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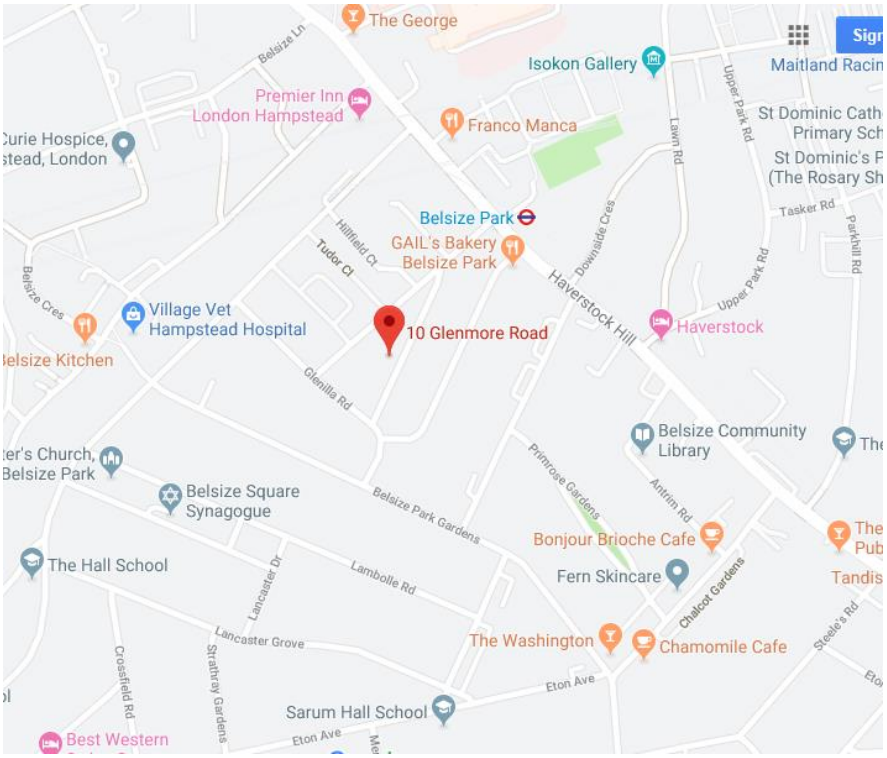
SITE INVESTIGATION LTD



Site Investigation Report
10 Glenmore Road
London
NW3 4DB

Report No.: 0762

Date: 7th August 2019

Engineers: Structure Workshop
(Sam Riley)

Connaughts
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Structure Workshop
4 Illiffe Yard
Walworth
London
SE17 3QA

Our Ref: SW/JW/0762
Date: 7th August 2019

F.A.O: Sam Riley (Engineer)

Dear Sir

Re: 10 Glenmore Road, London, NW3 4DB: Site Investigation Report

1.0 INTRODUCTION

In accordance with your instructions, we visited the above site on the 10th, 11th and 12th July 2019 to excavate trial pits, drill shallow hand augered boreholes and a deeper mechanical borehole. The purpose of our site investigation was to provide information on the foundations to the property in order for designs to be finalised for a proposed construction at this property. In addition to these works, contamination samples were taken in order for a preliminary contamination assessment report to be produced by Terragen Ltd. This report will be sent separately but should be read alongside this report.

The property 10 Glenmore Road is a large mid-terrace four storey residential property of estimated 1900 age. The property contained a partial basement which was 1.10m below the internal first floor level and 1.40m below the front pavement level and 1.20m below the rear garden level. It is understood that the proposed development comprises the lowering of the existing basement by approximately 1.50m to create a full habitable basement level and for this basement to be extended beneath the footprint of the property to the rear as the existing basement is only situated to the front half of the property.

2.0 GEOLOGICAL INFORMATION

The geological survey map of the area shows the site to be situated in a relatively simple geological area with the site and surrounding area underlain by the London Clay Formation of Eocene age. No other deposits were noted in close proximity to the site.

The London Clay Formation of Eocene age (34-56 million years) comprises a series of silty clays which can become clayey silts and sands. The upper sections of the London Clay is typically an orange brown colour due to oxidisation of the iron within the clay and becomes stiffer and a dark brown grey colour with depth signifying less weathering.

The London Clay Formation contains silt and fine sand partings along with shell layers and also concretions of cementstone nodules and pyrite and selenite crystals. Where compaction and dewatering has occurred to a greater level, the clay can become an extremely weak mudstone. The top of the London Clay Formation can contain an overlying head deposit comprising a reworked clay mixed with locally derived flint gravels. This deposit rarely extends much beyond 2.00m and the base tends to be signified by a lack of gravels.

A borehole record search revealed two boreholes drilled close to the east of the site with both encountering made ground over the London Clay Formation. A borehole drilled in 1941 encountered MADE GROUND over a soft mud MADE GROUND to 2.43m over what appeared to be a reworked clay (MADE GROUND) to 3.84m. Below this a natural yellow CLAY (Upper weathered London Clay Formation) was encountered which became a blue CLAY (Lower less weathered London Clay Formation) below 7.62m with this clay then present to the close of the borehole at 44.19m.

3.0 FIELDWORK

The site investigation works comprised the excavation of eight trial pits internally within the house (TP1, TP2, TP3) and within the basement area (TP4, TP5, TP6, TP7, TP8) to the property.

The trial pits exposed the foundations to the property which were then logged with measurements taken along with sampling and insitu strength testing using the hand held shear vane within the base of the trial pits. The findings from the trial pit excavations is discussed within Chapter 5.0 and are held as scaled foundation diagrams within Appendix 2. The location of the trial pits are also marked on the site plan within Appendix 1.

In addition to this, a single window sample borehole was drilled to the rear of the building using a light weight, restricted access, Competitor Window Sampling drilling rig with the borehole drilled within the rear garden. The borehole was progressed by the hammer drilling of 1m long steels cutting tubes within which are held a 1m long clear plastic liner which collects undisturbed samples. The diameter of the cutting tube is reduced regularly to allow for drilling to depths. This borehole was drilled to a depth of 5.00m where an impenetrable claystone layer prevented any further progress. Within the deep borehole a water monitoring standpipe was installed within the borehole at a depth of 5.00m.

Insitu strength testing was conducted within the borehole using the dynamic probe test which was set up to use the same drop weight and height as the Standard Penetration Testing (SPT). This test comprises the recording of the number of blows taken to drive a steel cone into the soil from the drop of a 63.5kg hammer of a distance of 760mm. For the dynamic probe test blow counts are taken at 100mm intervals throughout. To determine the SPT N Value, three of these increments are added together. To convert into an estimated shear strength a factor of 4.8 is used based on Stroud & Butler - The Standard Penetration Test and the Engineering Properties of Glacial Materials – 1975. The findings of the borehole drilling is discussed within Chapter 6.0 and held as a borehole log within Appendix 3. The location of the borehole is marked on the site plan within Appendix 1.

4.0 LABORATORY TESTING

Selected soil samples taken from the window sample boreholes were sent to Soil Property Testing for UKAS accredited soils testing in accordance with British Standards 1377: Testing of soils for civil engineering purposes.

Six samples were tested for their moisture content with three samples also tested for their plasticity using the Atterberg limits test. A single undisturbed sample was tested for its undrained shear strength using the triaxial compression test with another sample tested for its one dimensional consolidation properties using the oedometer test. Four samples were tested for their soluble sulphate and pH value. The results of the soil laboratory testing is discussed within Chapter 5.0 and held as results summaries and test sheets within Appendix 4.

5.0 TRIAL PIT FINDINGS

i. Trial pits excavated within the main house

Trial pit 1 was excavated internally on the right hand party wall and exposed the party wall foundation (A-A) and the small internal return wall (B-B). The party wall foundation (A-A) comprised brickwork which extended to 1.64m below the first floor level where a projection was encountered. Unfortunately, due to the depth of the foundation and the collapse of trial pit sides, it was not possible to expose or locate by probing the extent of the projection or the base of the foundation.

The internal return wall foundation comprised brickwork which appeared to follow the party wall foundation with the brickwork continuing below 1.00m. A sleeper wall was constructed in front of this wall which was seated onto the oversite concrete. Again, the base of this foundation could not be exposed due to the depths involved and collapse of the excavations.

Trial pit 2 was excavated internally on the left hand party wall and exposed the party wall foundation (A-A) and the small internal return wall (B-B). The party wall foundation (A-A) comprised brickwork which extended to 1.50m (proved by full excavation) and then continued to a depth in excess of 2.00m (proved by probing). Unfortunately, due to the depth of the foundation and the collapse of trial pit sides, it was not possible to expose or locate by probing the extent of the projection or the base of the foundation.

The internal return wall foundation comprised brickwork which appeared to follow the party wall foundation with the brickwork continuing below 1.85m where a possible step out of the brickwork was present, although this was difficult to determine accurately due to the depths involved and collapse of the excavations.

Trial pit 3 was excavated internally on the left hand party wall and exposed the party wall foundation (A-A) and the small internal return wall (B-B). Both foundation profiles (A-A & B-B) comprised brickwork which extended to 1.60m below the first floor level. Unfortunately, due to the depth of the foundation, the collapse of trial pit sides and lack of space available, it was not possible to expose or locate by probing the extent of the projection or the base of the foundation.

ii. Trial pits excavated within the basement

Trial pit 4 was excavated in the rear right hand corner of the basement to the property and exposed the foundations to the rear wall (A-A) and right hand flank wall (B-B). The rear wall foundation (A-A) comprised brickwork with a single step out onto a concrete strip. The total projection of this foundation was 240mm with the concrete 100mmm thick and the foundation seated at a depth of 0.34m below the basement level. The foundation was seated onto soft to firm, medium strength (V: 48-54kPa), orange brown, silty CLAY.

