

**GEOTECHNICAL REPORT ON
GROUND INVESTIGATION**

**91A UPPER TOLLINGTON PARK
FINSBURY, LONDON**

FOR

CONSTRUCTION TESTING SOLUTIONS LTD

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APPROVAL & DISTRIBUTION SHEET

PROJECT DETAILS	
CGL LEAD NO.	CGK00335
JOB NAME	91A Upper Tollington Park
CLIENT	Construction Testing Solutions Ltd
STATUS	Draft
VERSION	Rev2

DISTRIBUTION			
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FOREWORD

This document has been prepared by CGL with all reasonable skill, care and diligence within the terms of the contract with the Client and within the limitations of the resources devoted to it by agreement with the Client.

This document is confidential to the Client and CGL accepts no responsibility whatsoever to third parties to whom this document, or any part thereof, is made known. Any such party relies upon the document at their own risk.

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1. INTRODUCTION

This interpretative report has been prepared upon the instruction from Construction Testing Solutions Ltd email dated 8th April 2022.

The subject site is a residential property located at 91a Upper Tollington Park, Finsbury Park, London, N4 4LP. The rear of the property has been extended with single and two storey extensions. A survey of the property carried out by D M C Consulting Engineers on 25th January 2022 identified predominantly horizontal cracks up to 6mm wide affecting the flank walls of the extension. This has been attributed as most likely to be the result of desiccation of the clay soils that are anticipated to underly the site due to root activity from trees outside the boundary of the site on adjoining local authority land. The objective of this investigation was to establish whether desiccation is present due to the adjacent trees.

The fieldwork was carried out in April 2022 and comprised two hand dug trial pits extended by hand auger pits. This report is based upon the above fieldwork and subsequent geotechnical laboratory testing programme.

A CCTV drainage was also carried out but is not part of this report.

Attention is drawn to the fact that whilst every effort has been made to ensure the accuracy of the data supplied and any analysis derived from it, there is a potential for variations in ground and groundwater conditions between and beyond the specific locations investigated. No liability can be accepted for any such variations. Furthermore, any recommendations are specific to the client's requirements as detailed herein and no liability will be accepted should these be used by third parties without prior consultation with CGL.

A desk study as recommended in BS5930 "Code of practice for ground investigations" was not requested and has therefore not been carried out.

2. SITE SETTING

91A Upper Tollington Park, Finsbury, N4 4LP is located at the approximate national grid reference TQ312875, as shown on Figure 1. The property comprises a two and three storey house with single and two storey extensions to the rear, that has been converted to three self-contained flats.

In the proximity of 91A, Upper Tollington Park runs essentially north east to south west. The subject property is situated on the north side of the road. Immediately to south west of the property is Parkland Walk, an elevated wooded walk that probably exploits the line of a disused railway. The sides of the embankment are heavily wooded with the nearest trees about 8m from the affected flank wall of the property.

Reference to the publications of the British Geological Survey indicates that the site is underlain by the deposits of the London Clay Formation. The London Clay is an overconsolidated grey clay that weathers to brown near the surface. Characteristic of the London Clay are band of septarian nodules, commonly termed claystones, and the frequent presence of selenite crystals.

The London Clay Formation typically exhibits high shrinkage potential and high plasticity and as a result significant volume changes occur with variations in the natural moisture content. These volume changes may affect foundations and cause structural damage to buildings founded within the affected zone. Such changes can occur due to climatic and seasonal variations and, more significantly, because of the growth and removal of trees and shrubs.

Seasonal moisture content variations are likely to occur within the top 1m to 1.5m of the subsoil, whilst trees may abstract moisture to depths of 4m to 5m or more. As a tree grows it abstracts moisture from the ground and as a result subsidence of the ground surface may occur. If the tree is removed, the ground will swell causing heave of the ground surface. Shrinkable soils are subject to changes in volume as their moisture content is altered. Soil moisture contents vary seasonally and are influenced by several factors including the action of tree roots. The resulting shrinkage or swelling of the soil can cause subsidence or heave damage to foundations, the structures they support and services.

The ground investigation confirmed that the site was underlain by London Clay Formation mantled by Made Ground up to a maximum of 0.8m below ground level. Reference to publications of the British Geological Survey indicates that the site is underlain by The London Clay Formation. Typically, this formation comprises the following:

3. GROUND INVESTIGATION

The fieldwork was carried out in April 2022 and comprised two hand dug trial pit extended by hand augered boreholes to a maximum depth of 3.5m below ground level. The approximate locations of the exploratory holes are shown on Figure 2.

Details of the ground conditions encountered in the exploratory holes are presented on the engineer's logs in Appendix A. Reference should be made to these logs for detailed descriptions of the strata penetrated and the results of any in situ tests carried out. A summary only of the ground conditions encountered in the boreholes is presented below.

Made Ground

Underlying up to 0.1m of concrete, Made Ground was encountered within all the exploratory holes to a maximum depth of 0.8m below ground level in TP01. Typically, this material comprised one or more of the following: -

- Brown, fine to coarse sandy GRAVEL of angular and sub-angular, fine to coarse brick and occasional slate with low cobble content of angular brick.
- Dark brown, gravelly, fine to coarse SAND. Gravel is angular to sub-angular, fine to coarse brick.
- Firm, brown, gravelly CLAY. Gravel is angular and sub-angular brick.

London Clay Formation

Deposits of the London Clay Formation were encountered beneath the Made Ground and proved to the base of each exploratory hole to a maximum depth of 3.5m below ground level in TP01. The London Clay Formation was encountered as one or more of the following: -

- Firm to stiff, brown CLAY
- Firm to stiff brown mottled grey CLAY with occasional selenite crystals
- Very stiff, grey mottled brown CLAY with fine to coarse sand partings and frequent selenite crystals.

Roots and rootlets were observed to a maximum depth of 3.3m below ground level in TP01.

A slight water seepage was noted within the London Clay Formation in both exploratory holes at a depth of 1.5m below ground level in TP01 and 2.4m below ground level in TP02. The depth of the ground water table

was not ascertained as seepages in clay soils are extremely slow and the boreholes would need to have been left open for a considerable period of time for the water level in the borehole to have attained equilibrium with the ground water table. Notwithstanding the above, it should be noted that groundwater levels may vary both seasonally and in the long term.

4. LABORATORY TESTING

The following geotechnical laboratory testing programme was carried out to provide further information on the engineering properties of the subsoil. Unless stated otherwise, these tests were carried out in accordance with BS 1377 “Methods of Test for Soils for Civil Engineering Purposes”.

Number of tests	Test	UKAS Accreditation
12	Moisture content determinations	CTS
11	Atterberg limits	CTS
2	BRE SD1 Suite	CGL Supplier
6	Suction	CTS

5. DISCUSSION AND RECOMMENDATIONS

GENERAL

The property at 91a Upper Tollington Park was surveyed in January by D M C Consulting Engineers who identified horizontal cracking in a flank wall, adjacent to wooded park land, that they attributed to being likely due to desiccation of the underlying London Clay by tree root activity. A ground investigation was requested to confirm the anticipated geology and determine whether the London Clay was desiccated. The ground investigation comprising two hand excavated foundation pits extended by hand augered boreholes was carried out on 20th April 2022.

The ground investigation confirmed that the site is underlain by the solid geology of the London Clay Formation which was encountered and proved to the base of each borehole. Roots were observed to 3.3m bgl in TP01 and 2.9m in TP02. Root identification on recovered samples established that a sample from 3.3m in TP01 and from the underside of the footing in TP02 were too decayed to identify the species other than broadleaved. A 12mm diameter root sample from the underside of the footing TP01 established it to be a species of Acer, consistent with the presence of Sycamores on the adjoining park land.

Slight water seepages were noted in both boreholes at depths of 1.5m and 2.4m in TP01 and TP02 respectively.

