Soil Consultants
Ground Investigation
Geotechnical Analysis
Contamination Assessment

FACTUAL REPORT ON GROUND INVESTIGATION

PROPOSED REDEVELOPMENT:

10a OAKHILL AVENUE, LONDON NW3 7RE

Client:	**ESI Ltd** **New Zealand House** **160 Abbey Foregate** **Shrewsbury** **SY2 6FD**
Report ref:	**9374/MC/AW**
Date:	**27th February 2015 [Rev 1]**

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FACTUAL REPORT ON GROUND INVESTIGATION

PROPOSED REDEVELOPMENT:

10a OAKHILL AVENUE, LONDON NW3 7RE

DOCUMENT ISSUE STATUS:

Issue	Date	Description	Author	Checked / approved
Rev 0	24 May 2013	First issue	Matthew Clarke	Alan Watson
Rev 1	27 February 2015	Revised Client details	Matthew Clarke BSc(Hons) MSc(Dipl) CGeol FGS	Alan Watson BSc (Eng) CEnv CEng MICE

TABLE OF CONTENTS

APPENDIX

1.0 INTRODUCTION

It is proposed to demolish the existing buildings of No. 10a Oakhill Avenue, London NW3 7RE, and to construct a new residential building with four storeys above ground. The design will extend the existing front-aspect lower ground floor level to become a rear-aspect basement and, across some of the existing footprint, extend down for an additional basement level and a swimming pool.

This report presents the findings of a geotechnical ground investigation.

The site is also the subject of a further report: Soil Consultants Limited's, 'Land Stability Report' [Ref 9374D/MC/AW, dated February 2015].

This Report has been prepared for the benefit of the Client and associated parties directly involved with the design and construction of the project under direction of the Client. No reliance can be assumed by others without written agreement from Soil Consultants Limited.

2.0 SITE DESCRIPTION

The site of our investigation comprises the existing residential buildings, at number 10a Oakhill Avenue, in the Frognal and Fitzjohns district of the London Borough of Camden, at postcode NW3 7RE and approximate National Grid Reference 525690E, 185715N.

The site, which is approximately rectangular on plan, extends for some 23m along the northern side of Oakhill Avenue and 60m towards the north-west - covering an area of around 1135m². The existing buildings have a maximum of four above-ground storeys, including the front-aspect lower ground floor and are set amidst hardstanding with peripheral soft landscaping to the front and a garden to the rear. The site is bounded by further residential properties along Oakhill Avenue to the front and side and also to the rear, on Heath Drive.

The general topography slopes gently down, from Parliament Hill 500m to the NE, towards the River Westbourne, some 2.9km to the SW. The site is at an approximate elevation of +93mOD, although there are various elevation changes across the site: from a maximum of +96.25mOD near to the northern corner of the existing building, to +92.20mOD at the southern street boundary. Oakhill Avenue descends the hill along the steepest gradient and there is a fall across the length of the property of around 2.0m. The property is partially cut into the hillside and the southern half has been cut [by some 2.5m] to form an area of level hardstanding, providing access to lower ground floor garages, that are at street level at that end of the site. The northern half of the property is fronted by a terrace garden, which is accessed by stairway; rising from street level to the general 'ground floor' level of +96.2mOD. This general level extends, apart from a western corner of the rear garden which is at a lower elevation, to a point approximately mid-way along the property's length. From here the site slopes down by around 2.0m to the northern boundary.

There are rows of mature trees within the pavement on both sides of Oakhill Avenue and several mature trees, including oaks, within the gardens of the property and neighbouring properties. It is understood that the site has been the subject of an arboricultural survey and it is recommended that this be consulted with regard to tree locations, conditions, height and species.

The current site features are shown on the Site Plan which is included in the Appendix.

3.0 EXPLORATORY WORK

The ground investigation was carried out in May 2013 and the property was in residential occupancy. Potential locations for exploratory holes were therefore limited to those deemed suitable to avoid impeding site usage.

Our investigation comprised the following elements.

Window sample boreholes

Three window sample boreholes [WS1 to WS3] were completed using hand held/operated equipment under the supervision of an experienced geotechnical engineer. This technique involves driving hollow tubes of gradually reducing diameter into the ground using a hydraulically driven jackhammer. After each tube reaches the desired depth, it is removed using hydraulic jacks and the next tube is then driven. This method provides a near-continuous profile of the soil. Pocket penetrometer shear strength testing was performed at various depths and representative samples were taken for geotechnical and environmental testing. Monitoring pipes were installed in each borehole.

Groundwater monitoring

Water monitoring was carried out on two occasions following completion of the site works on 16th May and 24th May 2013.

Geotechnical laboratory testing

The following geotechnical laboratory testing was completed:

- moisture content profiling
- index properties tests [Atterberg Limits]
- pH and water-soluble sulphate tests [by QTS Environmental]

The engineering logs of the exploratory holes and the laboratory testing results to-date are included in the Appendix. The pH and sulphate results are pending and will be appended.

4.0 GROUND CONDITIONS

The geological survey map of the area indicates that the site is underlain by horizons of the London Clay Formation, with the uppermost unit, the Claygate Member at surface. Our investigation confirmed this sequence, beneath a thin cover of topsoil and made ground.

4.1 Made ground

Boreholes WS2 and WS3 were located in areas of existing hard-standing, which was 0.10m and 0.15m thick and comprised paving slabs and tarmac hardstanding, respectively.