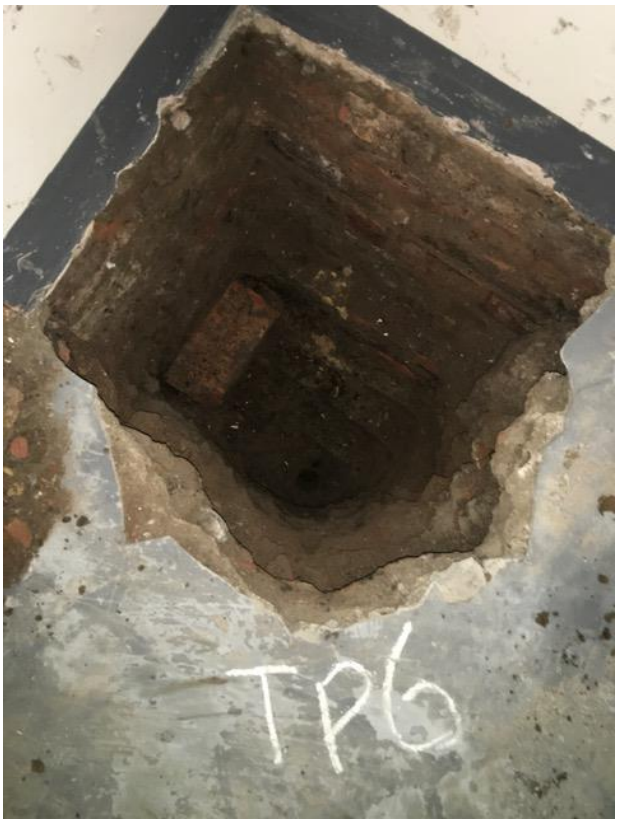
The right hand flank wall foundation (B-B) comprised brickwork with three step outs onto a concrete strip. The total projection of this foundation was 250mm with the concrete 200mmm thick and the foundation seated at a depth of 0.50m below the basement level. The foundation was seated onto soft to firm, medium strength (V: 46-58kPa), orange brown, silty CLAY. This trial pit was extended slightly with a hand augered borehole which found the clay to remain medium strength (V: 56-62kPa) at 1.00m.

Trial pit 5 was excavated in the rear left hand corner of the basement to the property and exposed the foundations to the left hand flank wall (A-A) and the rear wall (B-B). The left hand flank wall foundation (A-A) comprised brickwork with three step outs onto a concrete strip. The total projection of this foundation was 240mm with the concrete 200mmm thick and the foundation seated at a depth of 1.12m below the basement level. The foundation was seated onto soft to firm, medium strength (V: 42-44kPa), orange brown, silty CLAY.

The rear wall foundation (B-B) comprised brickwork with a single step out onto a concrete strip. The total projection of this foundation was 130mm with the concrete 250mmm thick and the foundation seated at a depth of 0.54m below the basement level. The foundation was seated onto soft to firm, low to medium strength (V: 38-40kPa), orange brown, silty CLAY.

Trial pit 6 was excavated on the right hand flank wall to the basement and exposed the flank wall (A-A) and a small internal return wall (B-B). The right hand flank wall foundation (A-A) comprised brickwork with four step outs onto a concrete strip. The total projection of this foundation was 270mm with the concrete 190mmm thick and the foundation seated at a depth of 1.05m below the basement level. The foundation was seated onto soft to firm, medium strength (V: 40-42kPa), orange brown, silty CLAY. This clay was found to remain medium strength (V: 52-54kPa) at 1.50m.

The internal wall foundation (B-B) comprised brickwork with a single step out (projection 75mm) seated directly onto the subsoil at a depth of 0.69m. This foundation was seated onto soft, low strength (V: 32-36kPa), orange brown, silty CLAY.



Trial pit 7 was excavated in the front right hand corner of the basement to the property and exposed the foundations to the front wall (A-A) and the right hand flank wall (B-B). The front wall foundation (A-A) comprised brickwork with two step outs onto a concrete strip. The total projection of this foundation was 380mm with the concrete 270mmm thick and the foundation seated at a depth of 0.565m below the basement level. The foundation was seated onto soft, low strength (V: 34-38kPa), orange brown, silty CLAY.

The right hand flank wall foundation (B-B) comprised brickwork with three step outs onto a concrete strip. The total projection of this foundation was 245mm with the concrete 260mmm thick and the foundation seated at a depth of 0.545m below the basement level. The foundation was seated onto soft, low strength (V: 34-38kPa), orange brown, silty CLAY.

Trial pit 8 was excavated in the front lightwell and exposed the foundations to the rear wall to the lightwell structure (A-A) and a return wall at the bottom of the lightwell (B-B). The rear wall to the lightwell comprised brickwork with a single step out (projection 60mm) onto a weak concrete and brick footing which was 350mm thick and seated at a depth of 0.88m onto a soft, low strength (V: 28-32kPa), orange brown, silty CLAY. The side wall to the lightwell (B-B) foundation comprised brickwork onto weak brick concrete which was 800mm thick and appeared to be seated onto dense clinker / concrete which may be drain benching associated with the drainage running across the front of the house in this location.

No root activity was encountered within any of the trial pits.

No water inflows were encountered within any of the trial pits which were found to be dry on completion of the site works.

6.0 BOREHOLE FINDINGS

The borehole was drilled in the rear garden at a level approximately 200mm below the front pavement level, 200mm above the basement level and 900mm below the first floor level. This borehole encountered astroturf over a sand layer to 0.20m over a soft to firm, low strength, brown and brownish grey, slightly gravelly slightly sandy clay with red brick, coal and charcoal fragments (MADE GROUND). This was present to a depth of 1.60m where a firm, medium strength, brown with some light grey veining CLAY was encountered. This stratum was found to become high strength by 4.15m and was present to a depth of 5.00m where a very dense / hard, CLAYSTONE layer was encountered. This stratum was found to be impenetrable with the window sampling drilling rig and the borehole was closed at 5.10m due to a lack of progress.

No water inflows were encountered within this borehole which was found to be dry on completion of the site works and on removal of the borehole casing. A water monitoring standpipe was installed within this borehole at a depth of 5.00m with a gravel pack from 5.00-1.00m followed by a one metre bentonite seal and a steel security cover.

Depth	N Value (conversion to undrained shear strength)	Strength description
1.15m	8 blows (38.4kPa)	Low strength
2.15m	9 blows (43.5kPa)	Medium strength
3.15m	12 blows (57.6kPa)	Medium strength
4.15m	19 blows (91.2kPa)	High strength
5.15m	75+ blows	Very dense

7.0 LABORATORY TESTING RESULTS

The **moisture content** and the **plasticity** of samples of the underlying silty, shelly CLAYS was tested using the Atterberg limits test. This testing found the samples to be of high to very high plasticity with a plasticity indices ranging from **40% to 55%** which indicates that this clay has a high volume change potential.

BH	Depth	Soil Type	MC	LL	PL	PI	Class	Ret	Comments
WS1	1.00m	MADE GROUND	38.6%						
	1.50m	MADE GROUND	35.5%						
	2.00m	CLAY	36.5%	85	26	59	CVO	0%	1. No Des 2. No Des
	2.50m	CLAY	32.9%						
	3.00m	CLAY	33.5%	83	25	58	CV	0%	1. No Des 2. No Des
	4.00m	CLAY	30.1%	84	26	58	CV	0%	
	4.50m	CLAY	31.0%						
MC: moisture content (MC): Corrected moisture content due to gravel content LL: Liquid Limit PL: Plastic limit PI: Plastic Index									

Desiccation analysis of the clay samples showed no evidence for significant levels of desiccation when applying the moisture content relationships devised by Professor Driscoll's involving the liquid limit[1] and plastic limit[2]. This would indicate that the clay underlying this site has not been affected by desiccation by removal of moisture.

Triaxial compression testing was conducted on an undisturbed sample extracted from the boreholes at a depth of 3.50m in order to determine the undrained shear strength of the cohesive soil at this depth. This testing was conducted at overburden pressures to replicate the pressure conditions the samples would have been in within the ground. This testing finds the CLAY present at the anticipated foundation level for the proposed new basement to be of high strength (92kPa) which is consistent with the insitu strength testing which found this soil to be high strength at 3.15m (78kPa).

BH	Depth	MC	Wet Density Mg/m3	Dry Density Mg/m3	Deviator Stress (kPa)	Shear Stress (cu)	Soil Strength Descriptions using BS5930 and (BS 14688)
WS1	3.50m	32.2	1.96	1.48	182	92kPa	High strength

A single undisturbed soil sample from 3.50m was tested for its consolidation properties using the one dimensional oedemeter test. This test involves applying increasing pressure to a prepared specimen of soil and measuring the amount of compaction (settlement) followed by removal of the loading and measuring the uplift. This provides information to enable an assessment to be made regarding the effect on the soil of increased loadings and removal of loading.

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
WS1	3.50	L	4	3.50 Horizontal	30.9	Stiff (high strength) fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	Specimen dried at 80°C due to the presence of selenite.

Initial Conditions			Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
Height	mm	17.52	1	80	0.070	0.902			22	
Diameter	mm	50.02	2	4	-0.266	0.939		0.25	22	
Wet Weight	g	66.51	3	80	-0.008	0.911	0.37	0.19	22	0.35
Water Content	%	30.9	4	200	0.363	0.870	0.34	0.18	22	0.32
Bulk Density	Mg/m³	1.93	5	400	0.803	0.823	0.26	0.13	21	0.25
Particle Density		Assumed 2.82	6	800	1.325	0.766	0.24	0.08	21	0.23
Voids Ratio		0.910	7	80	0.620	0.842		0.06	21	
Degree of Saturation	%	96								
Swelling Pressure	kN/m²	80								
Dry Density	Mg/m³	1.48								

Four samples were also tested for their **soluble sulphate content and pH value**. British Standards guidelines for assessing the aggressive chemical environment provide classification of sites based on SO_4 levels. To convert SO_3 to SO_4 levels a factor of 1.2 must be applied followed by multiplying by 1000 to convert from g/l to mg/kg.

BH	Depth	Soil type	Water soluble sulphate 2:1 (g/l)	Calculated Concentration So4 (g/l)	Calculated total So4 result	pH Value	Concrete Class
WS1	1.00m	MG	0.34	0.41	408mg/kg	7.7	DS1
	1.50m	MG	0.31	0.38	372mg/kg	7.7	DS1
	2.50m	CLAY	0.18	0.22	216mg/kg	8.1	DS1
	4.50m	CLAY	2.37	2.84	2844mg/kg	7.5	DS3

Applying these results to the standards chart indicates that the underlying CLAY soils at shallower depths have a low level of sulphates with three of the samples falling within the concrete class DS1 which indicate that no precaution against sulphate attack is required. However, the deeper sample tested at 4.50m fell within the concrete class DS3 which indicates that deeper concrete may require special precautions. We would note that further testing may be required if deeper concrete is to be installed.

8.0 COMMENTS

i. Ground Conditions

The geological survey map of the area suggested that the site was situated within an area underlain by a variable amount of MADE GROUND over the London Clay Formation. This is consistent with the findings from the trial pit and borehole drilling which found MADE GROUND to 1.60m and then beneath this, a brown CLAY with a very dense claystone layer present at 5.00m.

We would note that the laboratory testing revealed the sample of clay at 2.00m to be an organic clay which may mean that this could be reworked ground with the natural soil coming in slightly deeper at between 2.00-2.50m.

Laboratory testing did not reveal any significant desiccation was present within the soil although allowances will need to be made for the mature tree present in the neighbouring rear garden with foundations taken below the influence of this tree. A useful guide is provided by the NHBC Chapter 4.2 – building near trees which gives recommended foundation depths based on the size species and proximity of the tree within either a low, medium or as in this case high volume change potential soil.

