.14).
5. Undrained shear strength (low, medium, high etc) relates to in situ or laboratory test data and the associated assessed strength of a stratum (in compliance with BS EN ISO 14688-2:2004 Section 5.3 and Table 5).
6. The density of coarse-grained soils is based on SPT N values (or equivalent Dynamic Probe test or CPT data) as outlined in BS5930 and BS EN ISO 14688-2:2004.
7. Rock strength (weak, strong etc) is based on field identification (and/or strength test data), as outlined in BS EN ISO 14689-1:2003 Table 5.

BOREHOLE & DRILLHOLE RECORDS - LEGENDS KEY SHEET

Legend - Strata Encountered in Exploratory Hole


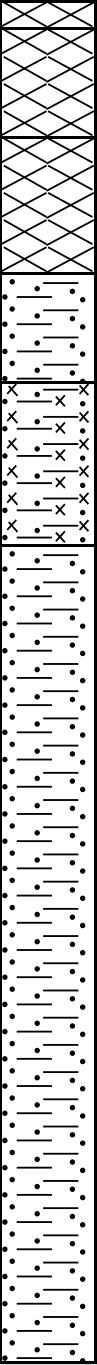
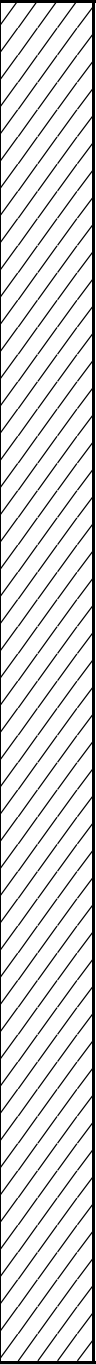
Soil	Rock		
	Sedimentary	Igneous	Metamorphic
 Made Ground	 Mudstone	 Fine-grained	 Fine-grained
 Clay	 Shale	 Medium-grained	 Medium-grained
 Silt	 Siltstone	 Coarse-grained	 Coarse-grained
 Sand	 Sandstone		
 Gravel	 Limestone		
 Peat/Topsoil	 Chalk		
 Organic Sand	 Coal		
 Organic Clay	 Conglomerate		


Legend - Backfill to Borehole and Standpipe Installations





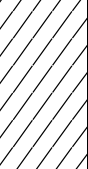

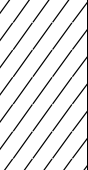

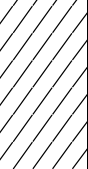
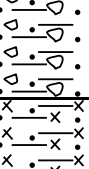
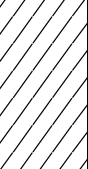
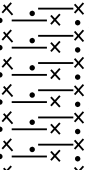


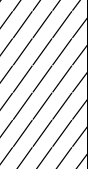
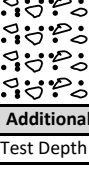

Backfill	Installations
 Soil arisings	 Concrete Cover Over Standpipe
 Bentonite	 Plain Standpipe - Bentonite Surround
 Cement-based Grout	 Perforated Standpipe - Geotextile and Granular Filter Surround
 Gravel	 Perforated Standpipe End Geotextile and Granular Filter Surround


Notes:


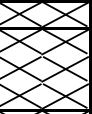
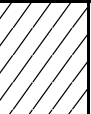
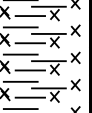

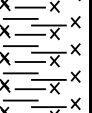
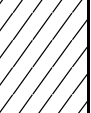
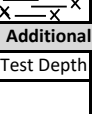
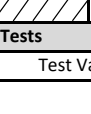
1. A combination of the strata symbols are indicative of mixed soil types.
2. The response zone of a standpipe refers to the section of perforated pipe within a granular surround, where substances may freely enter the standpipe from the surrounding strata.

					Windowless Sample Record Sheet					Hole Ref. WS1	
					Project: 76 - 78 High Street, Tonbridge					Sheet 1 of 1	
					Date: 08/02/2021					Job No. CCL03372	
Contractor Regional Drilling					Equipment Premier Compact 110					Ground Level. 22.30 m OD	
Method 0.0 m to 5.0 m windowless sampling										Co-ordinates	
Boring Diameter 100 mm										Logged by: GK Logged on site during drilling operations Checked by: <i>AKH</i>	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.		
0.40	JGg				Tarmac surfacing (MADE GROUND)	0.10			22.20		
					Black clayey sand and gravel with brick and charcoal fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.50			21.80		
0.80	J				Firm consistency brownish grey slightly sandy slightly gravelly clay with rare brick and charcoal fragments. Gravel is fine to coarse subangular (MADE GROUND)						
1.00-1.45	S	1.00	Dry	N=4		1.00			21.30		
1.10	J				Firm to stiff consistency brown slightly sandy CLAY. (ALLUVIUM)	1.40			20.90		
1.80	J				Firm to stiff consistency greenish grey to brown slightly sandy silty CLAY (ALLUVIUM)						
2.00-2.45	S	1.00	2.00	SW		2.00			20.30		
					Soft to firm consistency orangish brown sandy CLAY (ALLUVIUM)						
3.00-3.45	S	1.00	2.00	SW							
4.00-4.45	S	1.00	2.00	N=8							
5.00-5.45	S	1.00	2.00	N=20	... Becoming stiff below 5.0 m depth	5.00		17.30			
Core Recovery					Groundwater			Additional Tests			
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value			
0.00-1.00	100%	5.00	-	-	Wet below 2.0 m depth						
1.00-2.00	100%										
2.00-3.00	100%										
3.00-4.00	10%										
4.00-5.00	100%										
Remarks SW = Rods fell on self-weight					Notes 1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²						

					Windowless Sample Record Sheet					Hole Ref. WS2	
					Project: 76 - 78 High Street, Tonbridge					Sheet 1 of 1	
					Date: 08/02/2021					Job No. CCL03372	
Contractor Regional Drilling					Equipment Premier Compact 110					Ground Level. 22.35 m OD	
Method 0.0 m to 5.0 m windowless sampling										Co-ordinates	
Boring Diameter 100 mm										Logged by: GK Logged on site during drilling operations Checked by: <i>AKH</i>	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.		
0.50	JGg				Tarmac surfacing (MADE GROUND)	0.15			22.20		
					Black clayey slightly sandy gravel with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.30			22.05		
					Stiff consistency brownish black slightly sandy gravelly clay with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.70			21.65		
1.00-1.45	S	1.00	Dry	N=4	Firm to stiff consistency orangish brown slightly sandy slightly gravelly clay with rare brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	1.10			21.25		
1.30	J				Firm to stiff consistency orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular ironstone (ALLUVIUM)						
2.00-2.45	S	1.00	1.60	N=3		2.00			20.35		
2.20	J				Soft to firm consistency orangish brown sandy CLAY. (ALLUVIUM)						
3.00-3.45	S	1.00	1.60	N=1							
4.00-4.45	S	1.00	1.60	N=10		4.00			18.35		
					Orangish brown SAND and GRAVEL. Gravel is fine to coarse subangular to subrounded (ALLUVIUM)						
5.00-5.45	S	1.00	1.60	N=22		5.00			17.35		
Core Recovery					Groundwater			Additional Tests			
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value			
0.00-1.00	100%	5.00	-	-	Strata wet below 2.0 m depth						
1.00-2.00	100%				Water in hole at 1.6 m depth upon completion						
2.00-3.00	100%										
3.00-4.00	80%										
4.00-5.00	20%										
Remarks					Notes						
					1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²						