4.2 Topsoil

Beneath the paving slab in WS2 and from surface in WS1 was soft, very dark grey-brown, slightly sandy and gravelly, organic silt topsoil. This extended to 0.30m in WS1 and included gravel-size pieces of ash, glass and slate; and in WS2 it extended to 0.70m and included gravel of brick and flint.

4.3 Claygate Member

The Claygate Member was met beneath the made ground and topsoil and, where proven, extended to depths of between 5.95m [+90.20mOD] and 4.90m [+87.70mOD]. This deposit comprised orange-brown and light orange-brown, sandy, silty clay, with pockets and partings of silty sand.

The Claygate Member was of soft, locally firm, becoming stiff consistency, but was locally soft and firm amidst the stiff. Atterberg Limits tests show these to be of low to intermediate plasticity in the Casagrande classification and, in the NHBC definition, to be soils of low volume-change potential.

Live rootlets were observed only within WS2, at a depth of 2.5m.

4.4 London Clay

The London Clay comprised fissured, dark grey-brown, slightly sandy, silty clay, with occasional pockets and partings of silty sand. The proportion of sand was lower than in the Claygate Member and the sandy pockets less frequent. Where proven the upper surface was present at depths of 4.90m and 5.95m. The London Clay was of stiff consistency.

This formation extended to the base of boreholes WS1 and WS3, at depths of 7.00m [89.15mOD] and 5.00m [87.60mOD].

4.5 Ground-water

Ground-water was encountered within the Claygate Member and rest levels of between 1.07m and 4.14m were measured during monitoring of the standpipes. The range in depths reflects the topographical variation across the site.

Water data are summarised in the table below:

BH WS	Inflows [depth & level]	Monitoring results [depth and level] 2 May 2013	16 May 2013	24 May 2013
1	Around 4.4m [+91.75mOD]	3.55m [+92.60mOD]	4.14m [+92.01mOD]	3.62m [+92.53mOD]
2	Dry	4.55m [+90.20mOD]	3.19m [+91.56mOD]	3.27m [+91.48mOD]
3	Around 3.6m [+89.00mOD]	2.20m [+90.40mOD]	1.07m [+91.53mOD]	1.29m [+91.31mOD]

GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report [GIR] as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report [GDR] as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.

Comments made relating to ground-water or ground-gas are based upon observations made during our investigation unless otherwise stated. Ground-water and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as [but not limited to] areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report [anything above a 'low' risk rating], reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk [for example near-surface chalk strata] it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

[Rev_1_08_03_2013]

APPENDIX

Fieldwork, in-situ testing and monitoring

- Window sample borehole records
- Pocket Penetrometer Test results
- Ground-water monitoring results

Laboratory testing

- Index property testing
- Plasticity chart
- Volume-change potential chart

Plans and drawings

- Site Plan
- Location Maps

Site	**10a Oakhill Avenue**	Borehole No:	**WS1**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**1 of 3**
Engineer:		Report No:	**9374/MC**

Comments	Samples Type	Samples Depth[m]	Field Test	Strata Depth[m]		Strata Level[mOD]	Strata Description	Legend
Borehole conducted: 02 May 2013				0.00	0	+96.15	Grey stone dressing over TOPSOIL: Soft, very dark grey-brown, slightly sandy and gravelly, organic silt. Gravel is of ash, glass and slate.	0
	D	0.20		0.30		+95.85	Soft, locally firm, becoming stiff, locally soft and firm, below 2.7m, orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	
	D	0.50						
	D	0.90			1			1
	D	1.20						
	D	1.50						
	D	1.80			2			2
	D	2.10						
	D	2.40						
	D	2.70			3			3
	D	3.00						
	D	3.30						
Groundwater depth 3.55m [60 minutes after completion].								
	D	3.80			4			4
	D	4.30						
Groundwater strike around 4.4m depth								
	D	4.80						
					5			5

Constructed using tracked rig with cased percussive sampling system [plastic liner]

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water S = SPT 'N' [split spoon sampler] C = SPT 'N' [solid cone] HV = Hand Vane [kPa] PP = Pocket Penetrometer [kg/cm^2]

Remarks :- Groundwater monitoring well installed on completion - see Sheet 3 for details

Ground level interpolated from Kings Land and Architectural Surveyors' survey drawing (ref. 95274.0001)

Borehole No: **WS1**

[* = extrapolated SPT 'N' value]

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Site	**10a Oakhill Avenue**	Borehole No: **WS1**
Location	**London NW3 7RE**	
Client:	**ESI Ltd**	Sheet **2 of 3**
Engineer:		Report No: **9374/MC**

Comments	Samples Type	Samples Depth[m]	Field Test	Strata Depth[m]		Strata Level[mOD]	Strata Description	Legend
					5		*...continued from previous*	5
	D	5.30					Stiff, locally soft and firm, orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	
	D	5.80		5.95		+90.20	Stiff, fissured, dark grey-brown, slightly sandy silty CLAY, with occasional pockets and partings of silty sand.	
					6			6
	D	6.30						
	D	6.80						
				7.00	7	+89.15	End of borehole at 7.00m.	7
					8			8
					9			9
					10			10

Constructed using tracked rig with cased percussive sampling system [plastic liner]

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water S = SPT 'N' [split spoon sampler] C = SPT 'N' [solid cone] HV = Hand Vane [kPa] PP = Pocket Penetrometer [kg/cm^2]

Remarks :-

Borehole No: **WS1**

[* = extrapolated SPT 'N' value]