No water inflows were encountered within any of the trial pits or boreholes which were all found to be dry on completion of site works. The water monitoring standpipe will provide longer term information but it would appear that groundwater will not significantly affect the proposed construction with any inflows likely to be localised and should be controllable with pumping. As with all basements, longer term waterproofing will be needed as part of the design.

Trial pit excavations found the original foundations to the property to be seated at a substantial depth in excess of 1.60-2.00m in trial pits 1, 2 and 3 excavated on the walls to the rear part of the property which was not underlain by the basement. Given the depth of these foundations, the base of these could not be revealed or detected by probing but from the foundations exposed within the basement it would be reasonable to assume a similar founding depth.

The borehole drilled to the rear found MADE GROUND to 1.60m with possible reworked ground to 2.00-2.50m (based only on the laboratory testing). Below this the natural very highly plastic silty CLAY (London Clay Formation) was encountered. In terms of foundations for the new rear basement extension and the deepened basement to the front of the house, then foundations should be taken into the natural London Clay formation where suitable bearing capacity exists and at a depth below the influence of the mature tree to the rear of the site.

We would envisage that given the limited access then the most likely foundation solution would be sectional underpinning of the existing foundations using mass concrete footings. Although a piled solution could be considered, the need for specialist plant and difficulty in gaining access may mean this is problematical. In order to provide a full basement height it is understood that the existing basement is to be lowered by 1.50m which would mean a basement level of approximately 1.90m below the pavement level, 2.60m below the internal first floor level and 2.10m below the borehole location. This will mean foundations taken into the underlying London Clay Formation and seated at an estimated depth of around 3.00-3.50m below the borehole level.

Figures have been provided to give a guide to the anticipated bearing capacities of the soil based on the SPT N values and corresponding conversions to undrained shear strengths and also from the triaxial strength testing. We would note that all figures provided should be used as a guide to soil bearing capacities but should be verified by a structural engineer with knowledge of the design criteria and loadings. All bearing capacity figures provided are based on an assumed 1.00m wide strip foundation unaffected by groundwater with clearly greater bearing capacities achievable with wider foundations.

Test Depth	Soil Type	SPT & Shear strength	Approximate Bearing Capacity
WS1 at 2.15m	CLAY (reworked?)	9 blows (43.2kPa)	85kN/m^2
WS1 at 3.15m	London Clay Fm	12 blows (57.6kPa)	110kN/m^2
WS1 at 3.50m	London Clay Fm	92kPa (triaxial test)	180kN/m^2
WS1 at 4.15m	London Clay Fm	19 blows (91.2kPa)	180kN/m^2

Sufficient information is held in the report for the initial design assessment for foundations for the proposed basement construction. From the bearing capacities stated above, it would appear on initial assessment to possess adequate bearing for the use of mass concrete foundations seated into the underlying London Clay Formation, especially at 3.00m and below. If additional bearing capacity is required, then it is possible to incorporate the basement floor into the design almost creating a box type structure with the floor acting like a reinforced raft tied into the footings. The results of the oedemeter testing should provide sufficient information to determine the possible extent of any settlement associated with adding addition loadings along with any uplift caused when removing overburden pressures as the soil is removed.

If a piled foundation solution is to be chosen, then it is likely that a deeper borehole will be required to provide information on subsoil conditions at depth. In order to penetrate through any claystone layers then a larger window sample rig will be needed and would most likely need to be drilled within the front garden.

As with all such basement developments, care will need to be taken to ensure that the adjacent buildings and structures are not adversely impacted by the proposed works.

9.0 CERTIFICATION

The conclusions and recommendations given within this report, are based upon the stated development plans for the site. If the site is to be developed for a more or less sensitive use then a different interpretation may be appropriate. This report relies upon the co-operation of other organisations and the free availability of information and total access. Therefore, no responsibility can be accepted for conditions arising from information, which was not available to the investigation team as a result of information being withheld or access prevented.

The analyses and opinions expressed in the report are based upon data obtained from the site investigation. Responsibility cannot be accepted for variation in ground conditions between and around exploratory points not revealed by the data or at the time of the investigation.

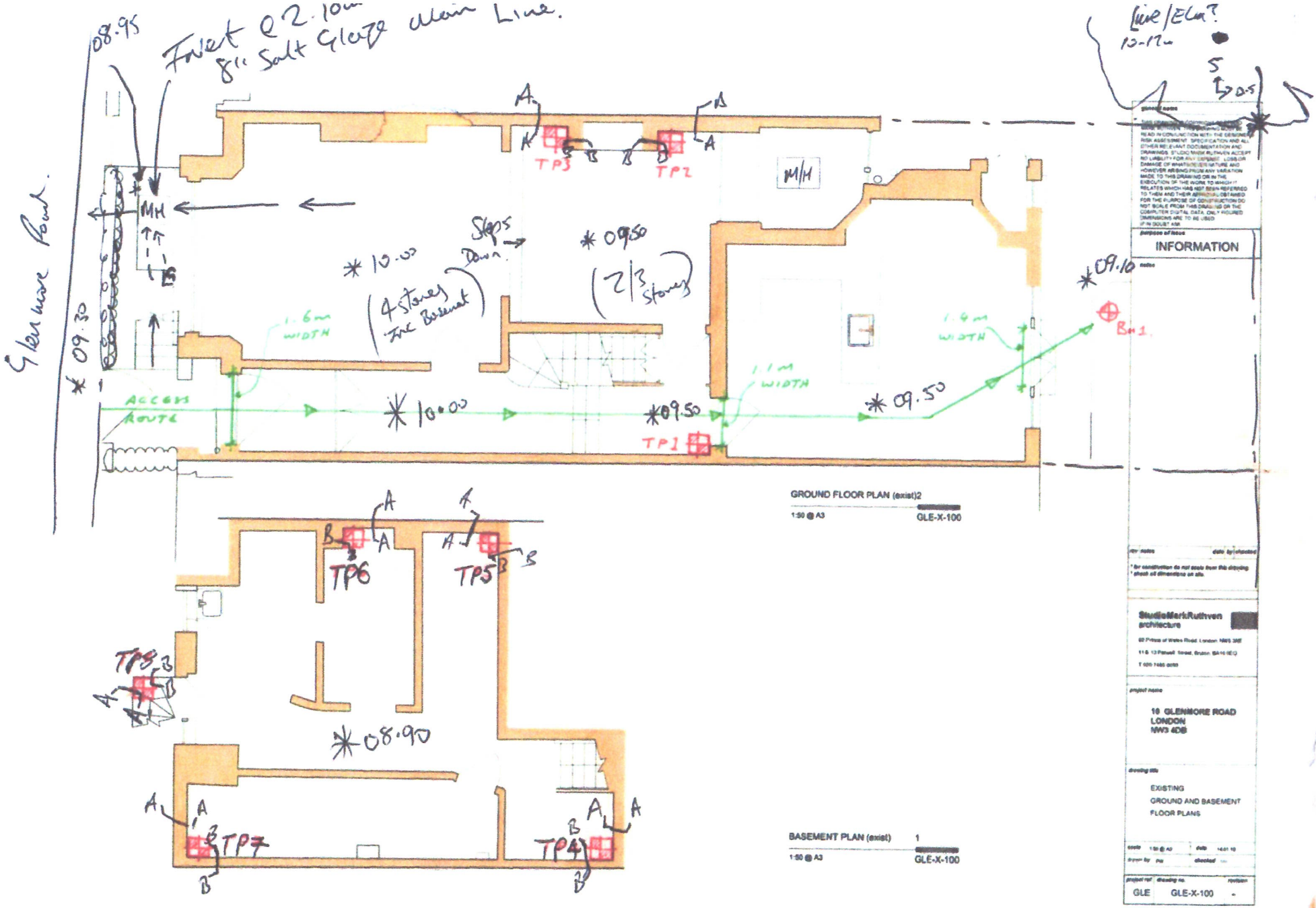
The report may suggest an opinion on the nature of the strata or conditions between exploratory points and below the maximum depth of investigation. However, this is for guidance only and no liability can be accepted for its accuracy.

Signed

James Woodward BSc(Hons) DipHE
For and on behalf of
CONNAUGHTS SITE INVESTIGATION LTD

Signed

Mark Pickering FGS
For and on behalf of
CONNAUGHTS SITE INVESTIGATION LTD


Glenmore Road.
08.95
Invert @ 2.10m
8" Salt Glaze Main Line.
Line/Elev?
10-12m
MH
09.30
10.00
(4 Storey Inc Basement)
Steps Down
09.50
(2/3 Storey)
09.10
1.6m WIDTH
1.1m WIDTH
ACCESS ROUTE
TP1
TP2
TP3
TP4
TP5
TP6
TP7
08.90
BM1
M/H
GROUND FLOOR PLAN (exist)2
1:50 @ A3
GLE-X-100
BASEMENT PLAN (exist) 1
1:50 @ A3
GLE-X-100
INFORMATION
StudioMarkRuthven architecture
10 GLENMORE ROAD
LONDON
NW3 4DB
EXISTING
GROUND AND BASEMENT
FLOOR PLANS
GLE
GLE-X-100

Connaughts Site Investigation Ltd

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Appendix No.	2
Sheet No.	1
Job No.	0762
Date:	July 2019
Scale:	1:20

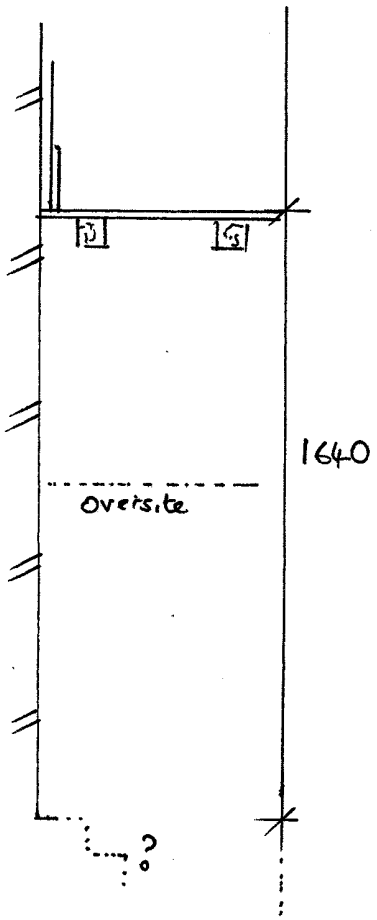
LOCATION 10 Glenmore Road, London, NW3 4DB

Trial Pit 1

No roots encountered

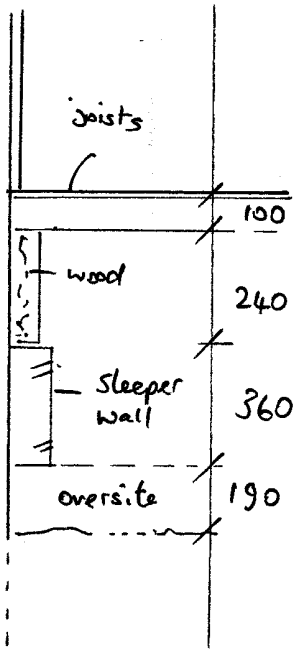
No water inflows encountered trial pit dry on completion.