DESSICCATION

Atterberg limits carried out on soil samples recovered from the London Clay Formation have established that it is of high volume change potential as defined in the National House Building Council (NHBC) Standards Chapter 4.2 “Building near trees” and very high plasticity (CV) as defined in BS5930.

Various relationships have been postulated for the relationship between equilibrium moisture content and the liquid and plastic limits. None of these postulated relationships suggest significant desiccation was present at the time of the investigation.

At equilibrium moisture content the strength of a homogenous clay soil, such as the London Clay, increases roughly linearly with depth. As a soil becomes desiccated the strength increases with greater strengths with increased moisture deficit. A crude approximation of strength can be made using a pocket or dial gauge penetrometer. Field testing was carried out and profiles of dial gauge penetrometer readings versus depth are included in Appendix C. The pocket penetrometer profiles do not indicate desiccation to be present.

As a soil becomes desiccated it develops a suction as it tried to recover the moisture deficit. In addition as a sample is recovered from the ground and relived of the stresses surrounding it it develops a suction due to sampling. By comparison of soil suction tests for affected soils with those unaffected by desiccation, a control borehole, it is possible to determine both the presence and magnitude of any desiccation due to tree root activity. In the absence of a control borehole, such as in this case, comparison can be made with a postulated equilibrium suction line based on the assumed stress history of the soil. The results of the soil suction tests appear to suggest desiccation is present to significant depth as all the results are considerable higher than those based on normal postulated relationship of suction with depth based on $K_0=2.5$. However, identifying the proportion of soils suctions due to desiccation is unreliable and these results too are inconclusive.

Based on NHBC Standards Chapter 4.2 and previous experience, the zone of influence of a tree, i.e. the extent of its roots, extends typically 1.5x the height of the tree from the tree, and where groups of trees are present the affect can extend to twice the height of the tree. Based on this and the presence of large roots beneath the foundations it is likely that the clay soils will be affected by desiccation although the affect of this may be being mitigated by the presence of water, as expressed by seepages not the boreholes. It has not been conclusively demonstrated that the water seepage into the boreholes was due to groundwater and in any event is possible that the water table is seasonal. If the water table is seasonal then desiccation may be present during summer months with recovery during wetter months. If this is the case this could result in a cycle of seasonal shrinkage and swelling accompanied by settlement and heave respectively. The presence of decayed roots may indicate seasonal inundation and “drowning” of the roots.

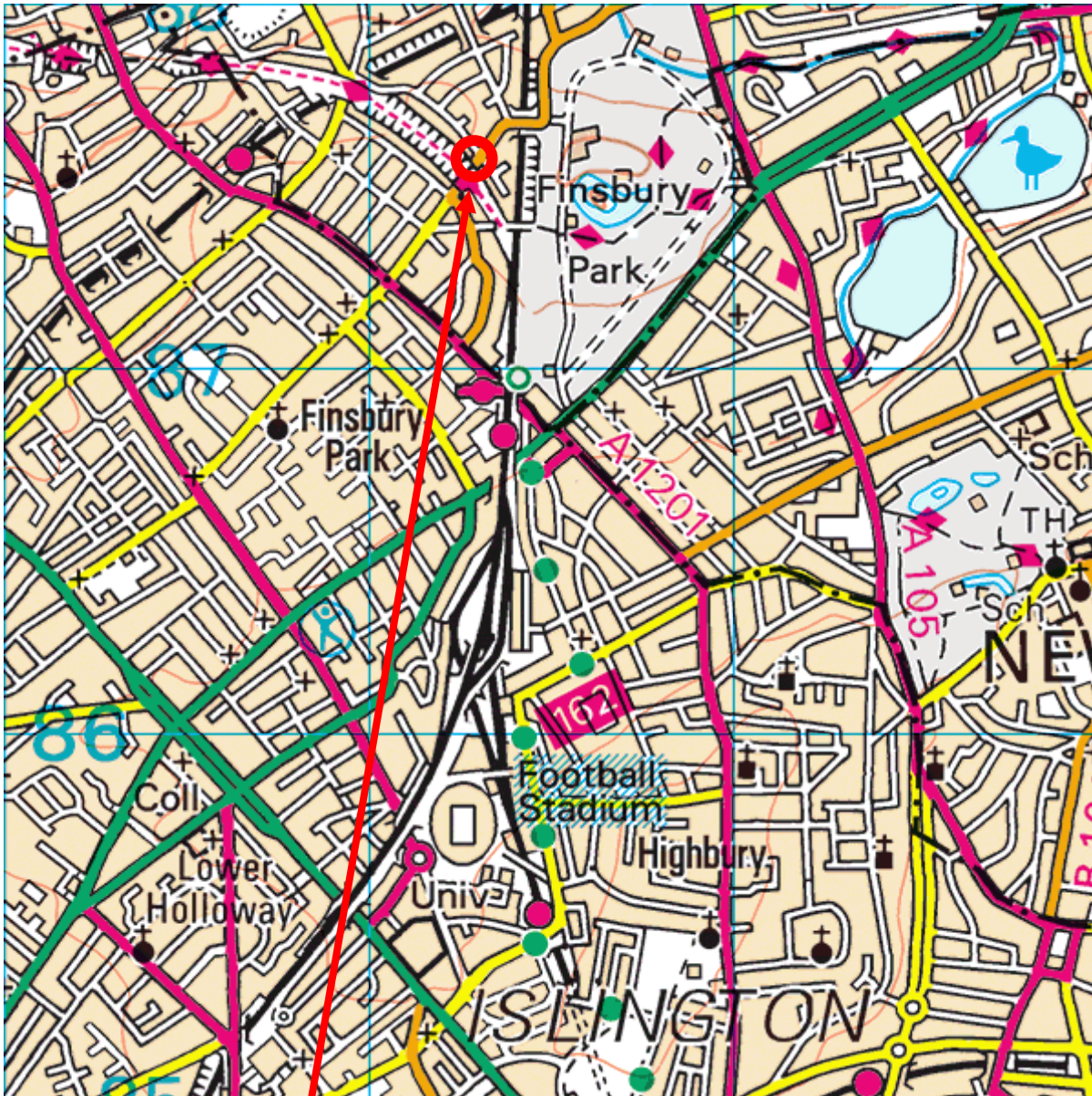
It is noted that the foundations to the extension, which it is understood was built prior to 1972, are shallow and as a result would likely to be affected by seasonal shrinkage and swelling, which can result in desiccation of clay soils to depths of up to 1.5m, and as a result of any tree root activity, even if this is confined to relatively shallow depths.

CONCLUSION

The investigation has established that the extension to 91a Upper Tollington Park is founded on relatively shallow foundations bearing in London Clay which is of very high plasticity and high volume change potential. Whilst tree roots have been observed to be present in the clay soils beneath the foundations the various tests have not confirmed desiccation to be present at the time of the investigation, possibly as a result of the shallow water table. The absence of desiccation at the time of the investigation does not preclude the possibility of desiccation being present seasonally during summer months or as a result of renewed growth of trees during spring and summer months, particularly if the water table is ephemeral and absent in the summer.

The crack damage is considered to be consistent with shrinkage of the soils beneath the foundations as a result of desiccation despite the fact that desiccation was not proved to be present at the time of the investigation. Based on the soils encountered in the boreholes and the depth of the foundations they are likely to be affected by shrinkage of the London Clay due to seasonal desiccation during summer months and by moisture abstraction by the tree roots whilst the water table is depressed or absent, also during summer months. Subsequent recovery of any moisture deficit during winter months and on recovery of any water table will result in swelling of any desiccated London Clay and heave of the foundations. The impact of the trees could be mitigated by removal of the trees or reduction of their crowns. Long term management of the trees will be required. Due to the shallow depth of the foundations future movement due to seasonal shrinkage and swelling cannot be avoided. Monitoring of the cracks would be beneficial in assessing the seasonal movements and the impact of tree management, and might be adequate to inform the need for future tree management.