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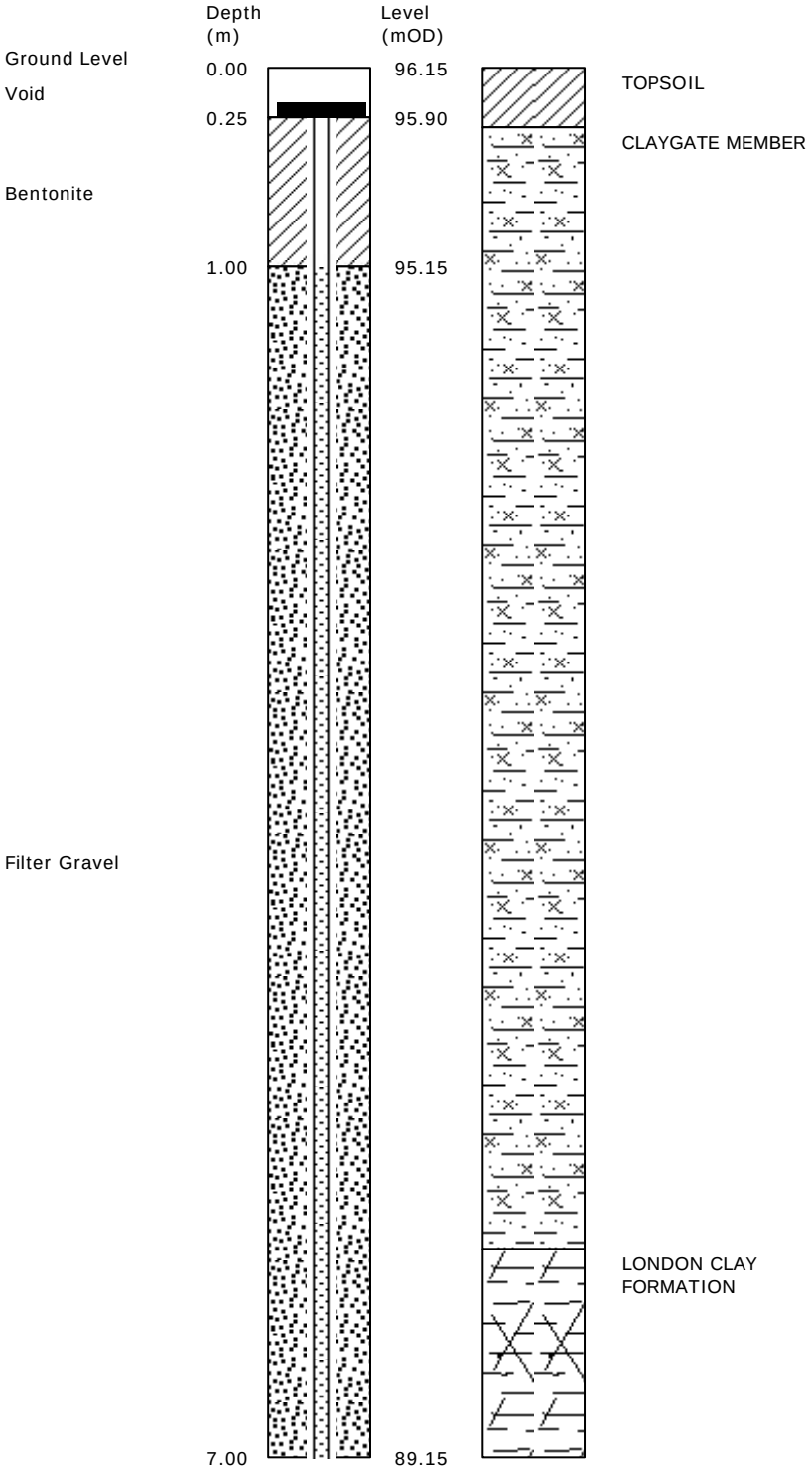
Site	**10a Oakhill Avenue**	Borehole No:	**WS1**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**3 of 3**
Engineer:		Report No:	**9374/MC**

Borehole Installation and Backfill Details



Constructed using tracked rig with cased percussive sampling system [plastic liner]

Remarks :- [i] Pipe diameter: 19mm
[ii] Tip at 7m depth [89.15m OD approx]
[iii] Bung fitted

Borehole No: **WS1**

Site	**10a Oakhill Avenue**	Borehole No:	**WS2**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**1 of 2**
Engineer:		Report No:	**9374/MC**

Comments	Samples Type	Samples Depth[m]	Field Test	Strata Depth[m]		Strata Level[mOD]	Strata Description	Legend
Borehole conducted: 02 May 2013				0.00	0	+94.75	MADE GROUND: Paving slab over light orange-brown, slightly silty sand.	0
				0.10		+94.65	TOPSOIL: Soft, very dark grey-brown, slightly sandy and gravelly, organic silt. Gravel is of brick and flint.	
	D	0.25						
	D	0.50						
				0.70		+94.05	Soft, locally firm, becoming stiff, locally soft and firm, below 3.4m, orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	
	D	0.80						
					1			1
	D	1.10						
	D	1.40						
	D	1.70						
	D	2.00			2			2
	D	2.30						
Rootlets at 2.5m depth.	D	2.60						
	D	2.90						
					3			3
	D	3.40						
	D	3.90						
					4			4
	D	4.40						
Groundwater depth 4.55m [10 minutes after completion].								
Borehole dry throughout boring	D	4.90						
				5.00	5	+89.75	End of borehole at 5.00m.	5

Constructed using tracked rig with cased percussive sampling system [plastic liner]

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water S = SPT 'N' [split spoon sampler] C = SPT 'N' [solid cone] HV = Hand Vane [kPa] PP = Pocket Penetrometer [kg/cm^2]

Remarks :- Groundwater monitoring well installed on completion - see Sheet 2 for details