Profile A-A



Unable to locate base of foundtion due to depth and collpase of trial pit sides.

Profile B-B



This foundation was difficult to expose due to the sleeper wall obstructing the excavation. Probing showed it was present at 1.00m+

0.00
Decorative flooring over floor boards onto 3x21/2' joists,

0.04
VOID

0.72
Lime and flint oversite concrete

0.91
Brown, clayey topsoil gravel with much brick, flint, ash and slate pieces (MADE GROUND)

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	2
Job No.	0762
Date	July 2019

LOCATION 10 Glenmore Road, London, NW3 4DB

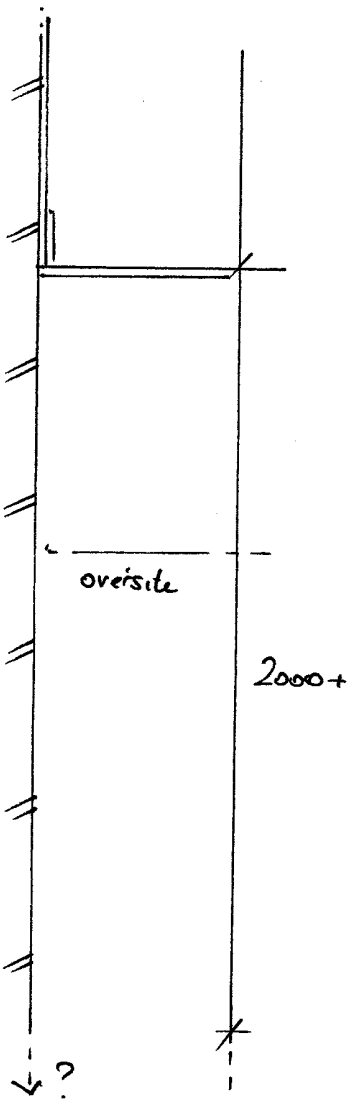
Scale: 1:20

Trial Pit 2

No roots encountered

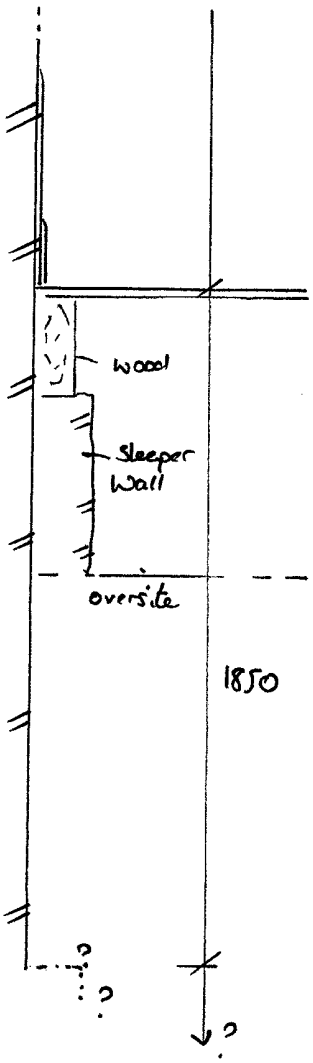
No water inflows encountered trial pit dry on completion.

Profile A-A



Unable to locate base of foundation due to depth and collpase of trial pit sides - stopped at 2.00m

Profile B-B



Possible step out at 1.85m but unable to determine projection or depth of foundation due to the depth and collpase of trial pit sides

0
Carpet over floorboards onto joists (3'x3')

0.08
VOID

0.75
Dry, grey, ash, lime and brick rubble oversite

0.86
Brown, clayey topsoil gravel with much brick and flint rubble (MADE GROUND)

Present to 2.00m+

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	3
Job No.	0762
Date:	July 2019
Scale:	1:20

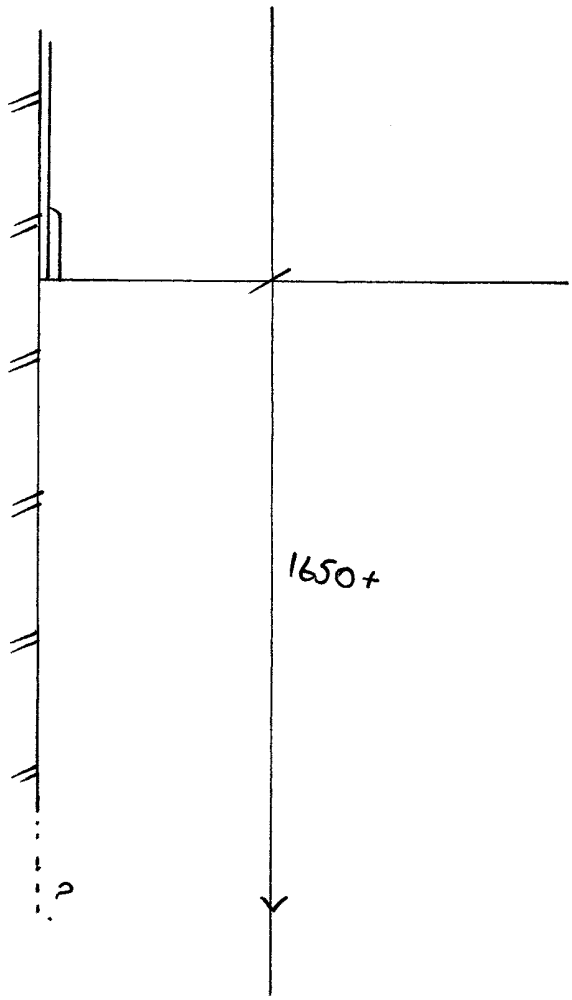
LOCATION 10 Glenmore Road, London, NW3 4DB

Trial Pit 3

Profile A-A & B-B

No roots encountered

No water inflows encountered
trial pit dry on completion.



0
Carpet over floorboards onto joists (3'x3')

0.18
VOID

0.75
Very dry concrete, lime and hardcore (MADE GROUND)

1.20
Brown, clayey topsoil hardcore (MADE GROUND)

Present to 1.60m+

Unable to work in the space available very easily - the steps amd floor joists meant little access was available. Excavavted and probed to 1.60m but with both profiles continuing below this depth. Unble to excavate further with collapse of trial pit sides.

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	4
Job No.	0762
Date:	July 2019

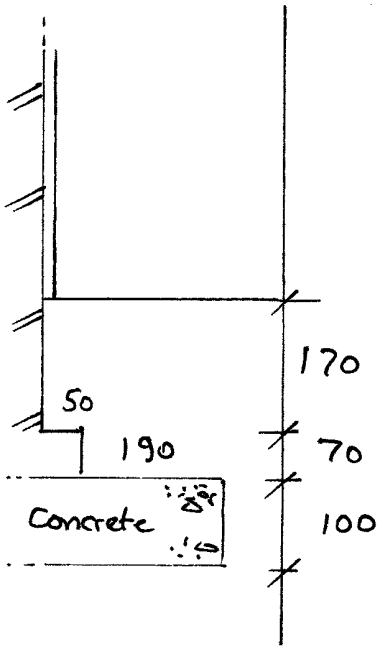
LOCATION 10 Glenmore Road, London, NW3 4DB | Scale: 1:10

Trial Pit 4

No roots encountered

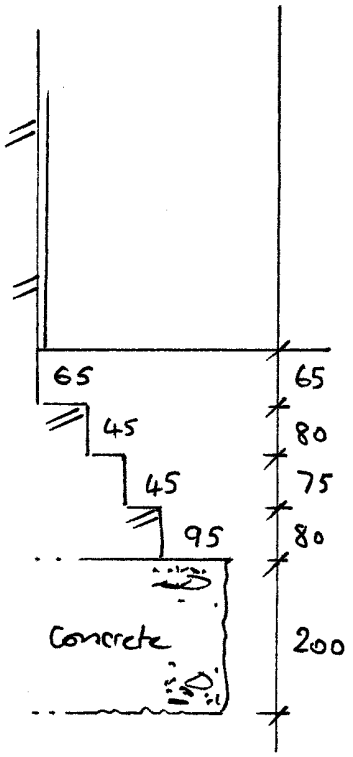
No water inflows encountered
trial pit dry on completion.

Profile A-A



D1 at F.L(0.34m)
V: 48-54kPa

Profile B-B



D1 at F.L(0.50m)
V: 46-58kPa

0	Concrete
0.08	Mid brown, hardcore within a silty, sandy matrix with much slate, brick, flint and ash pieces (MADE GROUND).
0.34	Soft to firm / firm, medium medium strength, orange brown silty CLAY

Founding stratum: Soft to firm / firm, medium strength, orange brown silty CLAY

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	5
Job No.	0762
Date.	July 2019

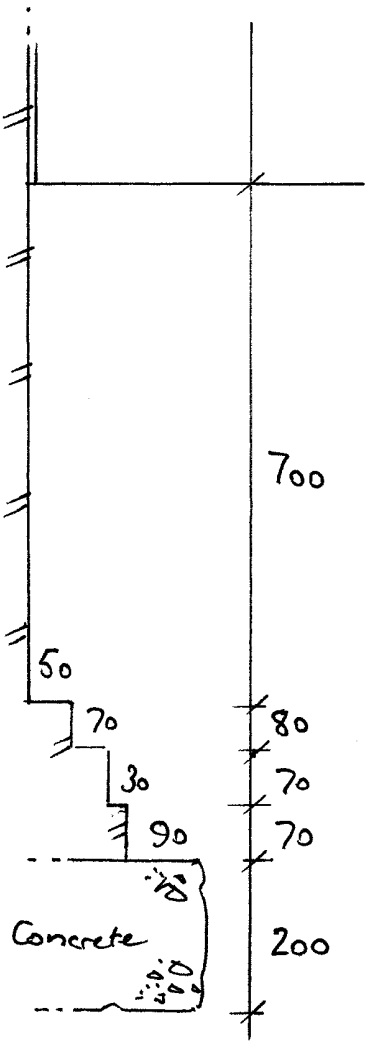
LOCATION 10 Glenmore Road, London, NW3 4DB Scale: 1:10

Trial Pit 5

No roots encountered

No water inflows encountered trial pit dry on completion.