					Windowless Sample Record Sheet					Hole Ref. WS3	
					Project: 76 - 78 High Street, Tonbridge					Sheet 1 of 1	
					Date: 08/02/2021					Job No. CCL03372	
Contractor Regional Drilling					Equipment Premier Compact 110					Ground Level. 23.40 m OD	
Method 0.0 m to 5.0 m windowless sampling										Co-ordinates	
Boring Diameter 100 mm										Logged by: GK Logged on site during drilling operations Checked by: <i>AKH</i>	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.		
0.30	JGg				Concrete surfacing (MADE GROUND) Blackish brown slightly clayey sandy gravel. Gravel is fine to coarse subangular (MADE GROUND)	0.15			23.25		
1.00-1.45	S	1.00	Dry	N=4	Soft to firm consistency brown slightly gravelly sandy clay with brick fragments. Gravel is fine to coarse angular to subangular (MADE GROUND)	0.70			22.70		
1.40	J				Firm to stiff consistency orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular ironstone (ALLUVIUM)	1.20			22.20		
2.00-2.45 2.10	S J	1.00	1.70	N=3							
3.00-3.45	S	1.00	1.70	N=5		3.00			20.40		
3.50	J				Grey to greenish grey with occasional orangish brown mottling slightly sandy silty CLAY (ALLUVIUM)						
4.00-4.45	S	1.00	1.70	N=15		4.00			19.40		
5.00-5.45	S	1.00	1.70	N=29	Orangish brown clayey SAND and GRAVEL. Gravel is fine to coarse subangular to subrounded (ALLUVIUM)	5.00			18.40		
Core Recovery					Groundwater			Additional Tests			
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value			
0.00-1.00	100%	5.00	-	-	Strata wet below 2.0 m depth						
1.00-2.00	50%				Water in hole at 1.7 m depth upon completion						
2.00-3.00	85%										
3.00-4.00	85%										
4.00-5.00	25%										
Remarks					Notes						
					1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²						

					Windowless Sample Record Sheet					Hole Ref. WS4	
					Project: 76 - 78 High Street, Tonbridge					Sheet 1 of 1	
					Date: 08/02/2021					Job No. CCL03372	
Contractor Regional Drilling					Equipment Premier Compact 110					Ground Level. 22.30 m OD	
Method 0.0 m to 5.0 m windowless sampling										Co-ordinates	
Boring Diameter 100 mm										Logged by: GK Logged on site during drilling operations Checked by: <i>AKH</i>	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.		
0.40	JGg				Tarmac surfacing (MADE GROUND) Brown slightly clayey sandy gravel with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.15			22.15		
0.90	J				Firm consistency brown slightly sandy slightly gravelly clay with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.70			21.60		
1.00-1.45	S	1.00	Dry	N=3							
1.60	J				Soft to firm consistency brown slightly sandy clay with rare brick fragments (MADE GROUND)	1.50			20.80		
2.00-2.45	S	1.00	NR	N=4							
2.50	J				Firm consistency greenish grey slightly sandy silty CLAY (ALLUVIUM)	2.40			19.90		
3.00-3.45	S	1.00	NR	SW							
4.00-4.45	S	1.00	NR	N=15							
					Orangish brown clayey SAND and GRAVEL. Gravel is fine to coarse subangular to subrounded (ALLUVIUM)	4.20			18.10		
5.00-5.45	S	1.00	NR	N=14		5.00			17.30		
Core Recovery					Groundwater			Additional Tests			
Depth		Recovery		Hole Depth	Strike Depth	Water Depth	Observations		Test type	Test Depth	Test Value
0.00-1.00		90%		5.00	-	-	Strata very wet below 2.0 m depth				
1.00-2.00		30%									
2.00-3.00		100%									
3.00-4.00		100%									
4.00-5.00		70%									
Remarks						Notes					
SW = Rods fell on self-weight						1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²					

					Windowless Sample Record Sheet					Hole Ref. WS5	
					Project: 76 - 78 High Street, Tonbridge					Sheet 1 of 1	
					Date: 08/02/2021					Job No. CCL03372	
Contractor Regional Drilling					Equipment Premier Compact 110					Ground Level. 22.30 m OD	
Method 0.0 m to 5.0 m windowless sampling										Co-ordinates	
Boring Diameter 100 mm										Logged by: GK Logged on site during drilling operations Checked by: <i>AKH</i>	
Sample Depth	Sample or Test	Casing Depth	Water Depth	Test Value	Description	Depth	Legend	Backfill	Level O.D.		
1.00-1.45	S	1.00	Dry	N=3	Tarmac surfacing (MADE GROUND)	0.10			22.20		
					Greyish black sandy very clayey gravel with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)	0.40			21.90		
					Geotextile material present at 0.4 m depth						
2.00-2.45	S	1.00	1.50	N=4	Firm to stiff consistency brown slightly sandy slightly gravelly clay with brick fragments. Gravel is fine to coarse subangular (MADE GROUND)						
					Charcoal inclusions below 1.0 m depth						
					Soft to firm consistency brown sandy CLAY (ALLUVIUM)	1.60		20.70			
3.00-3.45	S	1.00	1.50	SW		2.10			20.20		
					Firm consistency greenish grey silty CLAY (ALLUVIUM)						
4.00-4.45	S	1.00	1.50	N=8							
5.00-5.45	S	1.00	1.50	N=24		5.00			17.30		
Core Recovery					Groundwater					Additional Tests	
Depth	Recovery	Hole Depth	Strike Depth	Water Depth	Observations	Test type	Test Depth	Test Value			
0.00-1.00	100%	5.00	-	-	Water in hole at 1.5 m depth upon completion						
1.00-2.00	80%										
2.00-3.00	100%										
3.00-4.00	80%										
4.00-5.00	100%										
Remarks SW = Rods fell on self-weight					Notes 1. All logging and sampling in accordance with BS 5930:2015+A1:2020 2. The depths to strata change are approximate only 3. Symbols and abbreviations are explained on the accompanying key 4. All linear dimensions are in metres unless otherwise stated 5. Undrained shear strength test value given in kN/m ²						



Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref: DART300
Test Date: 20/09/2019
Report Date: 24/09/2019
File Name: DART300.spt
Test Operator: AP