Ground level interpolated from Kings Land and Architectural Surveyors' survey drawing (ref. 95274.0001)

Borehole No: **WS2**

[* = extrapolated SPT 'N' value]

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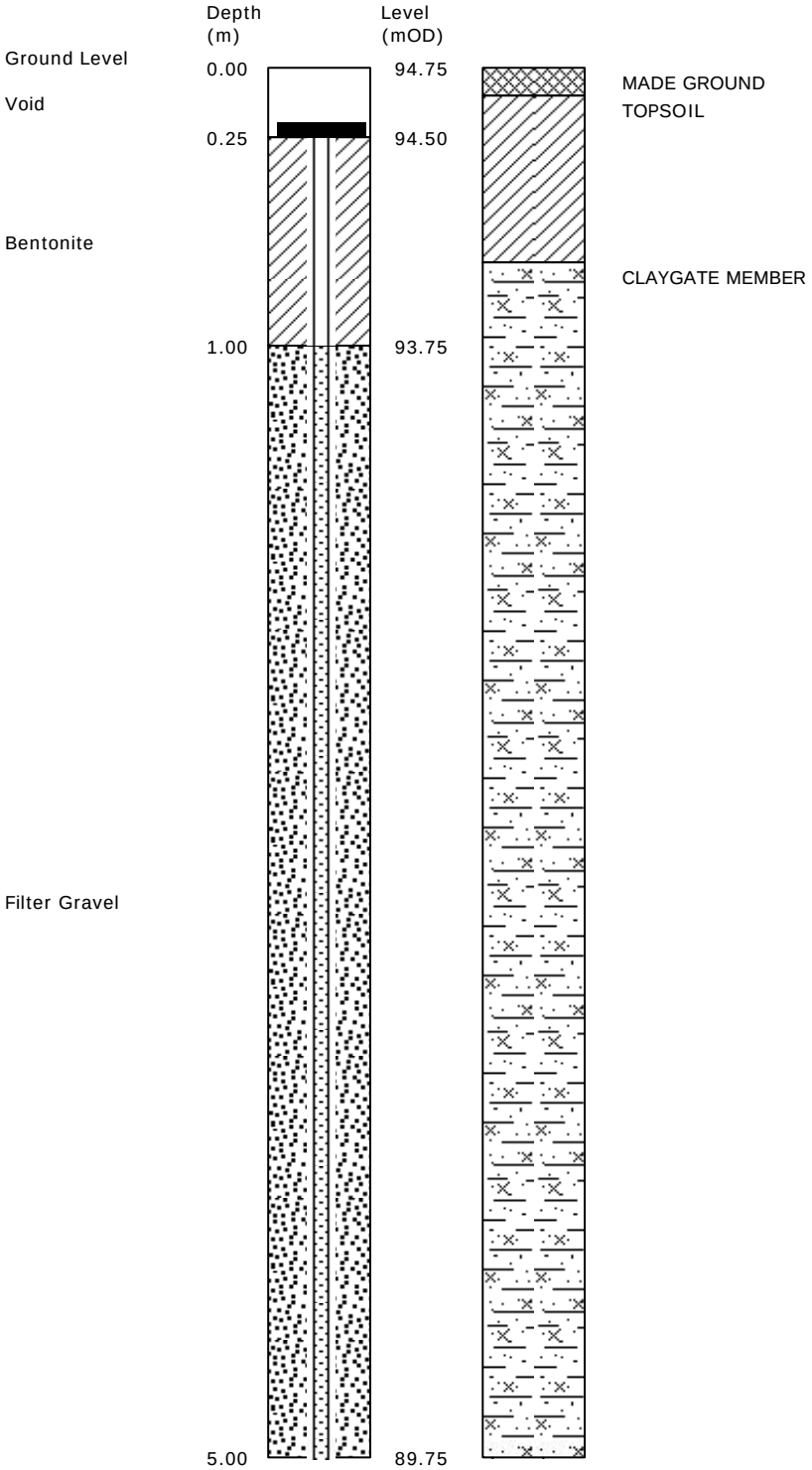
Site	**10a Oakhill Avenue**	Borehole No:	**WS2**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**2 of 2**
Engineer:		Report No:	**9374/MC**

Borehole Installation and Backfill Details



Constructed using tracked rig with cased percussive sampling system [plastic liner]

Remarks :- [i] Pipe diameter: 35mm
[ii] Tip at 5m depth [89.75m OD approx]
[iii] Bung fitted

Borehole No: **WS2**

Site	**10a Oakhill Avenue**	Borehole No:	**WS3**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**1 of 2**
Engineer:		Report No:	**9374/MC**

Comments	Samples Type	Samples Depth[m]	Field Test	Strata Depth[m]		Strata Level[mOD]	Strata Description	Legend
Borehole conducted: 02 May 2013				0.00	0	+92.60	MADE GROUND: Reinforced concrete slab.	0
				0.15		+92.45	Firm, becoming stiff, locally firm, below 1.8m, orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	
	D	0.25						
	D	0.50						
	D	0.70						
	D	1.00			1			1
	D	1.30						
	D	1.60						
	D	1.90						
					2			2
Groundwater depth 2.20m [10 minutes after completion].	D	2.20						
	D	2.70						
	D	3.00			3			3
	D	3.50						
Groundwater strike around 3.6m depth								
	D	4.00			4			4
	D	4.50						
							Stiff, fissured, dark grey-brown, slightly sandy silty CLAY, with occasional pockets and partings of silty sand.	
				4.90		+87.70		
				5.00	5	+87.60	End of borehole at 5.00m.	5