FIGURES



SITE LOCATION

Site Location Plan

Scale: 1:50,000

FIGURE 1

91A Upper Tollington Park

Lead No. CGK00335

Sheet 1 of 1

Created By:

AN

Checked:

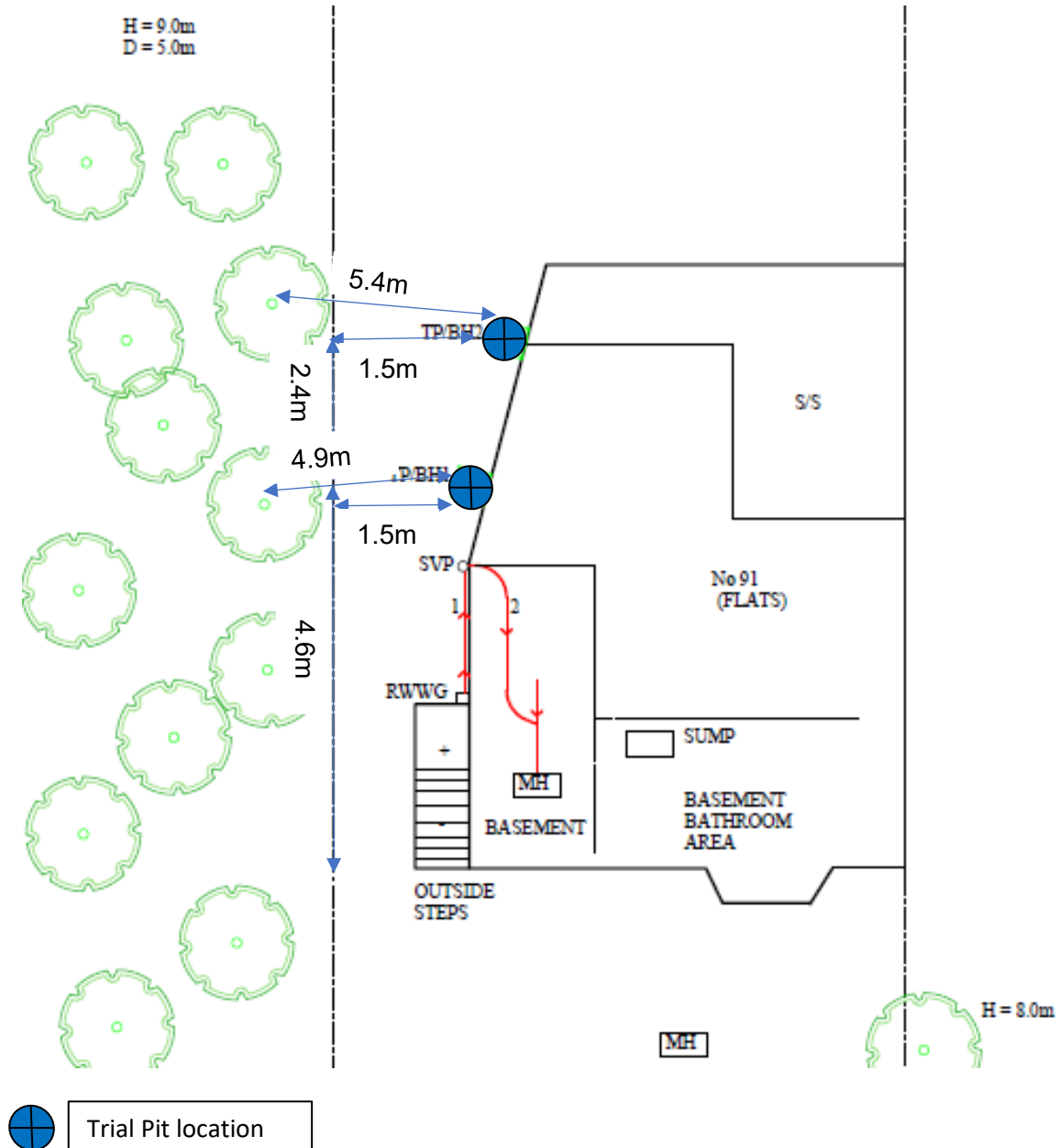
PW

Approved:

PW

Date:

June 2022



Approximate Borehole Location Plan

Scale: NTS

FIGURE 2

APPENDIX A

Fieldwork



Providing Ground Solutions

KEY TO BOREHOLE AND TRIAL PIT LOGS

Samples

D	Small disturbed sample
U	Undisturbed sample, 100mm nominal diameter
UT	Undisturbed thin walled sample, 100mm nominal diameter
B	Bulk disturbed samples (bar indicates sample range)
U38	Hand driven 'undisturbed' sample, 38mm nominal diameter
P	Undisturbed piston sample (bar indicates sample range)
W	Water sample
ICBR	In-situ California Bearing Ratio sample
*	No recovery sample
T	Tub sample
V	Vial sample
J	Jar sample

Tests

S	Standard penetration test
C	Cone penetration tests
N =	SPT/CPT 'N' Value (number of blows for 300mm full penetration)
80/150	Number of blows/total penetration(mm) for SPT/CPT test
25/25SP	As above for seating drive only
*	N value obtained over 450mm penetration
U =	Blows to achieve 450mm penetration for a U sample
$V_h =$	In-situ hand vane test in kN/m^2
m	In-situ CBR test by Mexe probe
$V =$	In-situ field vane test in kN/m^2
ppm =	Parts per million of flammable gas as methane equivalents
pp =	Pocket Penetrometer in kg/cm^2

Observations, Backfill and Installations



Water strike – depth shown in metres below ground level.