Instrumented Rod Data

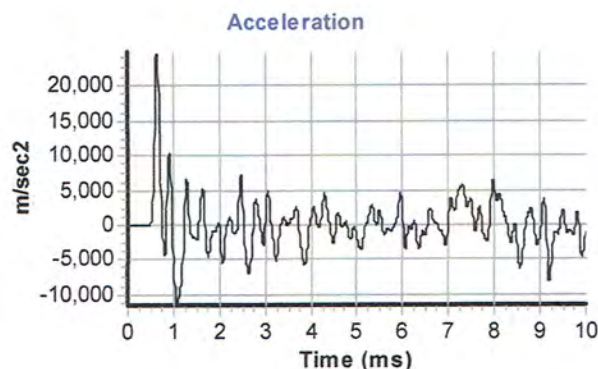
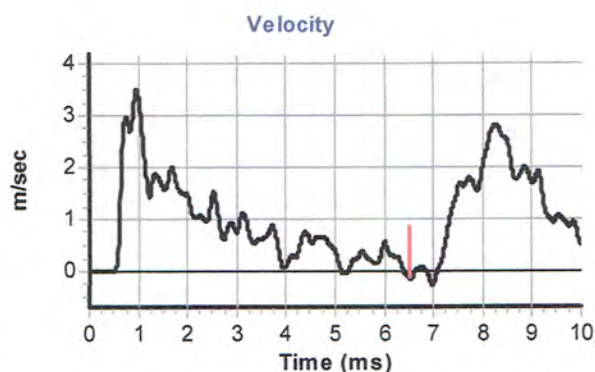
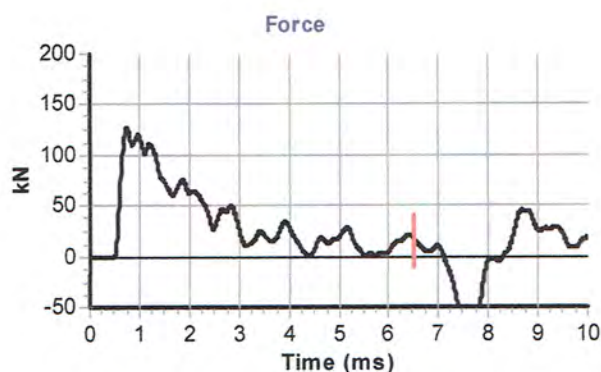
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.9
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 62901
Accelerometer No.2: 62902

Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
String Length L (m): 15.0

Comments / Location

Regional drilling rig tested at Dynamic samplings yard.



Calculations

Area of Rod A (mm^2): 1021
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 357

Energy Ratio E_r (%): **75**

Signed: A.parker.

Title: Associate Director.

The recommended calibration interval is 12 months

George Kavanagh
Crossfield Consulting Ltd
The Granary
White Hall Farm
Leamington Road
Long Itchington
Warwickshire
CV47 9PU

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

e: gk@crossfield-consulting.co.uk

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Analytical Report Number : 21-55854

Project / Site name:	76-78 High Street, Tonbridge	Samples received on:	09/02/2021
Your job number:	CCL03372	Samples instructed on/ Analysis started on:	09/02/2021
Your order number:	11793	Analysis completed by:	18/02/2021
Report Issue Number:	1	Report issued on:	18/02/2021
Samples Analysed:	12 soil samples		



Signed:

Rachel Bradley
Deputy Quality Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 21-55854
 Project / Site name: 76-78 High Street, Tonbridge
 Your Order No: 11793

Lab Sample Number	1764929	1764930	1764931	1764932	1764933
Sample Reference	WS1	WS2	WS3	WS4	WS5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.40	0.50	0.30	0.40	0.70
Date Sampled	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	9.1	11
Total mass of sample received	kg	0.001	NONE	1	1

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

pH - Automated	pH Units	N/A	MCERTS	8.5	8.7	9.4	9	7.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO4	mg/kg	50	MCERTS	1300	900	1200	1300	800
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.066	0.11	0.34	0.2	0.27
Sulphide	mg/kg	1	MCERTS	420	23	11	42	650
Total Sulphur	mg/kg	50	MCERTS	1100	610	600	690	1000
Total Organic Carbon (TOC)	%	0.1	MCERTS	3.4	3.1	1.3	3.5	2.9

Total Phenols

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

Naphthalene	mg/kg	0.05	MCERTS	1.4	0.69	< 0.05	0.29	0.44
Acenaphthylene	mg/kg	0.05	MCERTS	8.8	0.74	< 0.05	0.47	1.3
Acenaphthene	mg/kg	0.05	MCERTS	2.2	1.4	< 0.05	< 0.05	0.21
Fluorene	mg/kg	0.05	MCERTS	3.4	1.6	< 0.05	< 0.05	0.59
Phenanthrene	mg/kg	0.05	MCERTS	40	5.9	0.28	2.1	6.5
Anthracene	mg/kg	0.05	MCERTS	11	3.3	< 0.05	0.57	1.8
Fluoranthene	mg/kg	0.05	MCERTS	80	16	0.58	6.3	16
Pyrene	mg/kg	0.05	MCERTS	70	13	0.62	5.6	13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	40	8.1	0.27	4.2	9.8
Chrysene	mg/kg	0.05	MCERTS	31	5.5	0.29	3	7.2
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	48	8.5	0.61	5.4	12
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	18	3.1	0.21	1.4	3.9
Benzo(a)pyrene	mg/kg	0.05	MCERTS	45	7	0.6	4.1	9.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	19	2.9	0.31	1.8	4
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	5.5	0.67	< 0.05	0.45	1
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	21	3.2	0.44	2.1	4.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	444	82.2	4.21	37.7	90.7
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Analytical Report Number: 21-55854

Project / Site name: 76-78 High Street, Tonbridge

Your Order No: 11793

Lab Sample Number	1764929	1764930	1764931	1764932	1764933
Sample Reference	WS1	WS2	WS3	WS4	WS5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.40	0.50	0.30	0.40	0.70
Date Sampled	08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

	mg/kg	1	MCERTS	17	71	16	19	41
Arsenic (aqua regia extractable)	mg/kg	0.2	MCERTS	1.9	1.1	1.2	1.1	7.4
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (hexavalent)	mg/kg	1	MCERTS	21	23	18	24	25
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	73	75	29	74	66
Copper (aqua regia extractable)	mg/kg	1	MCERTS	930	530	41	360	1100
Lead (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.7	< 0.3	0.3	3.5
Mercury (aqua regia extractable)	mg/kg	1	MCERTS	36	35	29	44	24
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	500	240	58	220	490
Zinc (aqua regia extractable)	mg/kg	1	MCERTS					

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	3.2	< 1.0	< 1.0	1.9	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	21	11	< 2.0	7.5	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	56	14	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	240	42	51	27	29
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	330	68	56	42	34

	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.4	2.6	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	24	20	< 2.0	3.3	7.1
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	200	73	< 10	16	46
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	700	140	83	47	96
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	930	240	92	66	150

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

Analytical Report Number: 21-55854
 Project / Site name: 76-78 High Street, Tonbridge
 Your Order No: 11793

Lab Sample Number				1764934	1764935	1764936	1764937	1764938
Sample Reference				WS4	WS1	WS3	WS1	WS3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.10	1.40	1.80	2.10
Date Sampled				08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	14	16	14	11
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1