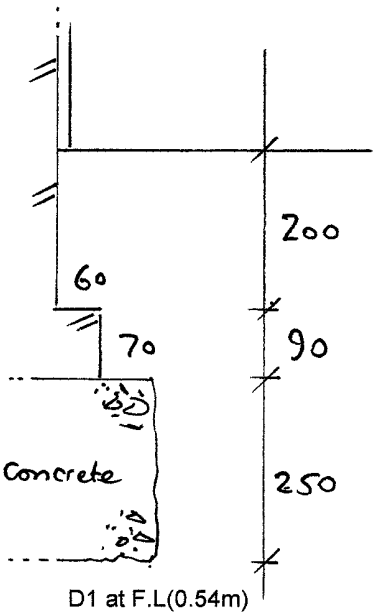
Profile A-A



D1 at F.L(1.12m)
V: 42-44kPa

Founding stratum:
Soft to firm, medium strength, orange brown,silty CLAY

Profile B-B



D1 at F.L(0.54m)
V: 38-40kPa

Founding stratum:
Soft to firm, low tomedium strength, orange brown,silty CLAY

0
Concrete
0.12
Mid brown, hardcore within a silty, sandy matrix with much slate, brick, flint and ash pieces (MADE GROUND).

0.50
Soft to firm, low to medium strength, orange brown, silty CLAY

Note: *Profile A-A had a 200mm projection which stepped up into profile B-B*

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	6
Job No.	0762
Date.	July 2019

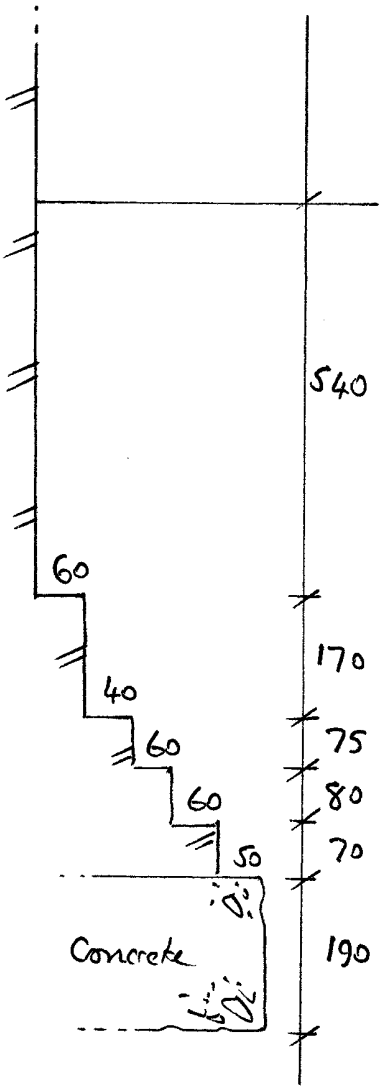
LOCATION 10 Glenmore Road, London, NW3 4DB Scale: 1:10

Trial Pit 6

No roots encountered

No water inflows encountered trial pit dry on completion.

Profile A-A

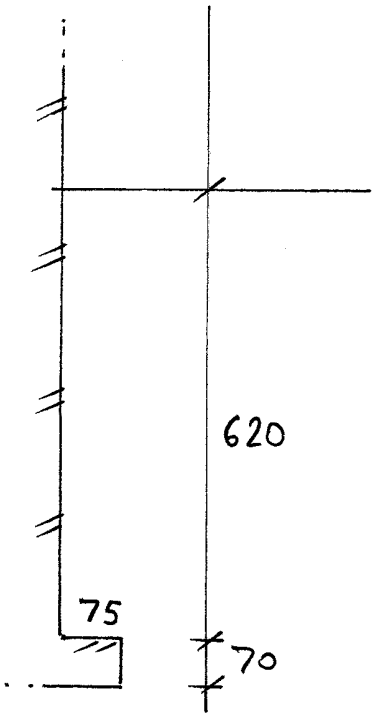


D1 at F.L (1.05m)
V: 40-42kPa

Founding stratum:
Soft to firm, medium strength, orange brown,silty CLAY

D2 at 1.50m. V: 52-54kPa

Profile B-B



D1 at F.L(0.69m)
V: 32-36kPa

Founding stratum:
Soft to firm, low strength, orange brown,silty CLAY

0
Concrete
0.13
Mid brown, hardcore within a silty, sandy matrix with much slate, brick, flint and ash pieces (MADE GROUND).

0.63
Soft to firm, low to medium strength, orange brown, silty CLAY

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	7
Job No.	0762
Date.	July 2019

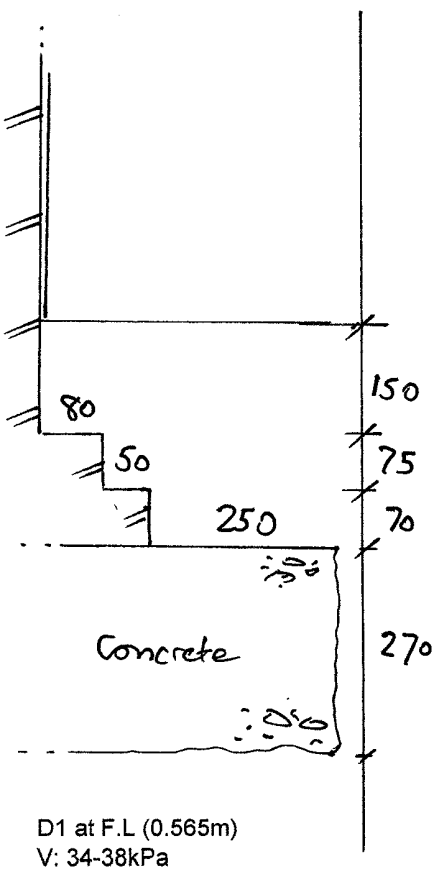
LOCATION 10 Glenmore Road, London, NW3 4DB | Scale: 1:10

Trial Pit 7

No roots encountered

No water inflows encountered
trial pit dry on completion.

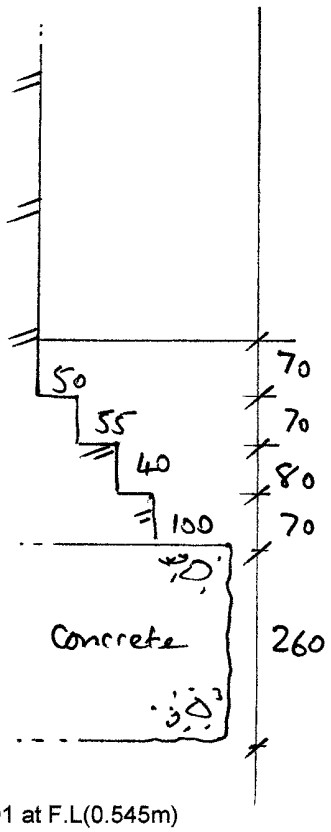
Profile A-A



D1 at F.L (0.565m)
V: 34-38kPa

Founding stratum:
Soft to firm, medium strength, orange brown,silty CLAY

Profile B-B



D1 at F.L(0.545m)
V: 34-38kPa

Founding stratum:
Soft to firm, low strength, orange brown,silty CLAY

0 — Concrete

0.13 — Mid brown, hardcore within a silty, sandy matrix with much lime, ash, flint and clay pipe (MADE GROUND).

Contam 1 at 0.30m

0.54 — Soft to firm, low to medium strength, orange brown, silty CLAY

Contam 2 at 0.70m

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No.	2
Sheet No.	8
Job No.	0762
Date:	July 2019
Scale:	1:10

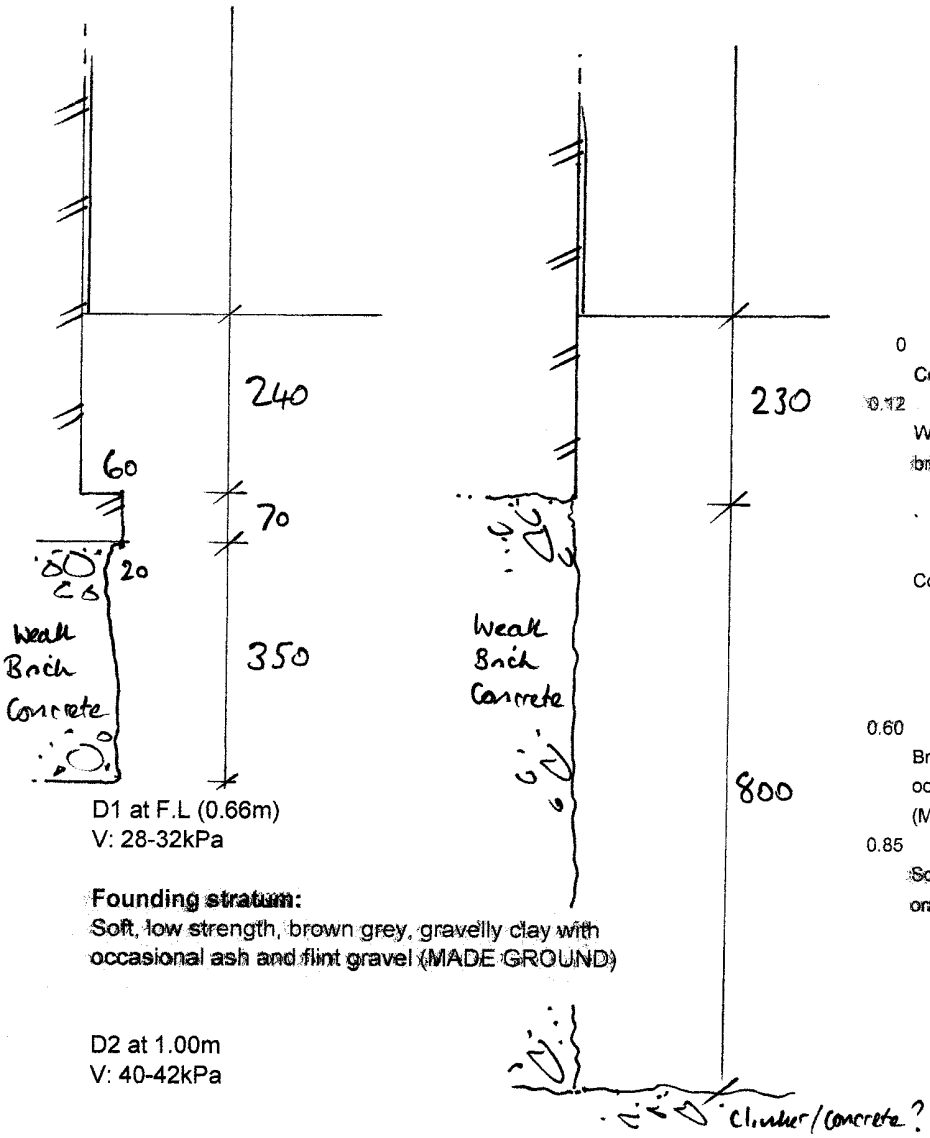
LOCATION 10 Glenmore Road, London, NW3 4DB

Trial Pit 8 (through bottom step)

No roots encountered

No water inflows encountered
trial pit dry on completion.