Gravel backfill



Bentonite backfill



Arisings backfill



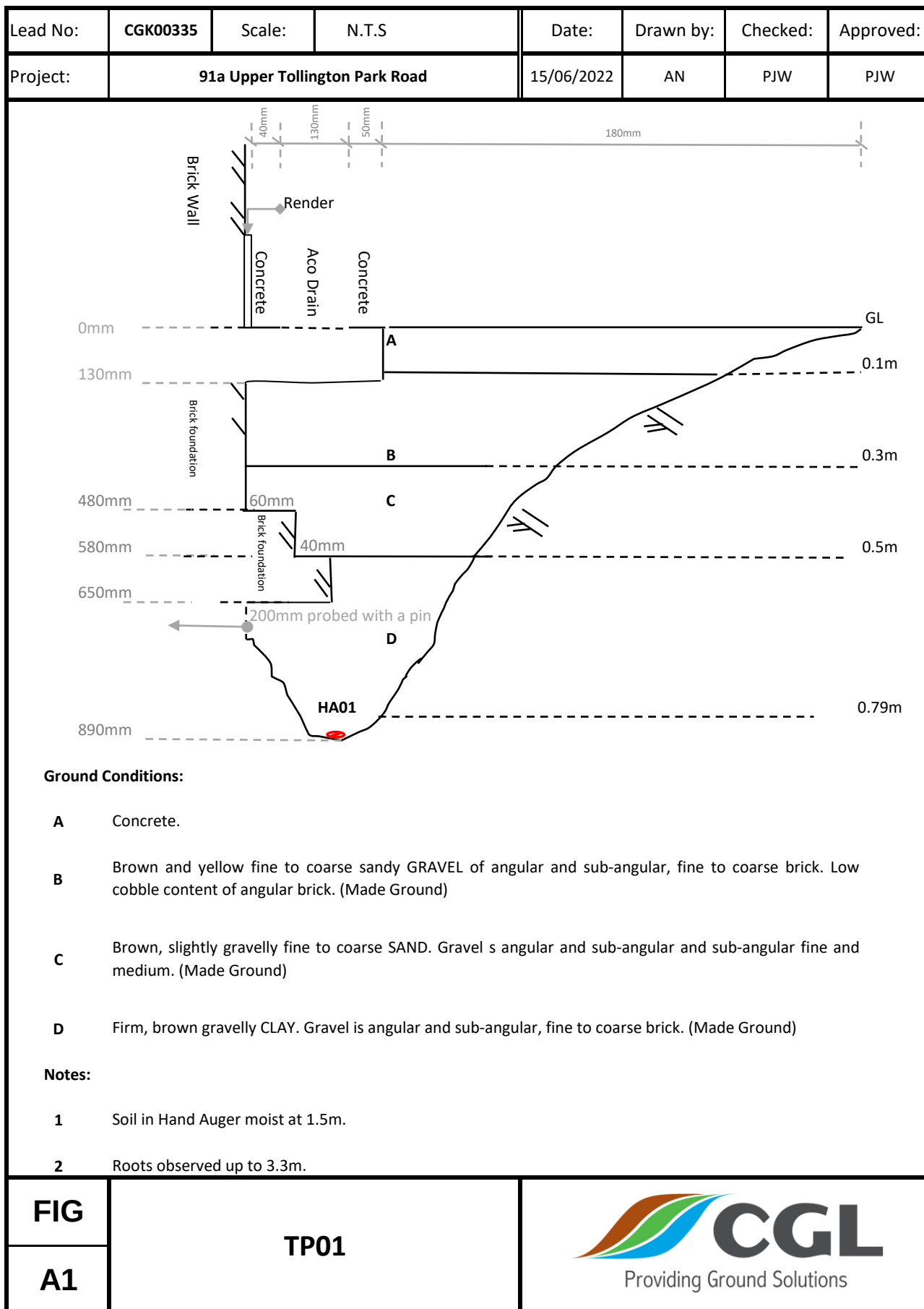
Concrete



Plain Pipe



Slotted Pipe

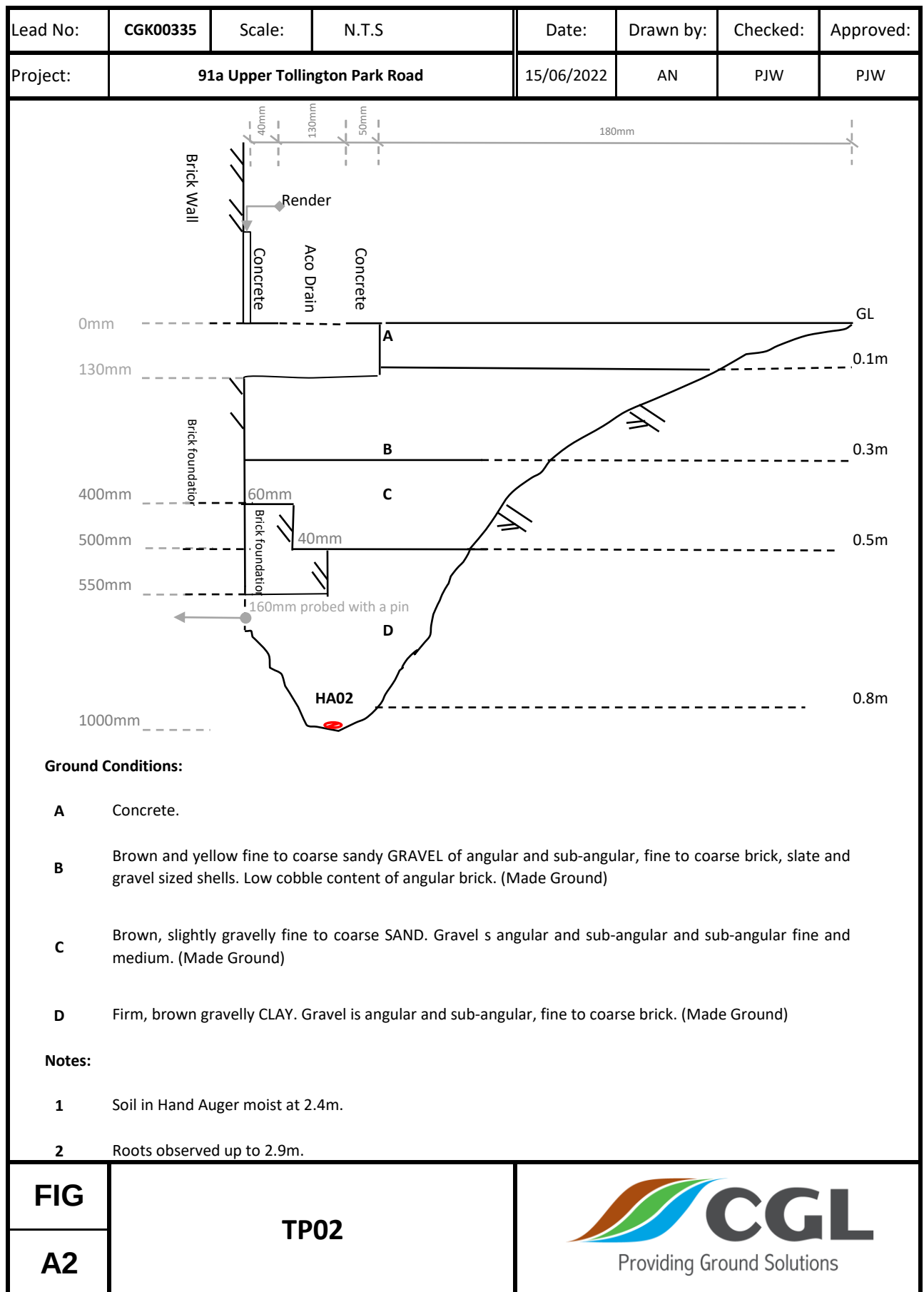


Client: CTS			Depth (m) 3.50		Plant used:Hand Auger	TRIAL PIT NUMBER TP01 Sheet 1 of 1	
Width (m) 0.30		Length (m) 0.35		Method of Excavation:	Shoring: None		
Co-ordinates		Ground Level (m AOD)		Hand Augering	Date Started: 20/04/2022		
Samples/In Situ Tests			Change of Strata		Description of Strata	Legend	
Depth (m)	Type	Test/Field Records	Reduced Level (mAOD)	Depth & (Thickness) (m)			
0.25				(0.10)	Concrete		
				0.10	Brown and yellow fine to coarse sandy GRAVEL of angular and sub-angular, fine to coarse brick. Low cobble content of angular brick.		
0.50			(0.20)				
			0.30				
0.65			(0.04)	Made Ground			
			0.34				
			(0.45)	Brown, slightly gravelly fine to coarse SAND. Gravel is angular and sub-angular fine and medium			
			0.79	Made Ground			
1.00		Vh = 50		Firm, brown gravelly CLAY. Gravel is angular and sub-angular, fine to coarse brick.			
1.00			(0.51)	Made Ground			
1.00				Firm, brown CLAY with abundant roots.			
1.10			1.30	London Clay Formation			
1.50		Vh = 117		Firm, fissured, brown mottled grey CLAY with fine to coarse sand partings. Abundant selenite crystals from 2.3m below ground level. Fissures were gleyed grey			
1.50				London Clay Formation			
1.50							
2.00		Vh = 121	(1.40)				
2.00							
2.00							
2.50		Vh = 133					
2.50							
2.50							
3.00		Vh = 134	2.70	Very stiff, fissured grey mottled brown CLAY with occasional fine to coarse sand partings. Occasional selenite crystals. Fissures were gleyed grey.			
3.00				(0.80)		London Clay Formation	
3.00							
3.50		Vh = 150	3.50	End of Trial Pit at 3.50m			
3.50							
3.50							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							
							

General Remarks:

1. A hard standing concrete was broken and reinstated. 2. Hand dug pit with a hand auger follow up to maximum depth of 3.5m below ground level. 3. A small seepage observed at 1.5m with a wet sample recovered at the same depth. 4. Roots observed to a maximum depth of 3.3m below ground level. 5. The trial pit remained open and stable during the exploratory work. 6. Borehole hand shear vane used for undrained shear strength.