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

pH - Automated	pH Units	N/A	MCERTS	8	7.8	7.3	7.4	7.5
Total Cyanide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	-	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.048	0.022	0.051	0.027	0.026
Sulphide	mg/kg	1	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-	-	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-	-	-	-

Total Phenols

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

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-	-	-	-
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Analytical Report Number: 21-55854
 Project / Site name: 76-78 High Street, Tonbridge
 Your Order No: 11793

Lab Sample Number				1764934	1764935	1764936	1764937	1764938
Sample Reference				WS4	WS1	WS3	WS1	WS3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	1.10	1.40	1.80	2.10
Date Sampled				08/02/2021	08/02/2021	08/02/2021	08/02/2021	08/02/2021
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-	-	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-	-	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-	-	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-	-	-	-

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

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

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

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

Analytical Report Number: 21-55854
Project / Site name: 76-78 High Street, Tonbridge
Your Order No: 11793

Lab Sample Number				1764939	1764940
Sample Reference				WS4	WS5
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	3.50
Date Sampled				08/02/2021	08/02/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	15
Total mass of sample received	kg	0.001	NONE	1	0.7

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.4	6.3
Total Cyanide	mg/kg	1	MCERTS	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.11	0.11
Sulphide	mg/kg	1	MCERTS	-	-
Total Sulphur	mg/kg	50	MCERTS	-	-
Total Organic Carbon (TOC)	%	0.1	MCERTS	-	-

Total Phenols

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

Speciated PAHs

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

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	-	-
-----------------------------	-------	-----	--------	---	---

Analytical Report Number: 21-55854
 Project / Site name: 76-78 High Street, Tonbridge
 Your Order No: 11793

Lab Sample Number				1764939	1764940
Sample Reference				WS4	WS5
Sample Number				None Supplied	None Supplied
Depth (m)				2.50	3.50
Date Sampled				08/02/2021	08/02/2021
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	-
Chromium (hexavalent)	mg/kg	4	MCERTS	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	-

Monoaromatics & Oxygenates

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

Petroleum Hydrocarbons

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

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

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

Analytical Report Number : 21-55854

Project / Site name: 76-78 High Street, Tonbrige

* 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 *
1764929	WS1	None Supplied	0.4	Black loam and gravel.
1764930	WS2	None Supplied	0.5	Brown loam and gravel with vegetation.
1764931	WS3	None Supplied	0.3	Grey loam and gravel.
1764932	WS4	None Supplied	0.4	Grey loam and gravel.
1764933	WS5	None Supplied	0.7	Brown clay with gravel.
1764934	WS4	None Supplied	0.9	Brown clay and loam with gravel.
1764935	WS1	None Supplied	1.1	Brown clay and loam with gravel.
1764936	WS3	None Supplied	1.4	Brown loam and clay.
1764937	WS1	None Supplied	1.8	Brown clay and loam.
1764938	WS3	None Supplied	2.1	Brown clay and loam with gravel.
1764939	WS4	None Supplied	2.5	Grey clay and loam.
1764940	WS5	None Supplied	3.5	Grey clay.

Analytical Report Number : 21-55854

Project / Site name: 76-78 High Street, Tonbrige

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

Analytical Report Number : 21-55854

Project / Site name: 76-78 High Street, Tonbrige

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
D.O. for Gravimetric Quant if Screen/ID positive	Dependent option for Gravimetric Quant if Screen/ID positive scheduled.	In house asbestos methods A001 & A006.	A006-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.



TEST CERTIFICATE

Liquid and Plastic Limits

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



4041

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

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU

Contact: George Kavanagh
Site Address: 76-78 High Street, Tonbridge

Client Reference: CCL03372

Job Number: 21-57919

Date Sampled: 08/02/2021

Date Received: 22/02/2021

Date Tested: 03/03/2021

Sampled By: Client

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

Test Results:

Laboratory Reference: 1776631

Hole No.: WS1

Sample Reference: Not Given

Soil Description: Dark brown slightly gravelly sandy CLAY

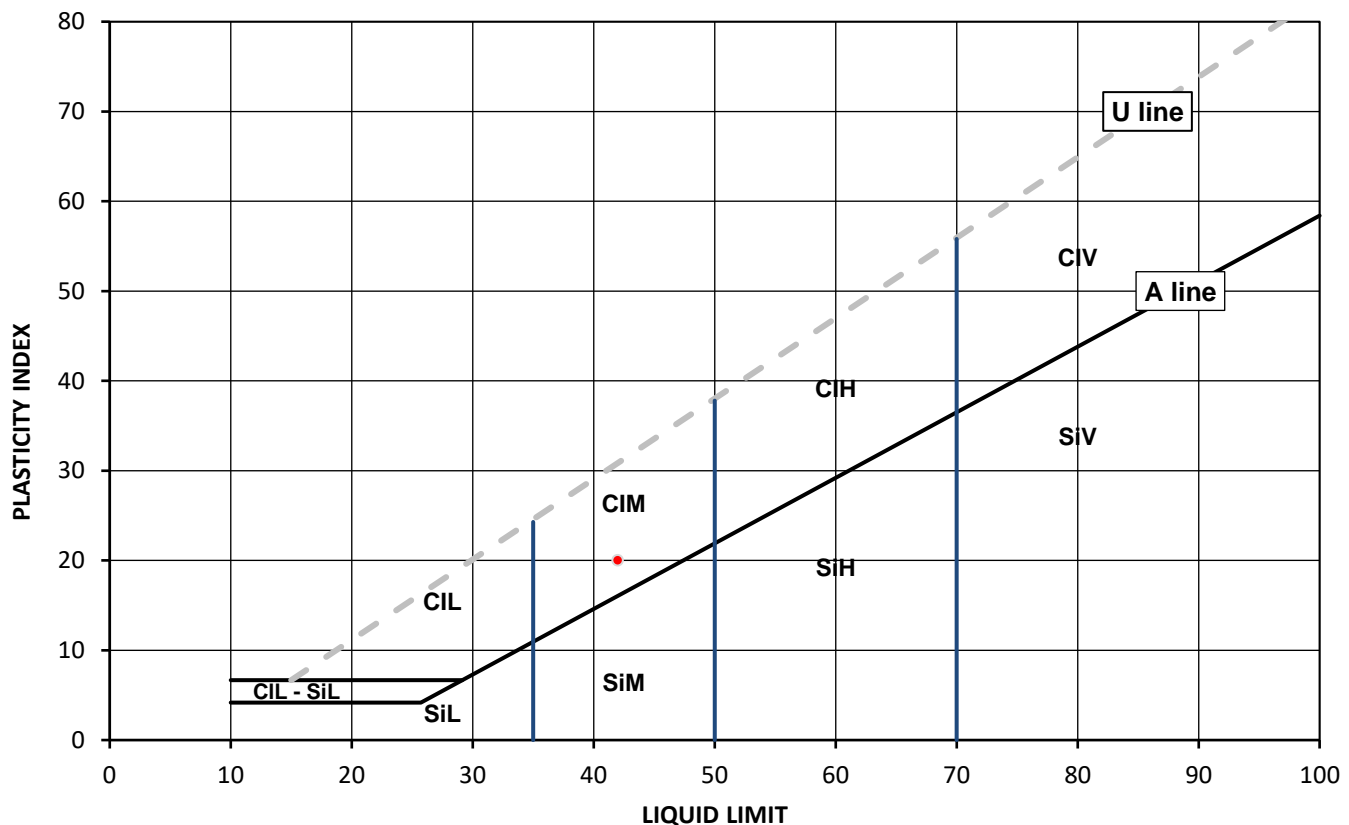
Depth Top [m]: 0.90

Depth Base [m]: Not Given

Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	42	22	20	71



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

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

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

Remarks:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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Date Reported: 05/03/2021