Profile A-A **Profile B-B**



0
Concrete
0.12
Weak leanmix clinker, flint and brick rubble FILL

Contam 1 at 0.30m

0.60
Brown grey, gravelly clay with occasional ash and flint gravel (MADE GROUND).
0.85
Soft to firm, medium strength, orange brown, silty CLAY

D1 at F.L (0.66m)
V: 28-32kPa

Founding stratum:
Soft, low strength, brown grey, gravelly clay with occasional ash and flint gravel (MADE GROUND)

D2 at 1.00m
V: 40-42kPa

Notes: *Layer of hard clinker / concrete possibly benching associated with drainage entering manhole?*

D= small disturbed sample, B= large bulk sample, U= Undisturbed sample, MP= Mackintosh probe blow counts, V= Shear Vane Reading (kPa)

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Appendix No. 3
Sheet No. 1
Job No. 0762
Date. July 2019

Borehole 1

LOCATION **10 Glenmore Road, London, NW3 4DB**

Method: Window sampler

Description of Stratum	(m)	Legend	Depth (m)	Samples Type	Samples Depth	Tests Type	Tests Value	Field Observations
Astriturf over orange brown, coarse sand			0.20m	U1	0.00			87mm dia. 90% recovery
Soft to firm, brpwn and brownish grey, slightly gravelly, slightly sandy clay with gravel fine, angular, red brick and rare ash fragments (MADE GROUND).	0.5							
	1.0			U2	1.00	N	8 blows	87mm dia 90% recovery Borehole cased to 1.00m
	1.5		1.60m					
Firm becoming stiff, medium strength, brown with some light grey veining, CLAY								
	2.0			U3	2.00	N	9 blows	77mm dia 100% recovery
	2.5							
Becoming high strength from 3.00m	3.0			U4	3.00	N	12 blows	77mm dia 100% recovery
	3.5							
	4.0			U5	4.00	N	19 blows	77mm dia 100% recovery
	4.5							
	5.0		5.00m					
Hard / vey dense light brown CLAYSTONE			5.10m	*	5.00	N	75+ blows	for 100mm travel
WS1 closed at 5.10m due to impenetrable nature of claystone band.								
	5.5							
	6.0							

Remarks:

No water inflows encountered in trial pit or borehole - dry on completion of site works. Water monitoring standpipe installed at 5.00m with gravel pack from 1.00-5.00m and a bentonite seal from G.L to 1.00m. Steel security cover fitted to standpipe.

Engineers: Structure Workshop

Key

U Undisturbed Sample
D Small disturbed sample
B Bulk distured sample
W Water sample
N Standard Penetration Test (C / S)
N* SPT test as a dynamic probe
V Shear vane test
MP Nackintosh probe (blows/0.3m)
BL No. blows to obtain U100 sample

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

0998

Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

Client:

Connaughts Site Investigation Ltd

35 Green Lane
Leigh on Sea
Essex
SS9 5AP

Soil Property Testing Ltd

15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG

Tel: 01480 455579
Email: enquiries@soilpropertytesting.com
Website: www.soilpropertytesting.com

Samples Submitted By:

Connaughts Site Investigation Ltd

Samples Labelled:

10 Glenmore Road, London, NW3 4DB

Approved Signatories:

- ☑ **J.C. Garner B.Eng (Hons) FGS** — Technical Director
- ☐ **S.P. Townend FGS** — Quality Manager
- ☐ **W. Johnstone** — Materials Lab Manager
- ☐ **D. Sabnis** — Operations Manager

Date Received: 19/07/2019

Samples Tested Between: 19/07/2019 **and** 02/08/2019

Remarks:

For the attention of Mark Pickering

Notes:

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.

2. (a) UKAS - United Kingdom Accreditation Service
   (b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.

4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

0998

Contract	**10 Glenmore Road, London, NW3 4DB**		
Serial No.	**35570**	**Target Date**	01/08/2019
Scheduled By	Connaughts Site Investigation Ltd		

SCHEDULE OF LABORATORY TESTS

Schedule Remarks

Bore Hole No.	Type	Sample Ref.	Top Depth	Sulphate Content/pH Value	Water Content (BSEN)	Liquid/Plastic Limits	Triaxial Test	One Dimensional Consolidation														Sample Remarks
TP4	D	-	1.00	1																		
TP6	D	-	1.50	1																		
WS1	L	1	1.00		1																	
WS1	L	2	1.50		1																	
WS1	L	2	2.00			1																
WS1	L	3	2.50	1	1																	
WS1	L	3	3.00		1	1																
WS1	L	4	3.50				1	1														
WS1	L	4	4.00		1	1																
WS1	L	5	4.50	1	1																	
Totals				**4**	**6**	**3**	**1**	**1**														**End of Schedule**

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

0998

Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

SUMMARY OF WATER CONTENT

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Description	Remarks
WS1	1.00	L	1	**38.6**	Firm yellowish brown CLAY.	
WS1	1.50	L	2	**35.5**	Firm dark grey organic CLAY locally oxidised to brown with rare black fine to medium angular chert, and recently active and decayed roots.	Dried at 50°C due to high organic content.
WS1	2.00	L	2	**36.5**	Firm olive grey slightly organic CLAY with occasional dark grey mottling, and rare recently active and decayed roots.	
WS1	2.50	L	3	**32.9**	Firm yellowish brown CLAY.	
WS1	3.00	L	3	**33.5**	Firm closely fissured yellowish brown CLAY with rare bluish grey veins, and decayed roots.	
WS1	4.00	L	4	**30.1**	Stiff fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	Dried at 80°C due to the presence of selenite.
WS1	4.50	L	5	**31.0**	Stiff yellowish brown CLAY with rare grey veins, decayed roots, and selenite crystals.	Dried at 80°C due to the presence of selenite.

Method Of Preparation: BS EN ISO: 17892-1: 2014
Method of Test: BS EN ISO: 17892-1: 2014
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

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Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasti-city Index (%)	Liquid-ity Index (%)	SAMPLE PREPARATION				Description	CLASS
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
WS1	2.00	L	2	**36.5**	85	26	59	0.18	From Natural	0 (A)		26	Firm olive grey slightly organic CLAY with occasional dark grey mottling, and rare recently active and decayed roots.	CVO
WS1	3.00	L	3	**33.5**	83	25	58	0.15	From Natural	0 (A)		26	Firm closely fissured yellowish brown CLAY with rare bluish grey veins, and decayed roots.	CV
WS1	4.00	L	4	**30.1**	84	26	58	0.07	From Natural	0 (A)		26	Stiff fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	CV

Method Of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:

Remarks to Include: Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

TEST REPORT

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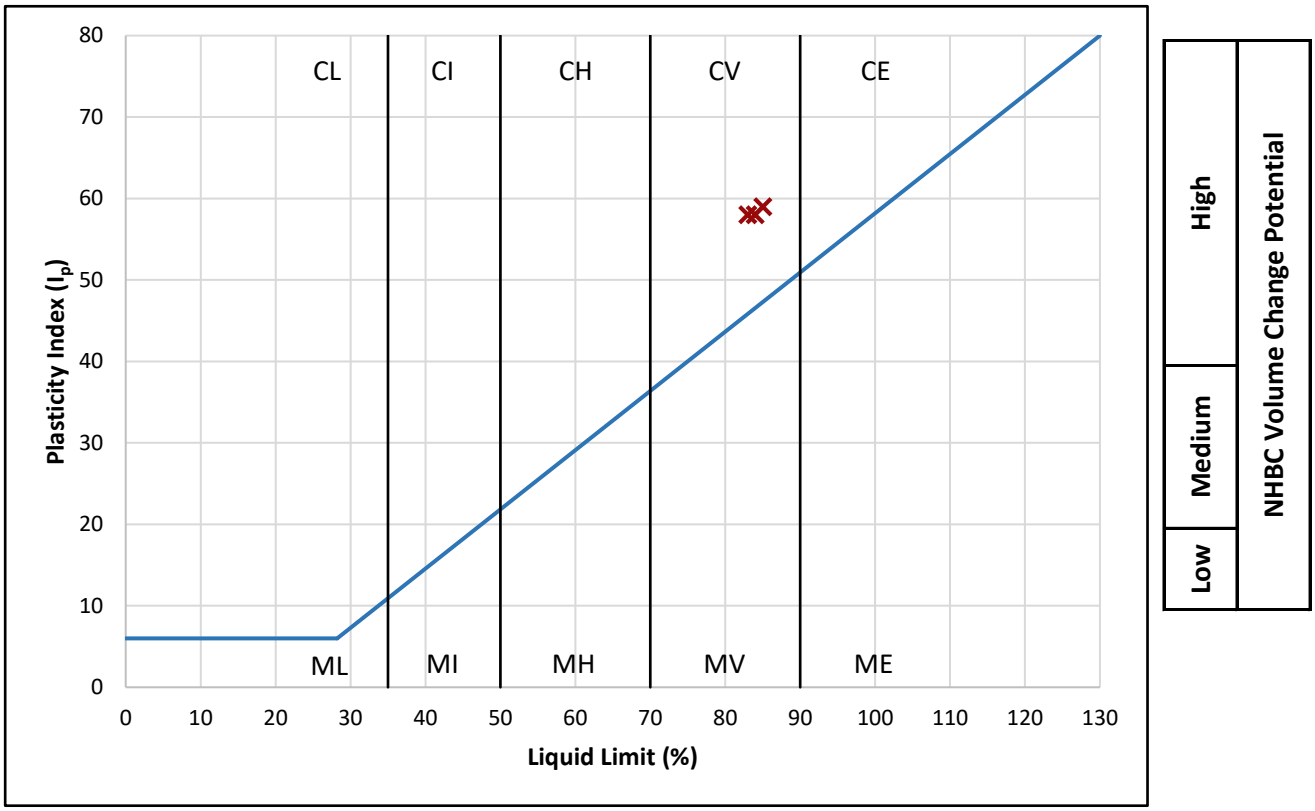
DATE ISSUED: 02/08/2019