Ref:	CGK00335	TRIAL PIT RECORD Scale 1:25 See Key Sheet for explanation of symbols, etc.	 Providing Ground Solutions
Logged:	AN		
Checked:		Upper Tollington Park	FIG A1
Appr'd:			



Client: CTS			Depth (m) 3.40		Plant used:Hand Auger	TRIAL PIT NUMBER TP02 Sheet 1 of 1
Width (m) 0.30		Length (m) 0.30		Method of Excavation:	Shoring: None	
Co-ordinates		Ground Level (m AOD)		Hand Augering	Date Started: 20/04/2022	
Samples/In Situ Tests			Change of Strata		Description of Strata	Legend
Depth (m)	Type	Test/Field Records	Reduced Level (mAOD)	Depth & (Thickness) (m)		
0.45		Vh = 68		(0.10)	Concrete	
0.55				0.10	Brown and yellow fine to coarse sandy GRAVEL of angular and sub-angular, fine to coarse brick, slate and gravel sized shells. Low cobble content of angular brick.	
0.65				(0.20)		
0.65				0.30		
0.80				(0.20)	Made Ground	
			0.50	Brown, slightly gravelly fine to coarse SAND. Gravel is angular and sub-angular fine and medium		
			(0.30)	Made Ground		
1.00		Vh = 62		0.80	Firm, brown gravelly CLAY. Gravel is angular and sub-angular, fine to coarse brick.	
1.00				(0.70)	Made Ground	
1.00					Firm, brown CLAY with abundant roots.	
					London Clay Formation	
				1.50	Firm, fissured, brown mottled grey CLAY with fine to coarse sand partings. Abundant selenite crystals from 2.6m below ground level. Fissures were gleyed grey.	
1.50		Vh = 77			London Clay Formation	
1.50				(1.20)		
2.00						
2.00						
2.00						
2.50		Vh = 93				
2.50						
2.50						
3.00		Vh = 126				
3.00						
3.00						
3.00						
3.00						
3.30		Vh = 135				
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						

General Remarks:

1. A hard standing concrete was broken and reinstated. 2. Hand dug pit with a hand auger follow up to maximum depth of 3.4m below ground level. 3. A small seepage observed at 2.4m with a wet sample recovered at the same depth. 4. Roots observed to a maximum depth of 2.9m below ground level. 5. The trial pit remained open and stable during the exploratory work. 6. . Borehole hand shear vane used for undrained shear strength.

Ref:	CGK00335	TRIAL PIT RECORD Scale 1:25 See Key Sheet for explanation of symbols, etc.	 Providing Ground Solutions
Logged:	AN		
Checked:		Upper Tollington Park	FIG A2
Appr'd:			

APPENDIX B

Laboratory Testing



SITE INVESTIGATION LABORATORY TEST REPORT

SI REPORT NUMBER: EQU001

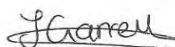
CLIENT : Yellow Pages - CGL - Geotechnical Consultancy

SITE:
(CGK00335)
91A Upper Tollington Park

DATE OF SITE VISIT:
20/04/2022

DATE RECEIVED BY LABORATORY:
04/05/2022

L. Kirby
Compiled by :
L. Kirby - Laboratory Technician (B)


Approved by :
J. Garrett - Laboratory Manager (B)

DATE REPORTED: 13-May-2022

Laboratory Summary Results

Our Ref : EQU001

Location : (CGK00335) 91A Upper Tollington Park

Client: Yellow Pages - CGL - Geotechnical Consultancy

Address: Northdown House, Ashford Road, Harrietsham, Kent ME17 1QW

Date Sampled: 20/04/2022

Date Received : 04/05/2022

Date Tested : 04/05/2022

Date of Report : 13/05/2022

Sample Ref		Type	Moisture Content (%) [1]	Soil Fraction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity * Index [5]	Modified * Plasticity Index (%) [6]	Soil * Class [7]	Filter Paper Contact Time (d)	Soil Sample Suction (kPa) [8]	Oedometer Strain [9]	Estimated * Heave Potential (Dd) (mm)[10]	In situ * Shear Vane Strength (kPa) [11]	Organic * Content (%) [12]	pH * Value [13]	Sulphate Content * (g/l)		* Class [16]
TP/BH No	Depth (m)																	SO3 [14]	SO4 [15]	
1	1.1	D	35	<5	81	30	51	0.09	51	CV	7	273								
	1.5	D	27	<5	73	25	48	0.05	48	CV					114					
	2.0	D	32	<5	75	29	46	0.06	46	CV	7	411			120					
	2.5	D	33	<5	77	29	48	0.08	48	CV					121					
	3.0	D	34	<5	83	32	51	0.05	51	CV	7	552			135					
	3.5	D	33	<5	80	30	50	0.05	50	CV					> 150					

Test Methods / Notes

[1] BS 1377 : Part 2 : 1990, Test No 3.2

[2] Estimated if <5%, otherwise measured

[3] BS 1377 : Part 2 : 1990, Test No 4.4

[4] BS 1377 : Part 2 : 1990, Test No 5.3

[5] BS 1377 : Part 2 : 1990, Test No 5.4

[6] BRE Digest 240 : 1993

[7] BS 5930 : 2018 : Figure 8 - Plasticity Chart for the classification of fine soils

[8] Building Research Establishment Information Paper 4/93

[9] In Accordance with BS 1377-5 : 1990 : Clause 3

[10] Estimated Heave Potential (Dd)

[11] Values of shear strength were determined in situ by CTS using a Pilcon hand vane or Geonor vane (GV).

[12] BS 1377 : Part 3 : 1990, Test No 4

[13] BS 1377 : Part 3 : 1990, Test No 9

[14] BS 1377 : Part 3 : 1990, Test No 5.6

[15] SO₄ = 1.2 x SO₃

[16] BRE Special Digest One (Concrete in Aggressive Ground) August 2005

Note that if the SO₄ content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4M or DS-5M class respectively unless water soluble magnesium testing is undertaken to prove otherwise.

PSD Chart - BS 1377: Part 2 : 1990, Test No 9.2

* These tests are not UKAS accredited

Full reports can be provided upon request.

Key

D Disturbed sample (small)

B Disturbed sample (bulk)

U Undisturbed sample

W Groundwater sample

ENP Essentially Non-Plastic by inspection

U/S Underside of Foundation

Test results reported relate only to the items tested.

This report shall not be reproduced except in full without approval of the laboratory.

The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer.

Opinions and interpretations expressed herein are outside of the scope of UKAS accreditation.

Construction Testing Solutions Ltd - Lawness Barns, Mountnessing Road, Billericay, Essex CM12 0TS

Version: 5BH V3.1 - 12.04.22



0927

Our Ref :EQU001

Location : (CGK00335) 91A Upper Tollington Park

Client: Yellow Pages - CGL - Geotechnical Consultancy

Address: Northdown House, Ashford Road, Harrietsham, Kent ME17 1QW

Laboratory Testing Results

Date Sampled : 20/04/2022

Date Received : 04/05/2022

Date Tested : 04/05/2022

Date of Report : 13/05/2022

Sample Ref.		Type	Moisture Content (%) [1]	Soil Fraction > 0.425mm (%) [2]	Liquid Limit (%) [3]	Plastic Limit (%) [4]	Plasticity Index (%) [5]	Liquidity * Index [5]	Modified * Plasticity Index (%) [6]	Soil * Class [7]	Filter Paper Contact Time (d)	Soil Sample Suction (kPa) [8]	Oedometer Strain [9]	Estimated * Heave Potential (Dd) (mm)[10]	In situ * Shear Vane Strength (kPa) [11]	Organic * Content (%) [12]	pH * Value [13]	Sulphate Content * (g / l)		* Class [16]		
TP/BH No.	Depth (m)																	SO3 [14]			SO4 [15]	
2	0.45	D	15	77																		
	0.8	D	29	36	73	30	43	-0.03	27	CV												
	1.0	D	35	<5	79	28	51	0.14	51	CV	7	217			62							
	2.0	D	33	<5	75	26	49	0.15	49	CV	7	478			93							
	2.5	D	33	<5	83	31	52	0.03	52	CV					126							
	3.0	D	33	<5	83	30	53	0.06	53	CV	7	574			135							

Test Methods / Notes

[1] BS 1377 : Part 2 : 1990, Test No 3.2

[2] Estimated if <5%, otherwise measured

[3] BS 1377 : Part 2 : 1990, Test No 4.4

[4] BS 1377 : Part 2 : 1990, Test No 5.3

[5] BS 1377 : Part 2 : 1990, Test No 5.4

[6] BRE Digest 240 : 1993

[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils

[8] Building Research Establishment Information Paper 4/93

[9] In Accordance with BS 1377-5 : 1990 : Clause 3

[10] Estimated Heave Potential (Dd)

[11] Values of shear strength were determined in situ by CTS using a Pilcon hand vane or Geonor vane (GV).