GF 232.10



TEST CERTIFICATE

Liquid and Plastic Limits

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



Environmental Science

4041

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

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU

Contact: George Kavanagh
Site Address: 76-78 High Street, Tonbridge

Client Reference: CCL03372

Job Number: 21-57919

Date Sampled: 08/02/2021

Date Received: 22/02/2021

Date Tested: 03/03/2021

Sampled By: Client

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

Test Results:

Laboratory Reference: 1776632

Hole No.: WS2

Sample Reference: Not Given

Soil Description: Brown slightly gravelly CLAY

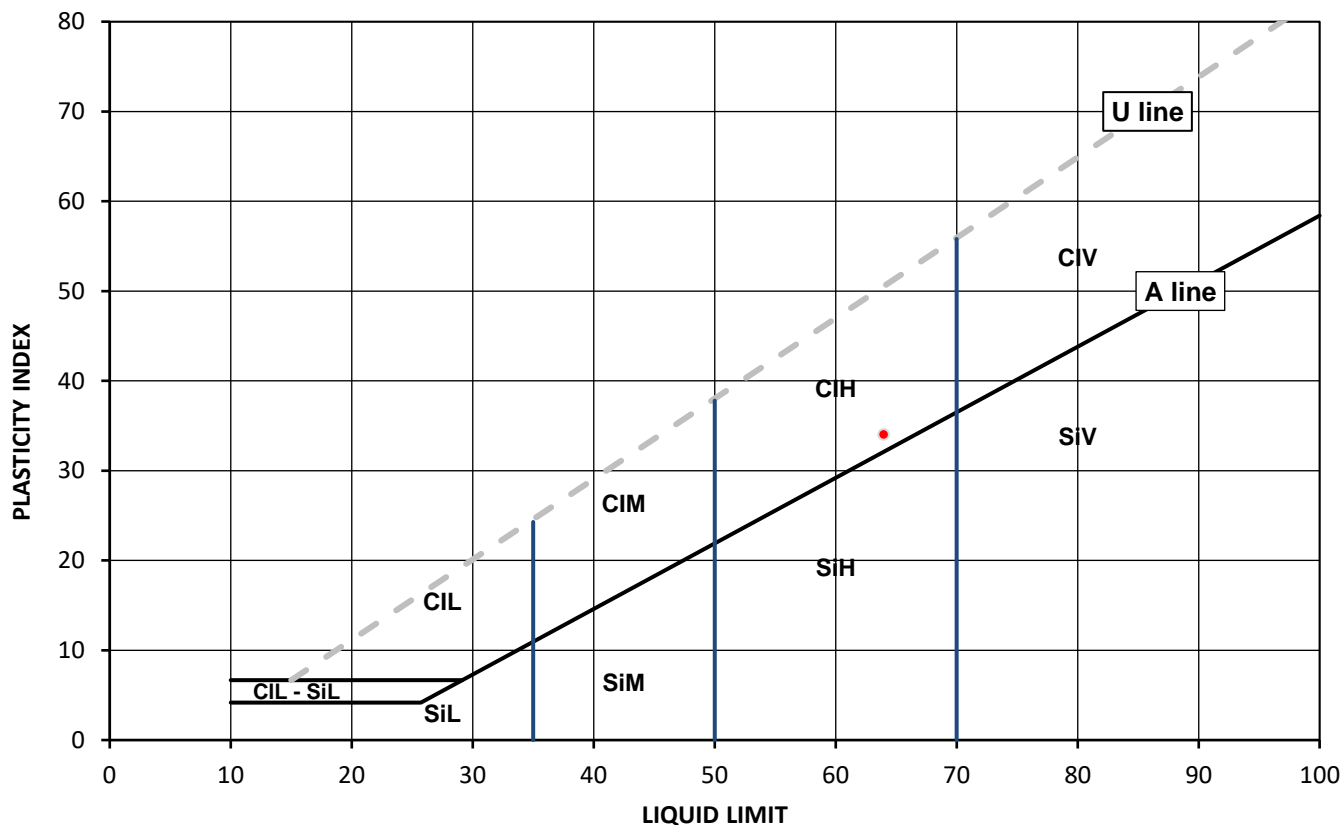
Depth Top [m]: 1.30

Depth Base [m]: Not Given

Sample Type: D

Sample Preparation: Tested after >425um removed by hand

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
39	64	30	34	99



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

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

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

Remarks:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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



Environmental Science

4041

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

Client: Crossfield Consulting Ltd
Client Address: The Granary, White Hall Farm,
Leamington Road, Long Itchington,
Warwickshire, CV47 9PU