0998

Contract	10 Glenmore Road, London, NW3 4DB
Serial No.	35570

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

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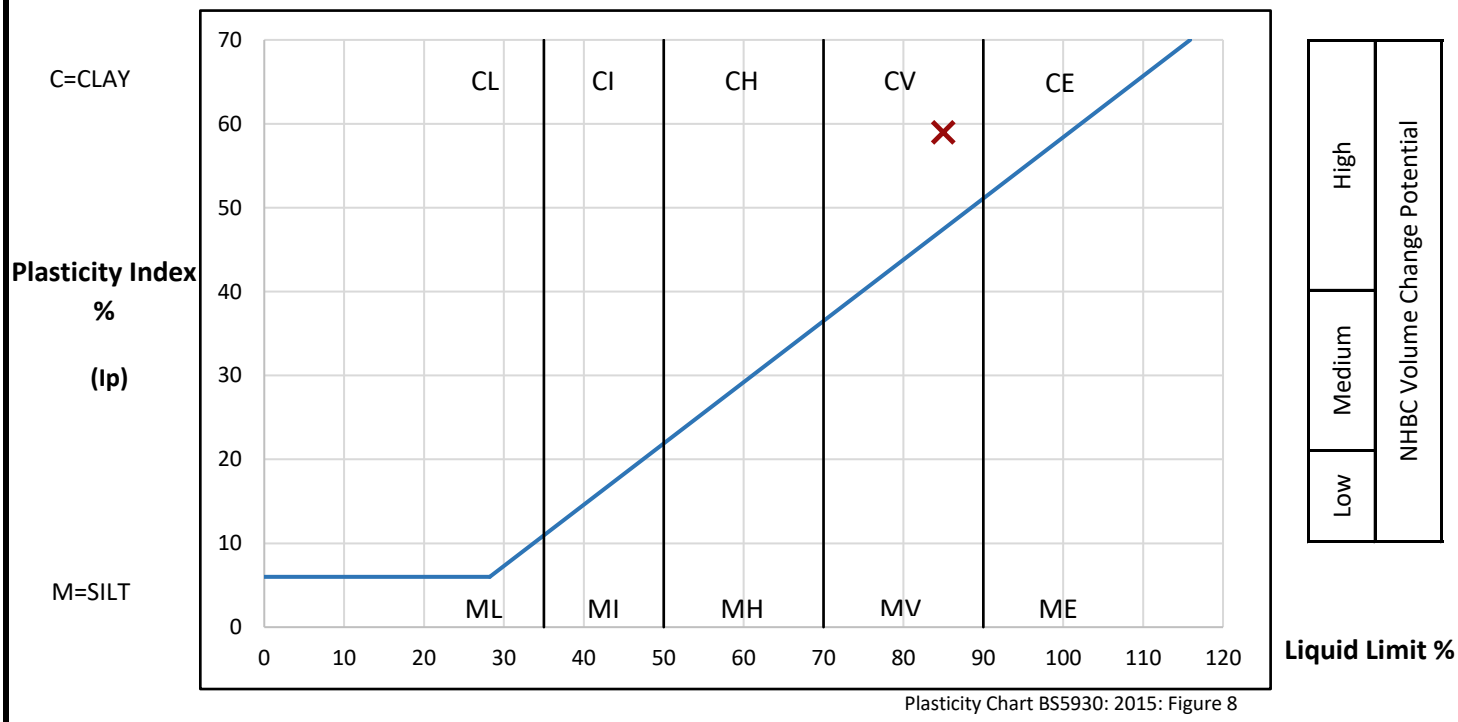
Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS1	2.00	L	2	36.5	Firm olive grey slightly organic CLAY with occasional dark grey mottling, and rare recently active and decayed roots.	

PREPARATION			Liquid Limit	85 %
Method of preparation		From natural	Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %	Plasticity Index	59 %
Corrected water content for material passing 0.425mm			Liquidity Index	0.18
Sample retained 2mm sieve	(Assumed)	0 %	NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

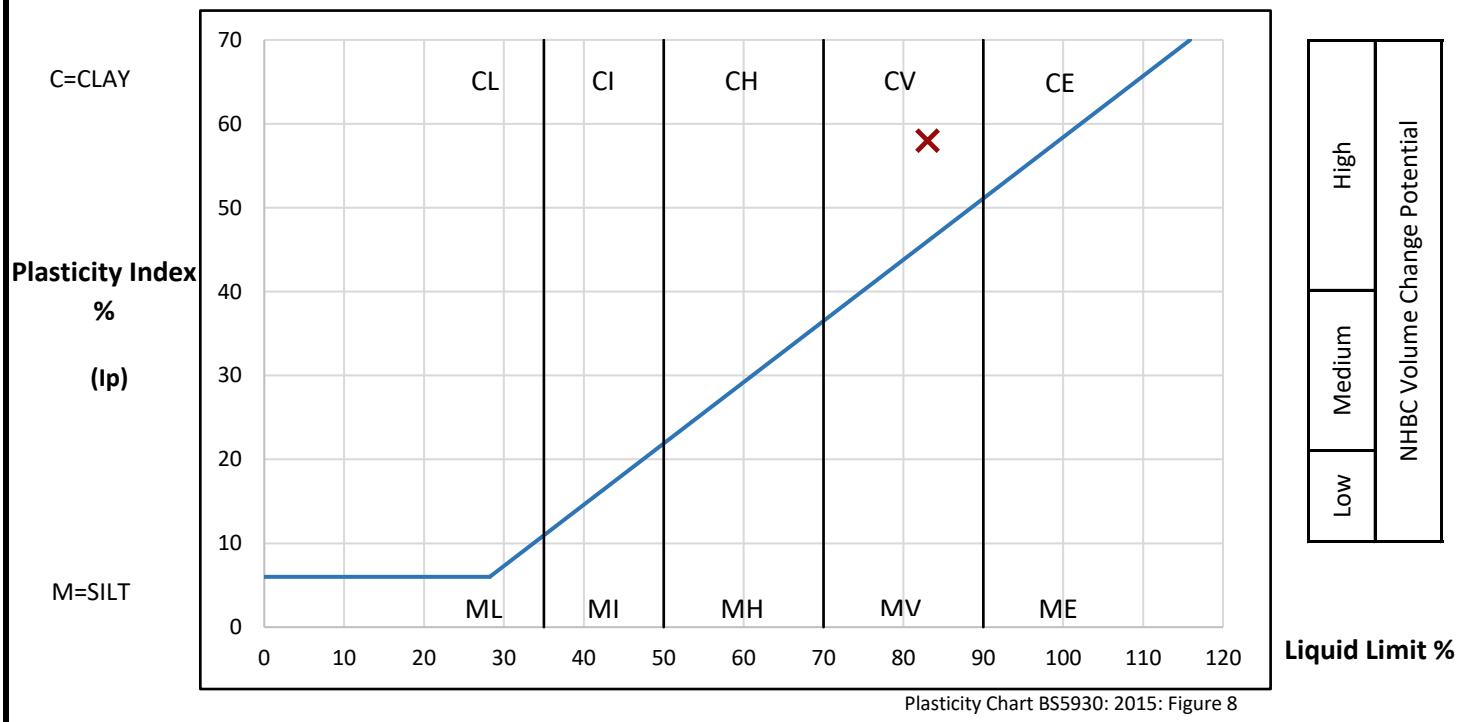
0998

Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS1	3.00	L	3	33.5	Firm closely fissured yellowish brown CLAY with rare bluish grey veins, and decayed roots.	

PREPARATION				Liquid Limit	83 %
Method of preparation		From natural		Plastic Limit	25 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	58 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.15
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs		Clay Content Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

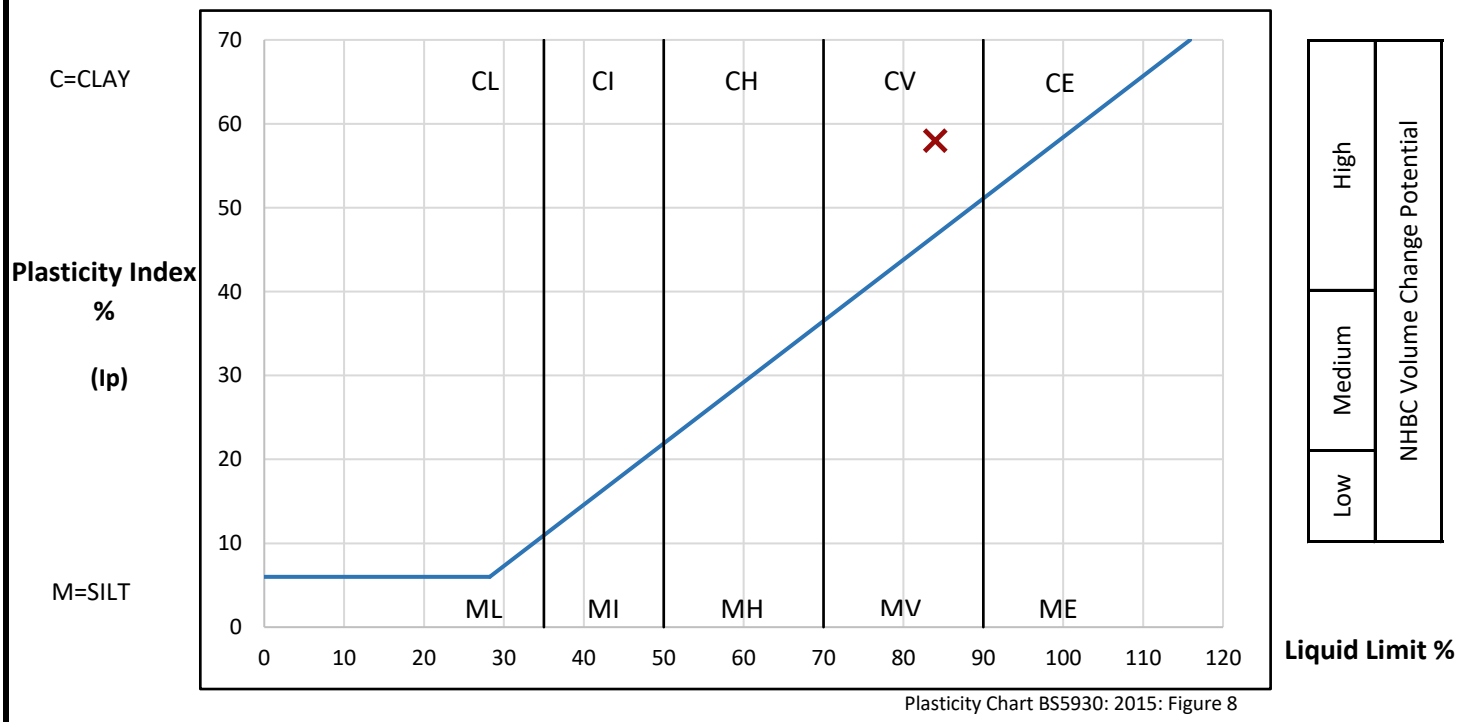
0998

Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole / Pit No.	Depth m	Sample Type	Sample Reference	Water Content (W) %	Description	Remarks
WS1	4.00	L	4	30.1	Stiff fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	Specimen dried at 80°C due to the presence of selenite.