[12] BS 1377 : Part 3 : 1990, Test No 4

[13] BS 1377 : Part 2 : 1990, Test No 9

[14] BS 1377 : Part 3 : 1990, Test No 5.6

[15] SO₄ = 1.2 x SO₃

[16] BRE Special Digest One (Concrete in Aggressive Ground) August 2005

Note that if the SO4 content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4M or DS-5M class respectively unless water soluble magnesium testing is undertaken to prove otherwise.

PSD Chart - BS 1377: Part 2 : 1990, Test No 9.2

* These tests are not UKAS accredited

Full reports can be provided upon request.

Key

D Disturbed sample (small)

B Disturbed sample (bulk)

U Undisturbed sample

W Groundwater sample

ENP Essentially Non-Plastic by inspection

U/S Underside of Foundation

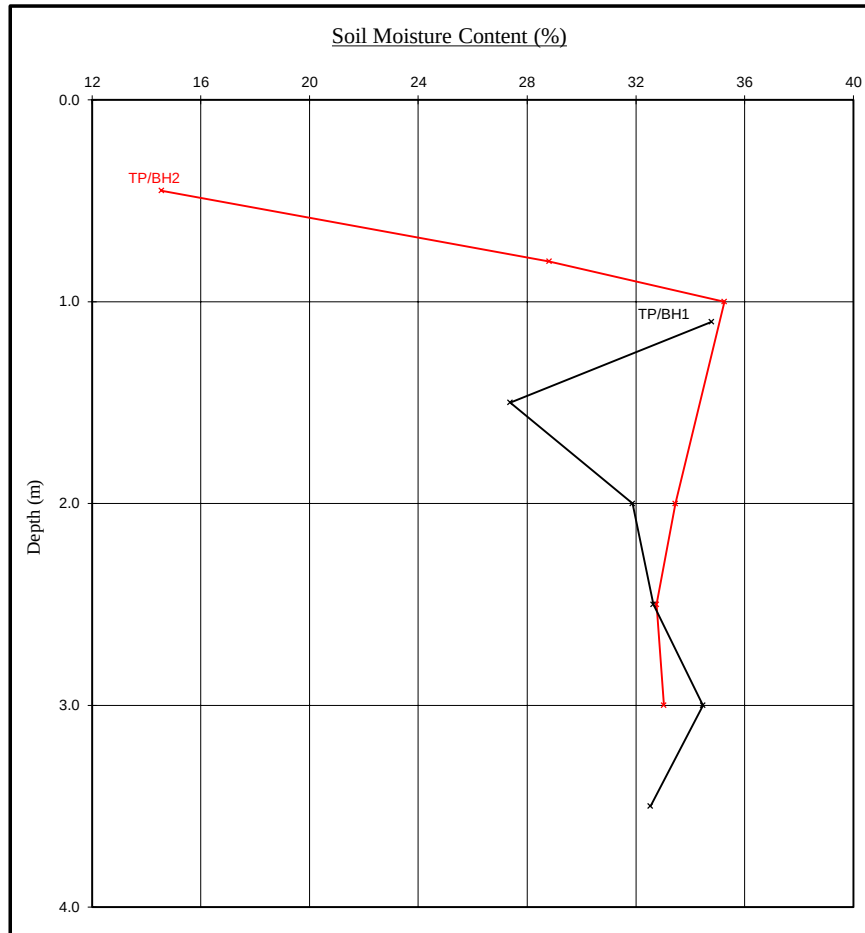
Test results reported relate only to the items tested.
This report shall not be reproduced except in full without approval of the laboratory.
The laboratory does not apply a conformity statement to test reports as standard, unless specifically requested by the customer.
Opinions and interpretations expressed herein are outside of the scope of UKAS accreditation.



Moisture Content Profiles

Our Ref : EQU001
Location : (CGK00335) 91A Upper Tollington Park
Work carried out for: Yellow Pages - CGL - Geotechnical Consultancy

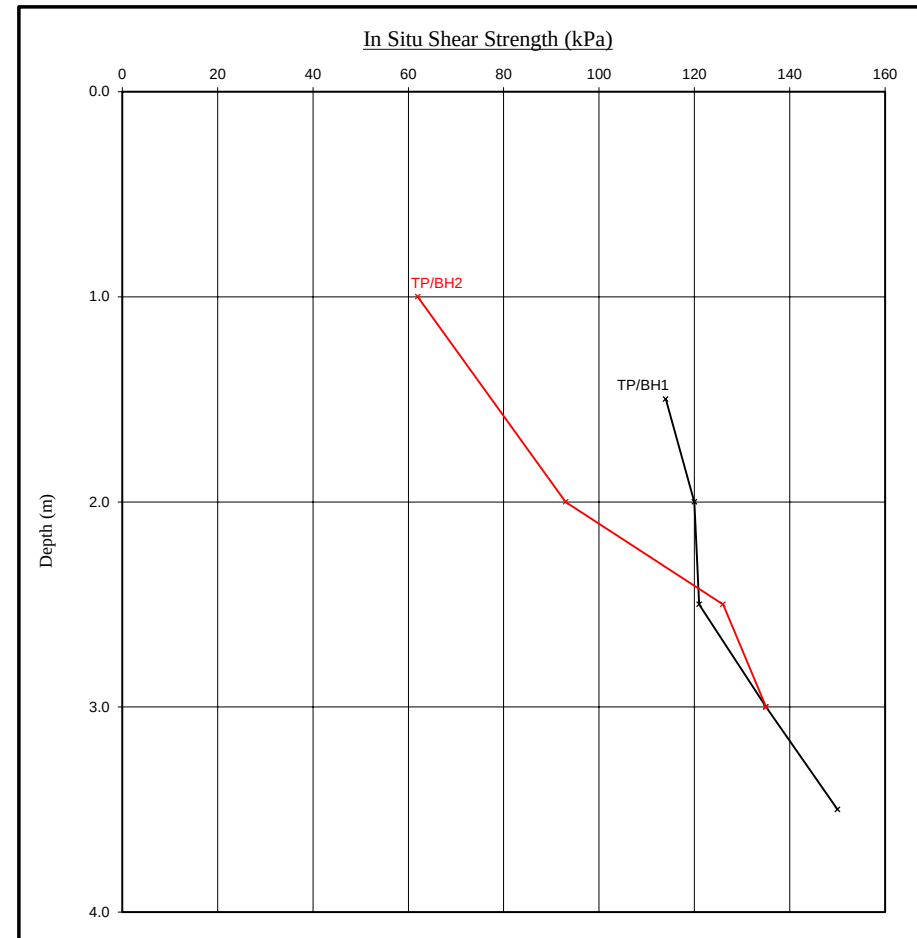
Date Sampled : 20/04/2022
Date Received : 04/05/2022
Date Tested : 04/05/2022
Date of Report : 13/05/2022



Notes

1. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clay) at shallow depths.
2. Unless specifically noted the profiles have not been related to a site datum.