Constructed using tracked rig with cased percussive sampling system [plastic liner]

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water S = SPT 'N' [split spoon sampler] C = SPT 'N' [solid cone] HV = Hand Vane [kPa] PP = Pocket Penetrometer [kg/cm^2]

Remarks :- Groundwater monitoring well installed on completion - see Sheet 2 for details

Ground level interpolated from Kings Land and Architectural Surveyors' survey drawing (ref. 95274.0001)

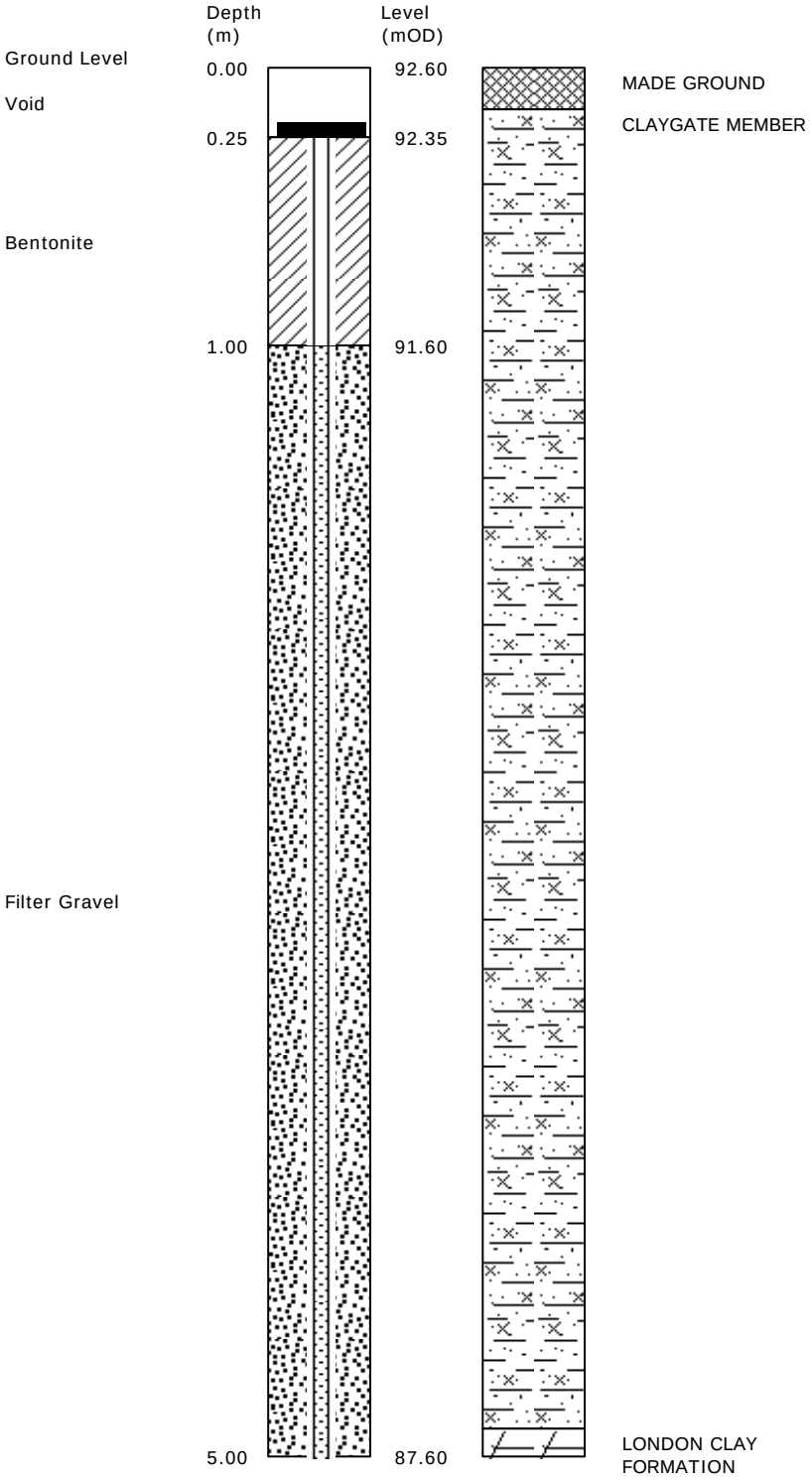
Borehole No: **WS3**

[* = extrapolated SPT 'N' value]

Soil Consultants

Site	**10a Oakhill Avenue**	Borehole No:	**WS3**
Location	**London NW3 7RE**		
Client:	**ESI Ltd**	Sheet	**2 of 2**
Engineer:		Report No:	**9374/MC**

Borehole Installation and Backfill Details



Constructed using tracked rig with cased percussive sampling system [plastic liner]

Remarks :-
[i] Pipe diameter: 35mm
[ii] Tip at 5m depth [87.6m OD approx]
[iii] Bung fitted