Contact: George Kavanagh
Site Address: 76-78 High Street, Tonbridge

Client Reference: CCL03372

Job Number: 21-57919

Date Sampled: 08/02/2021

Date Received: 22/02/2021

Date Tested: 03/03/2021

Sampled By: Client

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

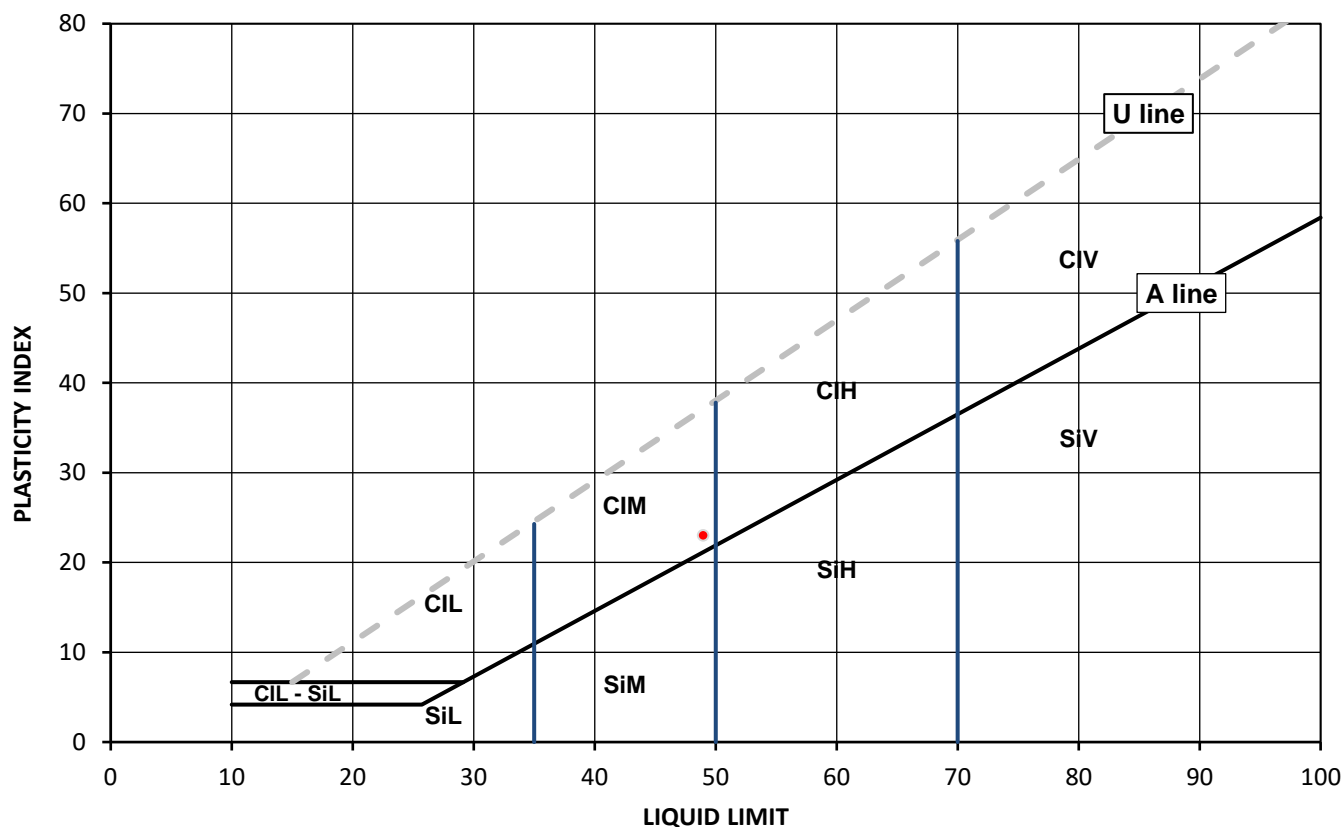
Test Results:

Laboratory Reference: 1776633
Hole No.: WS4
Sample Reference: Not Given
Soil Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.60
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
33	49	26	23	90



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

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

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

Remarks:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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Environmental Science

4041

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

Client: Crossfield Consulting Ltd
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Leamington Road, Long Itchington,
Warwickshire, CV47 9PU

Contact: George Kavanagh
Site Address: 76-78 High Street, Tonbridge

Client Reference: CCL03372

Job Number: 21-57919

Date Sampled: 08/02/2021

Date Received: 22/02/2021

Date Tested: 03/03/2021

Sampled By: Client

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

Test Results:

Laboratory Reference: 1776634

Hole No.: WS2

Sample Reference: Not Given

Soil Description: Brown slightly gravelly CLAY

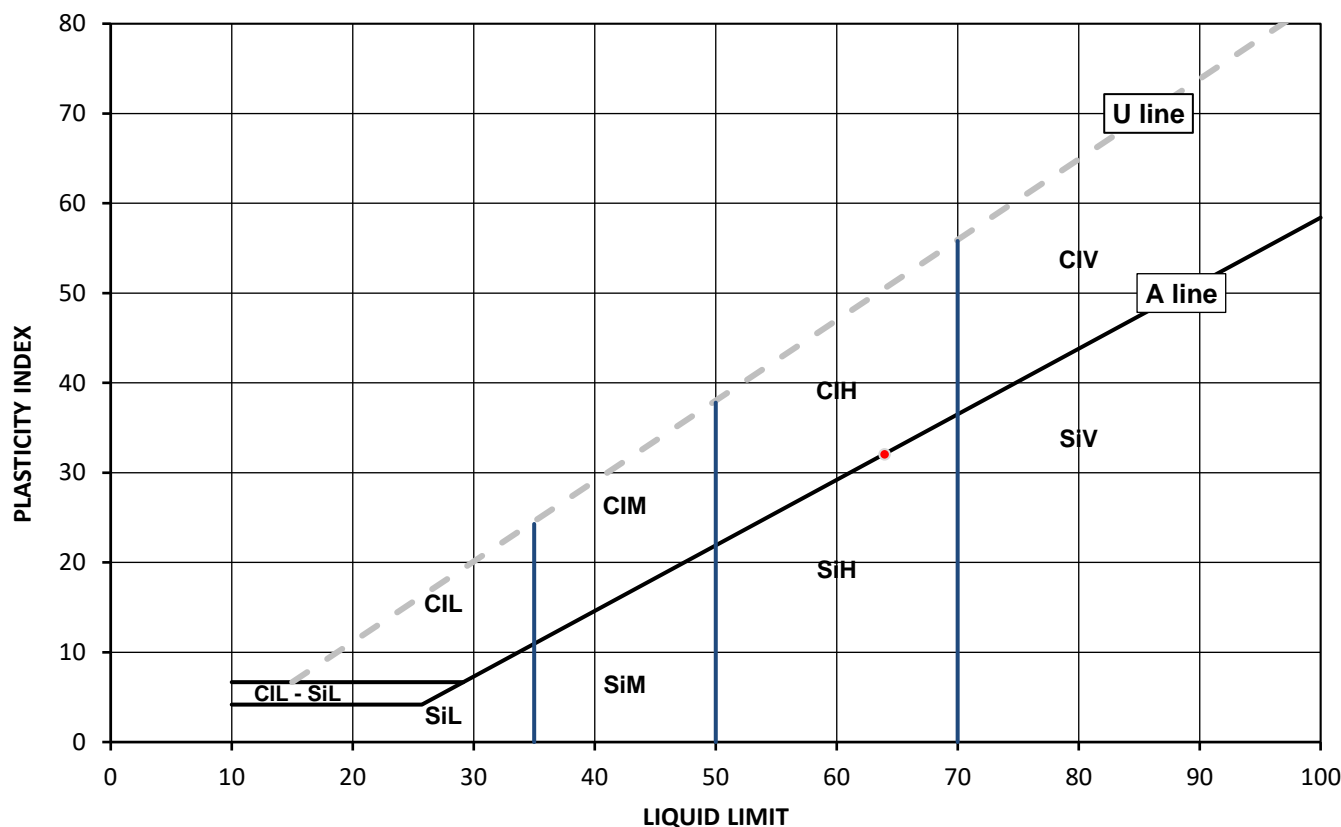
Depth Top [m]: 2.20

Depth Base [m]: Not Given

Sample Type: D

Sample Preparation: Tested after washing to remove >425um

As Received Moisture Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
41	64	32	32	97



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

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
		50 to 70
		exceeding 70
		append to classification for organic material (eg CIHO)