Shear Strength Profiles

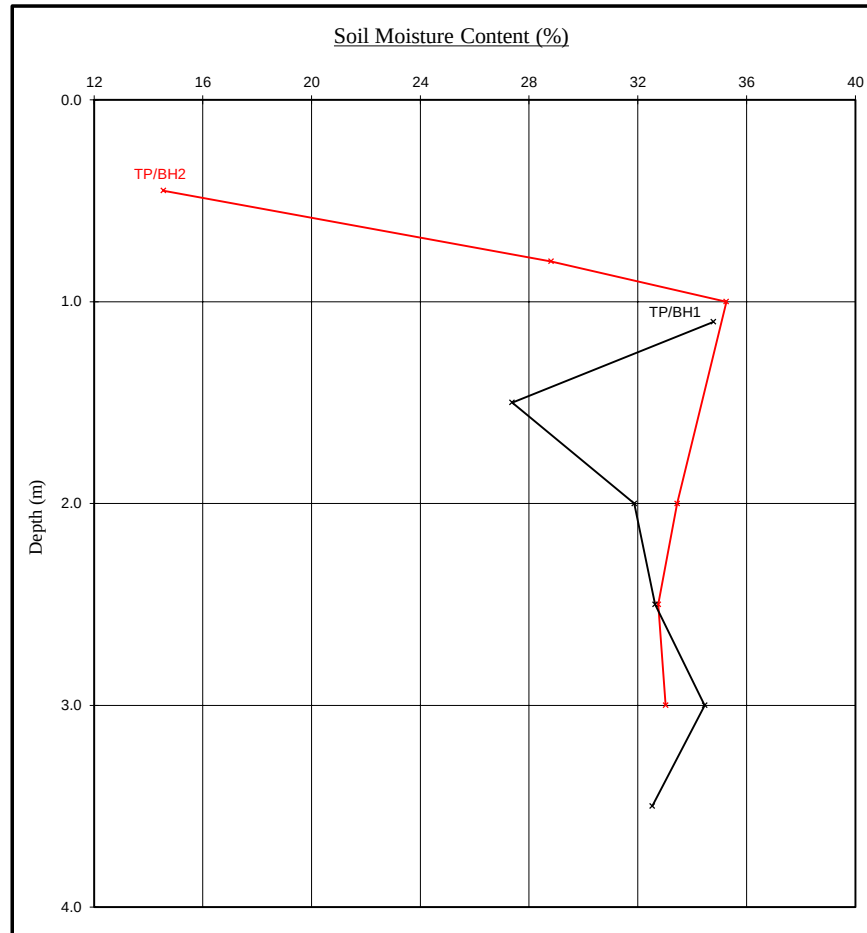


Note

1. Unless otherwise stated, values of Shear Strength were determined in situ by CTS using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 150 kPa.
2. Unless specifically noted the profiles have not been related to a site datum.

Moisture Content Profiles

Our Ref : EQU001
 Location : (CGK00335) 91A Upper Tollington Park
 Work carried out for: Yellow Pages - CGL - Geotechnical Consultancy

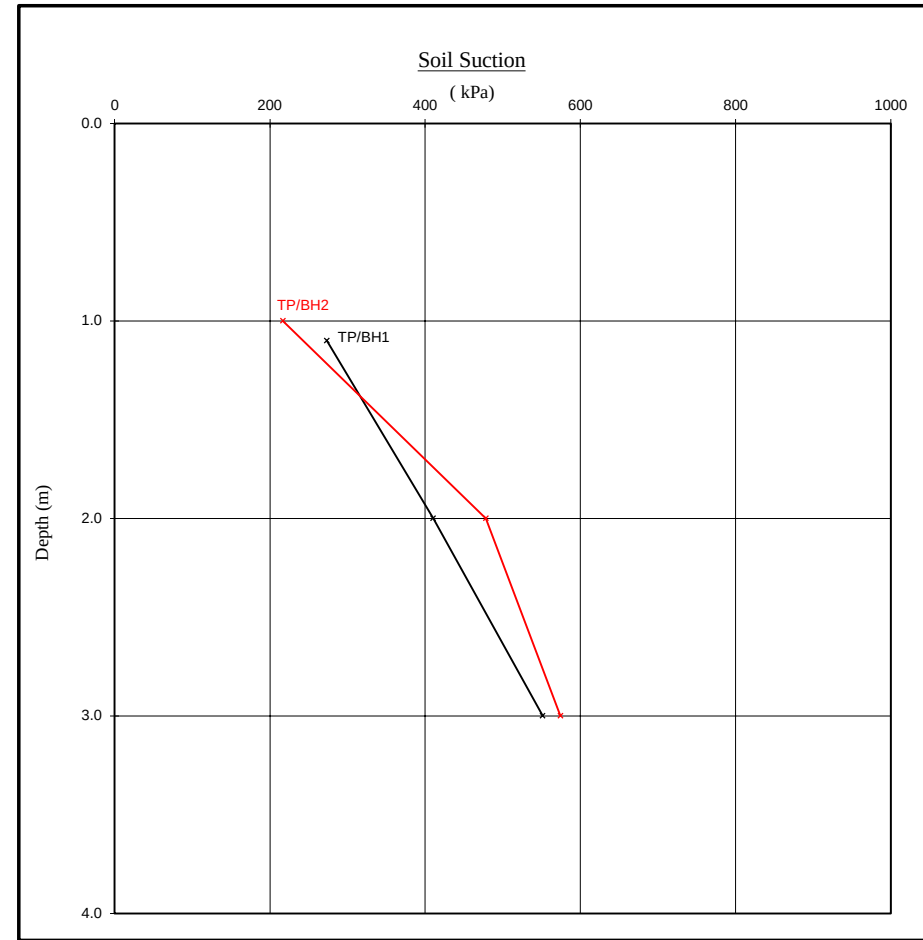


Notes

1. If plotted, 0.4 LL and PL+2 (after Driscoll, 1983) should only be applied to London Clay (and similarly overconsolidated clay) at shallow depths.
2. Unless specifically noted the profiles have not been related to a site datum.

Soil Suction Profiles

Date Sampled : 20/04/2022
 Date Received : 04/05/2022
 Date Tested : 04/05/2022
 Date of Report : 13/05/2022



Note

When shown, the theoretical equilibrium suction profiles are based on conventional assumptions associated with London Clay (and similarly overconsolidated clays) at shallow depths. Note that the sample disturbance component is dependant on the method of sampling and any subsequent recompaction. The above plots show this to be 100kPa which is the value suggested by the BRE on the basis of their limited number of tests on recompacted samples. This may or may not be appropriate in this instance and judgement should be exercised.

Construction Testing Solutions
4 Oak Spinney Park
Ratby Lane
Leicester Forest East
Leicestershire
LE3 3AW

Intec
Parc Menai, Bangor,
Gwynedd, North Wales
LL57 4FG
Tel: 01248 672652
Fax: 01248 672601

ROOT IDENTIFICATION

91A Upper Tollington Park

Client Reference: EQU001
Report Date: 4 May 2022
Our Ref: R45093

Sub Sample	Species Identified		Root Diameter	Starch
TP1:				
USF	Acer spp.	1	12 mm	Low
BH1:				
to 3.3m	broadleaved species, too decayed for positive identification	2	<1 mm	Absent
TP2:				
USF	broadleaved species, too decayed for positive identification	3	1 mm	Absent

Comments:

- 1 - Plus 3 others also identified as *Acer* spp.
- 2 - Plus 3 others the same. All small and juvenile.
- 3 - Plus 2 others the same.

Acer spp. are maples, including sycamore, Norway maple, and Japanese maples.