Borehole No: **WS3**

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

Pocket Penetrometer Test Results

WS1		WS2		WS3							
Depth [m]	Value [kg/cm²]	Depth [m]	Value [kg/cm²]	Depth [m]	Value [kg/cm²]	Depth [m]	Value [kg/cm²]	Depth [m]	Value [kg/cm²]	Depth [m]	Value [kg/cm²]
0.50	1.7	0.90	1.5	0.60	1.8						
0.75	1.2	1.20	1.3	0.90	1.6						
1.00	1.0	1.50	1.7	1.20	1.8						
1.25	0.7	1.80	1.8	1.50	1.3						
1.50	1.7	2.10	1.8	1.80	2.7						
1.75	1.7	2.40	2.0	2.10	1.9						
2.00	1.5	2.70	1.8	2.40	2.5						
2.25	1.1	3.00	1.8	2.70	2.9						
2.50	1.7	3.30	1.5	3.00	2.8						
2.75	1.9	3.60	2.2	3.30	2.4						
3.00	1.5	3.90	2.2	3.60	1.8						
3.25	1.4	4.20	2.7	3.90	2.2						
3.50	1.6	4.50	1.8	4.40	1.6						
3.75	1.4	4.80	3.4	4.90	1.6						
4.00	2.2	5.00	3.4								
4.25	2.0										
4.50	0.8										
4.75	1.2										
5.00	2.0										
5.25	2.9										
5.50	3.2										
5.75	2.6										
6.00	2.6										
6.25	1.7										
6.50	1.7										
6.75	1.6										
7.00	1.8										

Notes

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Site Location

10a Oakhill Avenue,
London NW3 7RE

Ref:

9374/MC

Record of groundwater monitoring

Date	Time	Well Ref	Groundwater depth from surface [m]	Depth of base of monitoring pipe from surface [m]	Comments	Recorded by
16/05/2013	10:45	WS1	4.14	6.15		AC
		WS2	3.19	4.95		
		WS3	1.07	3.40		
24/05/2013	12:00	WS1	3.62	-		MvR
		WS2	3.27	-		
		WS3	1.29	-		

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

Index Property Test Results

Sample Location	Depth (m)	Sample Description	Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	Percent Passing [%]	Remarks
WS1	0.90	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	25	33	17	16	100	
	1.20	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	26					
	1.50	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	28					
	1.80	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	28					
	2.10	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	29					
	2.40	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	26					
	2.70	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	29					
	3.00	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	29	33	19	14	100	
	3.30	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	30					
	3.80	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	30					
	4.30	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	4.80	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	30					
	5.30	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	29					

Notes

- Moisture content test: BS 1377:Part 2 [1990] Clause 3.2 [value in brackets = calculated matrix moisture content for comparison with LL and PL]
- Liquid and Plastic Limit: BS 1377:Part 2 [1990] Clauses 4.4, 5.2, 5.3, 5.4 is carried out on fine grained soil matrix
- Percent passing 425 micron sieve is by estimation, by hand* or by wet sieving**
- LOI = Loss on Ignition

Sample examined by MC (Engineer)

Results checked by MC (Engineer) Certificate date : 24/05/2013

Soil Consultants

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

Index Property Test Results

Sample Location	Depth (m)	Sample Description	Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	Percent Passing [%]	Remarks
WS1	5.80	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	31	39	20	19	100	
	6.30	Dark grey-brown, slightly sandy silty CLAY, with occasional pockets and partings of silty sand.	29					
	6.80	Dark grey-brown, slightly sandy silty CLAY, with occasional pockets and partings of silty sand.	26					
WS2	0.80	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	25					
	1.10	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	24					
	1.40	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	24					
	1.70	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	2.00	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	2.30	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	28					
	2.60	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	26					
	2.90	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	3.40	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	25					
	3.90	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	26					

Notes

- Moisture content test: BS 1377:Part 2 [1990] Clause 3.2 [value in brackets = calculated matrix moisture content for comparison with LL and PL]
- Liquid and Plastic Limit: BS 1377:Part 2 [1990] Clauses 4.4, 5.2, 5.3, 5.4 is carried out on fine grained soil matrix
- Percent passing 425 micron sieve is by estimation, by hand* or by wet sieving**
- LOI = Loss on Ignition

Sample examined by MC (Engineer)

Results checked by MC (Engineer) Certificate date : 24/05/2013

Soil Consultants

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

Index Property Test Results

Sample Location	Depth (m)	Sample Description	Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	Percent Passing [%]	Remarks
WS2	4.40	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	30					
	4.90	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
WS3	0.70	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	28					
	1.00	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	24					
	1.30	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	1.60	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	1.90	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					
	2.20	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	30					
	2.70	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	26					
	3.00	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	25					
	3.50	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	31					
	4.00	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	29					
	4.50	Orange-brown and light orange-brown, sandy silty CLAY, with pockets and partings of silty sand.	27					

Notes

- Moisture content test: BS 1377:Part 2 [1990] Clause 3.2 [value in brackets = calculated matrix moisture content for comparison with LL and PL]
- Liquid and Plastic Limit: BS 1377:Part 2 [1990] Clauses 4.4, 5.2, 5.3, 5.4 is carried out on fine grained soil matrix
- Percent passing 425 micron sieve is by estimation, by hand* or by wet sieving**
- LOI = Loss on Ignition