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

Remarks:

Signed:

Aleksandra Jurochnik
PL Technical Reviewer
for and on behalf of i2 Analytical Ltd

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4041

Client: Crossfield Consulting Ltd
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 Warwickshire, CV47 9PU
 Contact: George Kavanagh
 Site Address: 76-78 High Street, Tonbridge

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

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

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



Environmental Science

Client Reference: CCL03372
 Job Number: 21-57919
 Date Sampled: 08/02/2021
 Date Received: 22/02/2021
 Date Tested: 03/03/2021
 Sampled By: Client

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

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Moisture Content [W]	Water Content [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
1776631	WS1	Not Given	0.90	Not Given	D	Dark brown slightly gravelly sandy CLAY	Atterberg 1 Point	26		71	42	22	20						
1776632	WS2	Not Given	1.30	Not Given	D	Brown slightly gravelly CLAY	Atterberg 1 Point	39		99	64	30	34						
1776634	WS2	Not Given	2.20	Not Given	D	Brown slightly gravelly CLAY	Atterberg 1 Point	41		97	64	32	32						
1776633	WS4	Not Given	1.60	Not Given	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	33		90	49	26	23						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Aleksandra Jurochnik
 PL Technical Reviewer
 for and on behalf of i2 Analytical Ltd

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FIGURE III-1

The figure is a detailed site plan for an exploratory hole location. It shows a large rectangular building footprint on the right side, with various rooms and corridors. To the left of the building is a large open area, likely a parking lot or yard, with numerous elevation points marked (e.g., +22.30, +22.35, +22.40). Five specific locations for exploratory holes are marked with blue 'X' symbols and labeled WS 1, WS 2, WS 3, WS 4, and WS 5. WS 1 is in the upper left, WS 2 is in the upper middle, WS 3 is in the upper right, WS 4 is in the lower middle, and WS 5 is in the lower left. The plan also shows a road labeled 'New Wharf Road' at the top, a 'Garage' area, and various other site features like 'Elevation 3' and 'Elevation 4'. A north arrow is located in the top right corner.

EXPLORATORY HOLE LOCATION PLAN
Scale 1:200

Based on Jaspar Group Drawing No. JM065_PL_0100, dated 23.03.2020

Crossfield
CONSULTING
GEOTECHNICAL ENVIRONMENTAL

APPENDIX IV

APPENDIX IV – QUANTITATIVE RISK ASSESSMENT: HUMAN HEALTH

Contaminated Land Exposure Assessment Model v1.071

A site-specific risk assessment, with respect to human health considerations, has been undertaken due to the concentrations of arsenic, lead and the polyaromatic hydrocarbons benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(ah)anthracene recorded at levels above the generic assessment criteria (GAC).

The model has been set up on the basis that the proposed development comprises apartments, for residents of retirement age. The development will have managed landscaping such that there will be no private gardens and residents will not be permitted to cultivate the ground. The pollutant linkages considered are compatible with the published criteria for a residential development without plant uptake. It is noted that the risk assessment model presumes that the soil associated with the substance will be exposed at the surface following completion of the development. However, as the soft landscaped areas will comprise entirely grassed and mulched ornamental planting areas, which will be tended by landscaping contractors as part of a maintenance agreement, it is considered that there will be no exposure route relating to home grown produce or long-term direct dermal soil contact. The CLEA model has been set up for an age class of 18, which is appropriate for end users of retirement age as the critical risk receptor. The soil organic matter and pH parameters have been determined from average site data.

The model parameters, exposure route analysis and the summary of results for the relevant compounds are presented in this Appendix. The output data are summarised as follows:

Substance	Maximum Concentration (mg/kg)	Concentration Range (mg/kg)	Site Specific Assessment Criteria (SSAC) (mg/kg)	Maximum Concentration Exceeds SSAC? ¹	No. of Samples that Exceed SSAC
Arsenic	71	16 to 71	913	No	0
Lead	1100	41 to 1100	1480	No	0
Benzo(a)anthracene	40	0.27 to 40	89.6	No	0
Benzo(b)fluoranthene	48	0.61 to 48	30.1	Yes	1
Benzo(a)pyrene	45	0.60 to 45	65.7	No	0
Dibenzo(ah)anthracene	5.5	<0.05 to 5.5	2.41	Yes	1

Notes

1. Where the maximum concentration does not exceed the SSAC, risks to end users are considered to be negligible and, therefore, no further assessment is required. For compounds with a maximum concentration above the SSAC, further consideration of risks or remediation may be required. See Section 7.

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BASIC SETTINGS

Land Use Residential without produce

Building Apartment - Large

Receptor Female (res)

Start age class 18

End age class 18

Exposure Duration 10 years

Soil Sandy clay loam

Exposure Pathways

Direct soil and dust ingestion	<input checked="" type="checkbox"/>
Consumption of homegrown produce	<input type="checkbox"/>
Soil attached to homegrown produce	<input type="checkbox"/>

Dermal contact with indoor dust	<input checked="" type="checkbox"/>
Dermal contact with soil	<input type="checkbox"/>

Inhalation of indoor dust	<input checked="" type="checkbox"/>
Inhalation of soil dust	<input checked="" type="checkbox"/>
Inhalation of indoor vapour	<input checked="" type="checkbox"/>
Inhalation of outdoor vapour	<input checked="" type="checkbox"/>



Land Use Residential without produce

Receptor Female (res)

Age Class	Exposure Frequencies (days yr ⁻¹)						Occupation Periods (hr day ⁻¹)		Soil to skin adherence factors (mg cm ²)		Direct soil ingestion rate (g day ⁻¹)	Body weight (kg)	Body height (m)	Inhalation rate (m ³ day ⁻¹)	Max exposed skin factor		Total skin area (m ²)
	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with indoor dust	Dermal contact with soil	Inhalation of dust and vapour, indoor	Inhalation of dust and vapour, outdoor	Indoors	Outdoors	Indoor	Outdoor					Indoor (m ² m ⁻²)	Outdoor (m ² m ⁻²)	
1	180	0	180	180	365	365	23.0	1.0	0.06	1.00	0.10	5.60	0.7	8.5	0.32	0.26	3.43E-01
2	365	0	365	365	365	365	23.0	1.0	0.06	1.00	0.10	9.80	0.8	13.3	0.33	0.26	4.84E-01
3	365	0	365	365	365	365	23.0	1.0	0.06	1.00	0.10	12.70	0.9	12.7	0.32	0.25	5.82E-01
4	365	0	365	365	365	365	23.0	1.0	0.06	1.00	0.10	15.10	0.9	12.2	0.35	0.28	6.36E-01
5	365	0	365	365	365	365	19.0	1.0	0.06	1.00	0.10	16.90	1.0	12.2	0.35	0.28	7.04E-01
6	365	0	365	365	365	365	19.0	1.0	0.06	1.00	0.10	19.70	1.1	12.2	0.33	0.26	7.94E-01
7	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	22.10	1.2	12.4	0.22	0.15	8.73E-01
8	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	25.30	1.2	12.4	0.22	0.15	9.36E-01
9	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	27.50	1.3	12.4	0.22	0.15	1.01E+00
10	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	31.40	1.3	12.4	0.22	0.15	1.08E+00
11	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	35.70	1.4	12.4	0.22	0.14	1.19E+00
12	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	41.30	1.4	13.4	0.22	0.14	1.29E+00
13	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	47.20	1.5	13.4	0.22	0.14	1.42E+00
14	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	51.20	1.6	13.4	0.22	0.14	1.52E+00
15	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	56.70	1.6	13.4	0.21	0.14	1.60E+00
16	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	59.00	1.6	13.4	0.21	0.14	1.63E+00
17	0	0	0	0	0	0	0.0	0.0	0.00	0.00	0.00	70.00	1.6	14.8	0.33	0.27	1.78E+00
18	365	365	365	170	365	365	16.0	1.0	0.06	0.30	0.05	70.90	1.6	17.4	0.33	0.27	1.80E+00