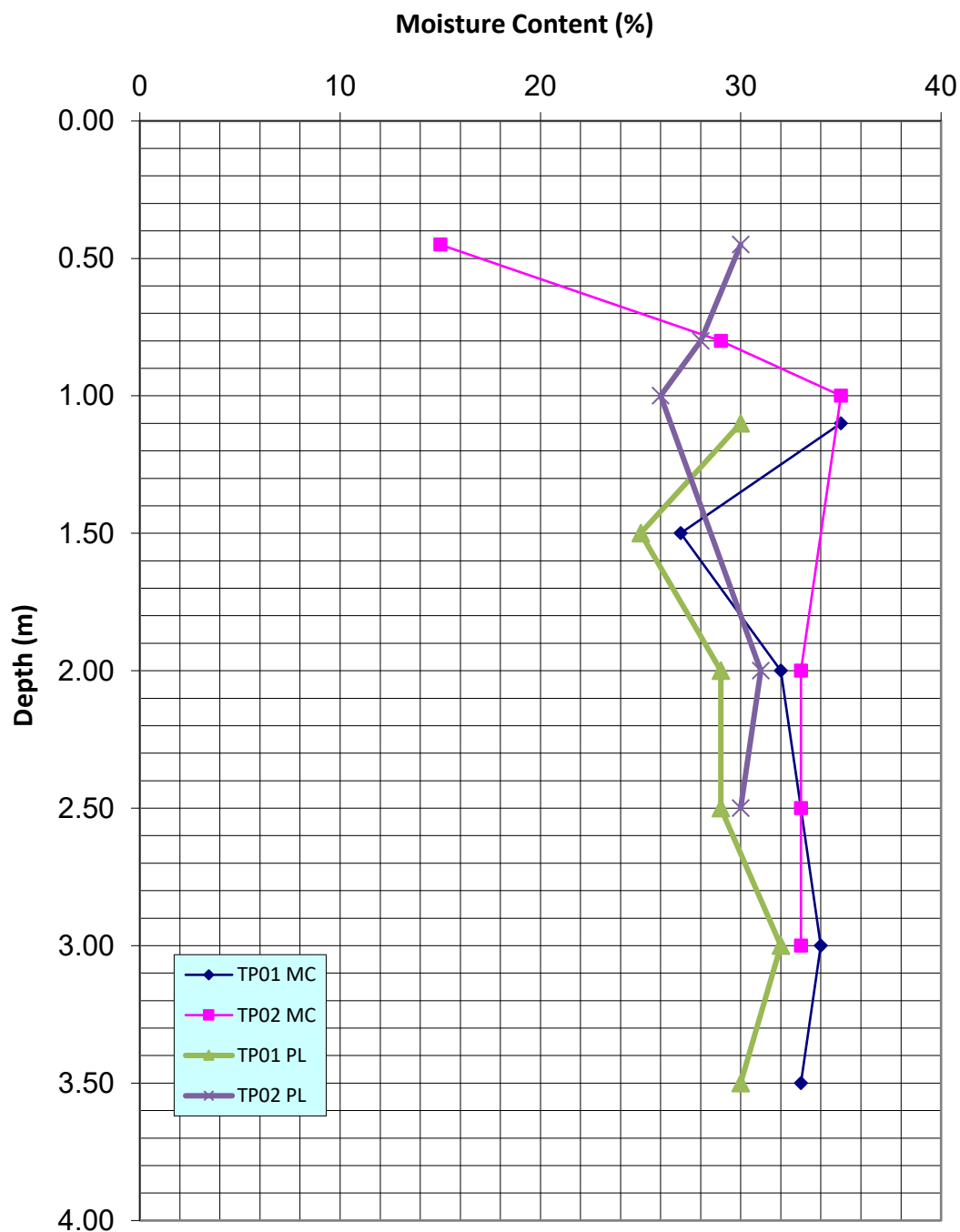
Signed: R J Shaw

Unless we are otherwise instructed in writing, the above sample material will normally be disposed of 6 years after the date of this report.

APPENDIX C

Soil Profiles

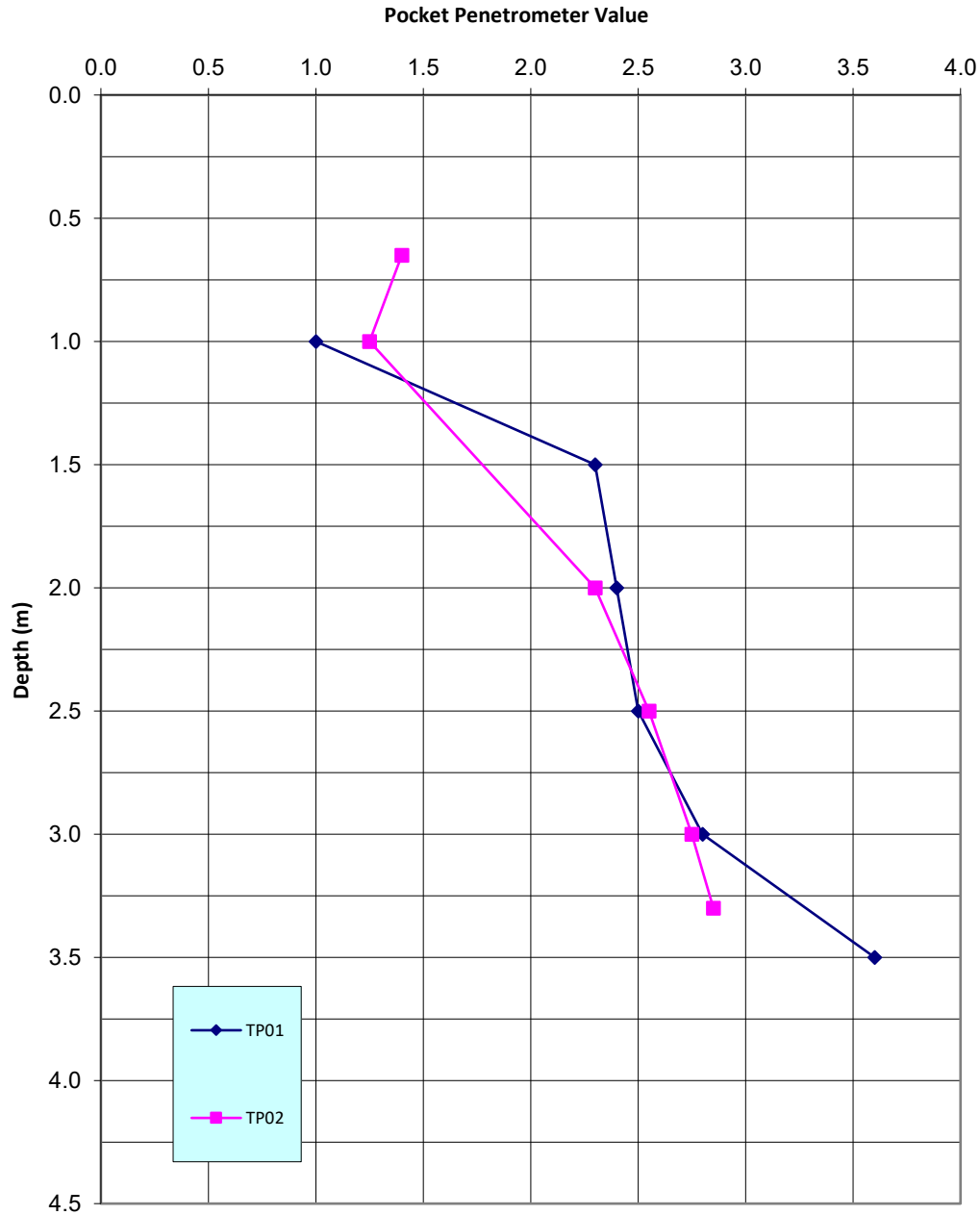
Lead No.: CGK00335	Scale: N.T.S	Date	Drawn by	Checked	Approved
Site: 91A Upper Tollington Park		15/06/22	AN	PE	PE



MOISTURE CONTENT PROFILE



Lead No.: CGK00335	Scale: N.T.S	Date	Drawn by	Checked	Approved
Site: 91A Upper Tollington Park		15/06/22	AN	PE	PE



POCKET PENETROMETER PROFILE