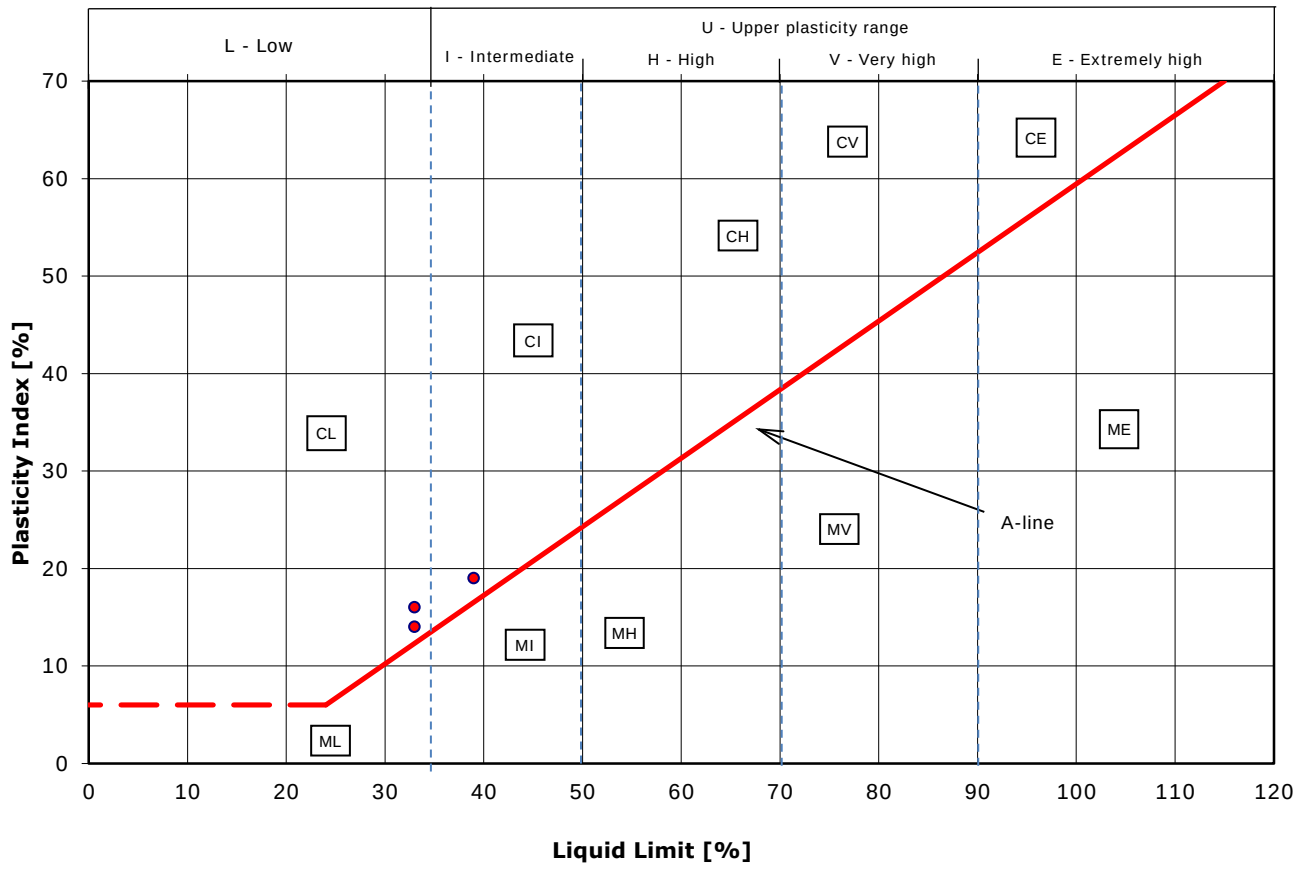
Sample examined by MC (Engineer)

Results checked by MC (Engineer) Certificate date : 24/05/2013

Soil Consultants

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

PLASTICITY CHART - BS5930 classification



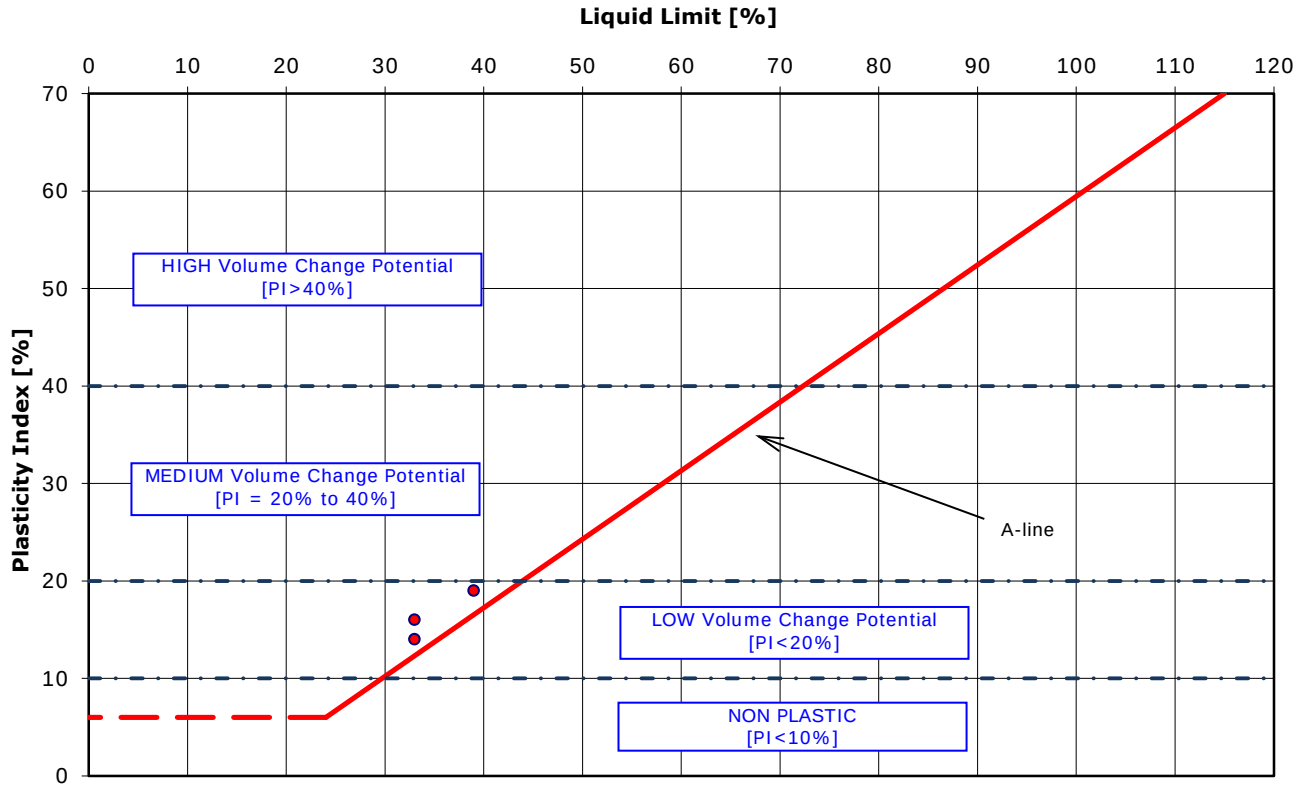
M - Silt [M-soil] plots below the A-line
C - Clay plots above the A-line