Consumption Rates

Consumption rates (α FW kg^{-1} bodyweight day^{-1}) by Produce Group

Age Class	MEAN RATES						90TH PERCENTILE RATES					
	Green veg	Root veg	Tuber veg	Herb. Fruit	Shrub fruit	Tree fruit	Green veg	Root veg	Tuber veg	Herb. Fruit	Shrub fruit	Tree fruit
1							7.12E+00	1.07E+01	1.60E+01	1.83E+00	2.23E+00	3.82E+00
2							6.85E+00	3.30E+00	5.46E+00	3.96E+00	5.40E-01	1.20E+01
3							6.85E+00	3.30E+00	5.46E+00	3.96E+00	5.40E-01	1.20E+01
4							6.85E+00	3.30E+00	5.46E+00	3.96E+00	5.40E-01	1.20E+01
5							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
6							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
7							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
8							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
9							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
10							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
11							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
12							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
13							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
14							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
15							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
16							3.74E+00	1.77E+00	3.38E+00	1.85E+00	1.60E-01	4.26E+00
17							2.94E+00	1.40E+00	1.79E+00	1.61E+00	2.20E-01	2.97E+00
18							2.94E+00	1.40E+00	1.79E+00	1.61E+00	2.20E-01	2.97E+00

Top 2 applied? No

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

Building Apartment - Large**Soil** Sandy clay loam

Building footprint (m ²)	8.00E+01
Living space air exchange rate (hr ⁻¹)	5.00E-01
Living space height (above ground, m)	2.50E+00
Living space height (below ground, m)	0.00E+00
Pressure difference (soil to enclosed space, Pa)	3.10E+00
Foundation thickness (m)	1.50E-01
Floor crack area (cm ²)	2.56E+03
Dust loading factor (µg m ⁻³)	5.00E+01

Porosity, Total (cm ³ cm ⁻³)	5.30E-01
Porosity, Air-Filled (cm ³ cm ⁻³)	1.60E-01
Porosity, Water-Filled (cm ³ cm ⁻³)	3.70E-01
Residual soil water content (cm ³ cm ⁻³)	1.50E-01
Saturated hydraulic conductivity (cm s ⁻¹)	2.37E-03
van Genuchten shape parameter <i>m</i> (dimensionless)	3.10E-01
Bulk density (g cm ⁻³)	1.20E+00
Threshold value of wind speed at 10m (m s ⁻¹)	7.20E+00
Empirical function (F _x) for dust model (dimensionless)	1.22E+00
Ambient soil temperature (K)	2.83E+02
Soil pH	7.00E+00
Soil Organic Matter content (%)	2.00E+00
Fraction of organic carbon (g g ⁻¹)	1.16E-02
Effective total fluid saturation (unitless)	5.79E-01
Intrinsic soil permeability (cm ²)	3.16E-08
Relative soil air permeability (unitless)	5.78E-01
Effective air permeability (cm ²)	1.83E-08

Soil - Vapour Model

Depth to top of source (no building) (cm)	0
Depth to top of source (beneath building) (cm)	65
Default soil gas ingress rate?	Yes
Soil gas ingress rate ($\text{cm}^3 \text{s}^{-1}$)	2.50E+01
Building ventilation rate ($\text{cm}^3 \text{s}^{-1}$)	2.78E+04
Averaging time surface emissions (yr)	10
Finite vapour source model?	No
Thickness of contaminated layer (cm)	200

Air Dispersion Model

Mean annual windspeed at 10m (m s^{-1})	5.00
Air dispersion factor at height of 0.8m *	2400.00
Air dispersion factor at height of 1.6m *	0.00
Fraction of site cover ($\text{m}^2 \text{m}^{-2}$)	0.75

* Air dispersion factor in $\text{g m}^{-2} \text{s}^{-1}$ per kg m^{-3}

Soil - Plant Model

	Dry weight conversion factor	Homegrown fraction		Soil loading factor	Preparation correction factor
	g DW g^{-1} FW	Average	High	g g^{-1} DW	dimensionless
Green vegetables	0.096	0.05	0.33	1.00E-03	2.00E-01
Root vegetables	0.103	0.06	0.40	1.00E-03	1.00E+00
Tuber vegetables	0.210	0.02	0.13	1.00E-03	1.00E+00
Herbaceous fruit	0.058	0.06	0.40	1.00E-03	6.00E-01
Shrub fruit	0.166	0.09	0.60	1.00E-03	6.00E-01
Tree fruit	0.157	0.04	0.27	1.00E-03	6.00E-01

Gardener type None

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RESULTS

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Environment
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APPENDIX V

APPENDIX V – BASIS OF GEOTECHNICAL ASSESSMENT FOR FOUNDATIONS

Geotechnical Design Category of Structure: 2

Design Working Life: Standard building structure (50 years)

Design Approach: 1

1. Geotechnical Model

On the basis of the ground investigation data, the following model of the ground conditions is considered appropriate for foundation design purposes:

Depth (m)	General Description of Strata (and classification)	Parameter	Characteristic Value & Units	Remarks
0.00 to 1.20	Made Ground	γ	18 kN/m ³	Estimated from field data
0.20 to 4.00	Soft consistency, low strength, sandy, gravelly clays	N	3	Based on field data
		γ	18 kN/m ³	Estimated from field data
		c_u	30 kN/m ²	Based on field data
		ϕ_u	0°	
	Alluvium	Modified PI	30 %	Medium volume-change potential NHBC (2021)
4.00 to 5.00	Medium dense sands and gravels	N	15	Based on field data
		γ	20 kN/m ³	Estimated from field data
		c'	0 kN/m ²	
		ϕ'	32°	From Peck Hanson & Thornburn (1974)
	Alluvium	PI	n/a	Non volume-change potential – NHBC (2021)

Characteristic Depth to Groundwater (or groundwater level): 1.5 m

Reference should be made to Sections 8 – 9 of the report for an assessment of overall ground stability, seismic risk, combined failure of the structure/ground, excessive settlements and potential soil-volume changes (including heave).