PREPARATION				Liquid Limit	84 %
Method of preparation		From natural		Plastic Limit	26 %
Sample retained 0.425mm sieve	(Assumed)	0 %		Plasticity Index	58 %
Corrected water content for material passing 0.425mm				Liquidity Index	0.07
Sample retained 2mm sieve	(Assumed)	0 %		NHBC Modified (I'p)	n/a
Curing time	26 hrs	Clay Content	Not analysed	Derived Activity	Not analysed



Plasticity Chart BS5930: 2015: Figure 8

Method of Preparation:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2
Method of Test:	BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:	

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

UKAS TESTING 0998

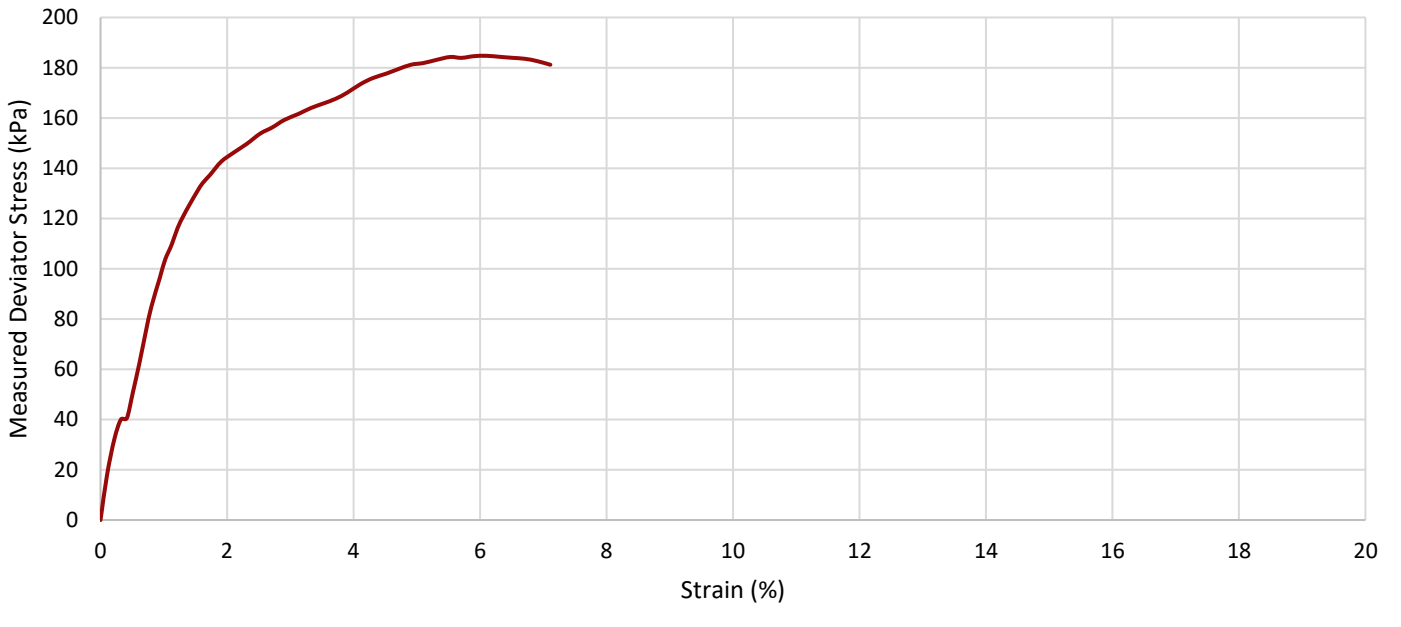
Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole /Pit No.	Depth (m)	Type	Reference	Description	Remarks
WS1	3.50	L	4	Stiff (high strength) fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	Specimen oven dried at 80°C due to the presence of selenite.

Initial Specimen	Height (mm)	Diameter (mm)	Weight (g)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)
Depth of Top of Specimen (m) 3.54	121.0	62.7	730	32.2	1.96	1.48

TEST INFORMATION — Rate of Strain 1.1 % per Min — Rubber Membrane Thickness 0.3 mm



Specimen at failure	Measured Cell Pressure, σ3 (kPa)	Strain at Failure (%)	Stress Corrections (kPa)		Corrected Max. Deviator Stress, (σ1-σ3)f (kPa)	Shear Stress Cu, ½(σ1-σ3)f (kPa)	Mohrs Circle Analysis	
			Rubber Membrane	Piston Friction			Cu (kPa)	PHI (degrees)
	68	6.1	0.8	\	184	92		

Method of Preparation:	BS 1377: Part 1: 1990
Method of Test:	BS 1377: Part 7: 1990: 8 Definitive Method, 1990: 9 Multi-stage loading
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Tested in Vertical Condition
	UKAS Calibration - loads from 0.2 to 10kN
Remarks to Include:	Sample disturbance, loss of moisture, variation form test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110°C

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

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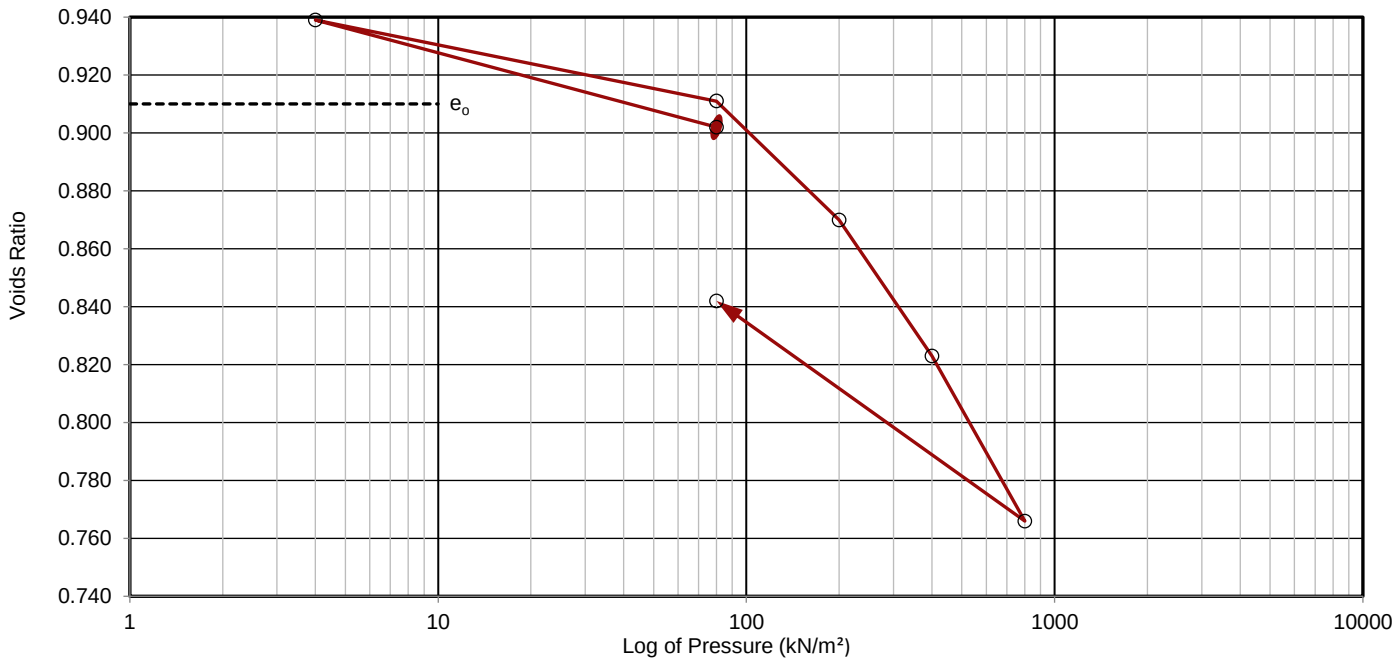
Contract	**10 Glenmore Road, London, NW3 4DB**
Serial No.	**35570**

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Borehole/ Pit No.	Depth (m)	Type	Ref.	Specimen Depth (m) and Orientation	Water Content (%)	Description	Remarks
WS1	3.50	L	4	3.50 Horizontal	30.9	Stiff (high strength) fissured orangish brown CLAY with occasional brown mottling, and selenite crystals.	Specimen dried at 80°C due to the presence of selenite.

Initial Conditions			
Height	mm	17.52	
Diameter	mm	50.02	
Wet Weight	g	66.51	
Water Content	%	30.9	
Bulk Density	Mg/m³	1.93	
Particle Density		Assumed	2.82
Voids Ratio		0.910	
Degree of Saturation	%	96	
Swelling Pressure	kN/m²	80	
Dry Density	Mg/m³	1.48	

Increment No.	Load (kN/m²)	Change in Height (mm)	Void Ratio	Cv (m²/yr)	Mv (m²/MN)	Temp (°C)	Corrected Cv
1	80	0.070	0.902			22	
2	4	-0.266	0.939		0.25	22	
3	80	-0.008	0.911	0.37	0.19	22	0.35
4	200	0.363	0.870	0.34	0.18	22	0.32
5	400	0.803	0.823	0.26	0.13	21	0.25
6	800	1.325	0.766	0.24	0.08	21	0.23
7	80	0.620	0.842		0.06	21	



Method of Preparation:	BS 1377: Part 5: 1990: 3.3 & 3.4
Method of Test:	BS 1377: Part 5: 1990: 3.5
Method of Time Fitting Used:	Square root
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	
Remarks to Include:	Sample disturbance, loss of water, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110 °C.

TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD

DATE ISSUED: 02/08/2019

Contract:	**10 Glenmore Road, London, NW3 4DB**
Serial No:	**35570**

DETERMINATION OF THE SULPHATE CONTENT AND pH OF SOIL AND GROUNDWATER

Borehole / Pit No.	Depth (m)	Sample		Conc. of Soluble SO3		Calc'd Conc. Of SO4 (g/L)	pH Value	% Sample Passing 2mm Sieve	Description	Remarks
		Type	Ref.	Water Soluble 2:1 (g/L)	Ground Water (g/L)					
TP4	1.00	D	-	0.34		0.41	7.7	100	Firm yellowish brown CLAY	
TP6	1.50	D	-	0.31		0.38	7.7	100	Firm yellowish brown CLAY	
WS1	2.50	L	3	0.18		0.22	8.1	100	Firm yellowish brown CLAY.	
WS1	4.50	L	5	2.37		2.84	7.5	100	Stiff yellowish brown CLAY with rare grey veins, decayed roots, and selenite crystals.	

Method of Preparation:	BS1377: Part 1: 2016: 8.5, BS1377: Part 3: 1990: 5.3 Soil/Water Extract, 5.4 Groundwater
Method of Test:	BS1377: Part 3: 1990: 5.5
Type of Sample Key:	U= Undisturbed, B= Bulk, D= Disturbed, J= Jar, W= Water, SPT= Split Spoon Sample, C= Core Cutter
Comments:	**Test not UKAS accredited**
Remarks to Include:	Sample disturbance, loss of moisture, variation from test procedure, location, and origin of test specimen within original sample. Oven drying temperature if not 105-110C.