Notes:

Classification based upon BS5930:1999 'Code of practice for site investigations'

Site Location	**10a Oakhill Avenue London NW3 7RE**	Report No:	**9374/MC**

PLASTICITY CHART - NHBC classification



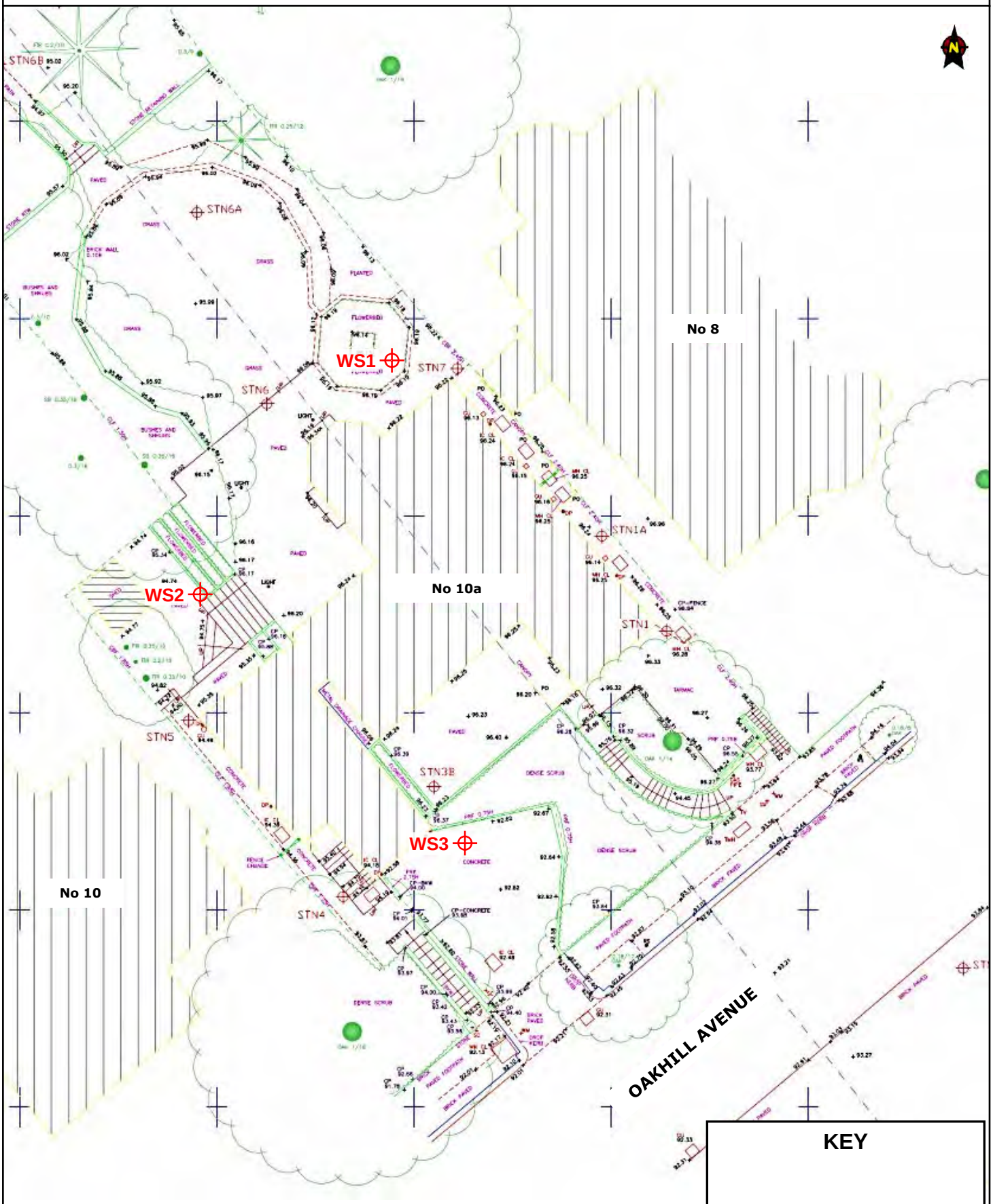
Notes:

Classification based upon NHBC Standards, Part 4 'Foundations', Chapter 4.2 'Building near trees'

Soil Consultants

Site & Location	**10a Oakhill Avenue London NW3 7RE**	Report No: **9374/MC**

Site Plan – showing locations of exploratory holes



0 Scale: 1:250 @A4 25m

KEY

WS1 — WS borehole

Based on extract from Kings Land and Architectural Surveyors' drawing 95274.0001, dated April 2013

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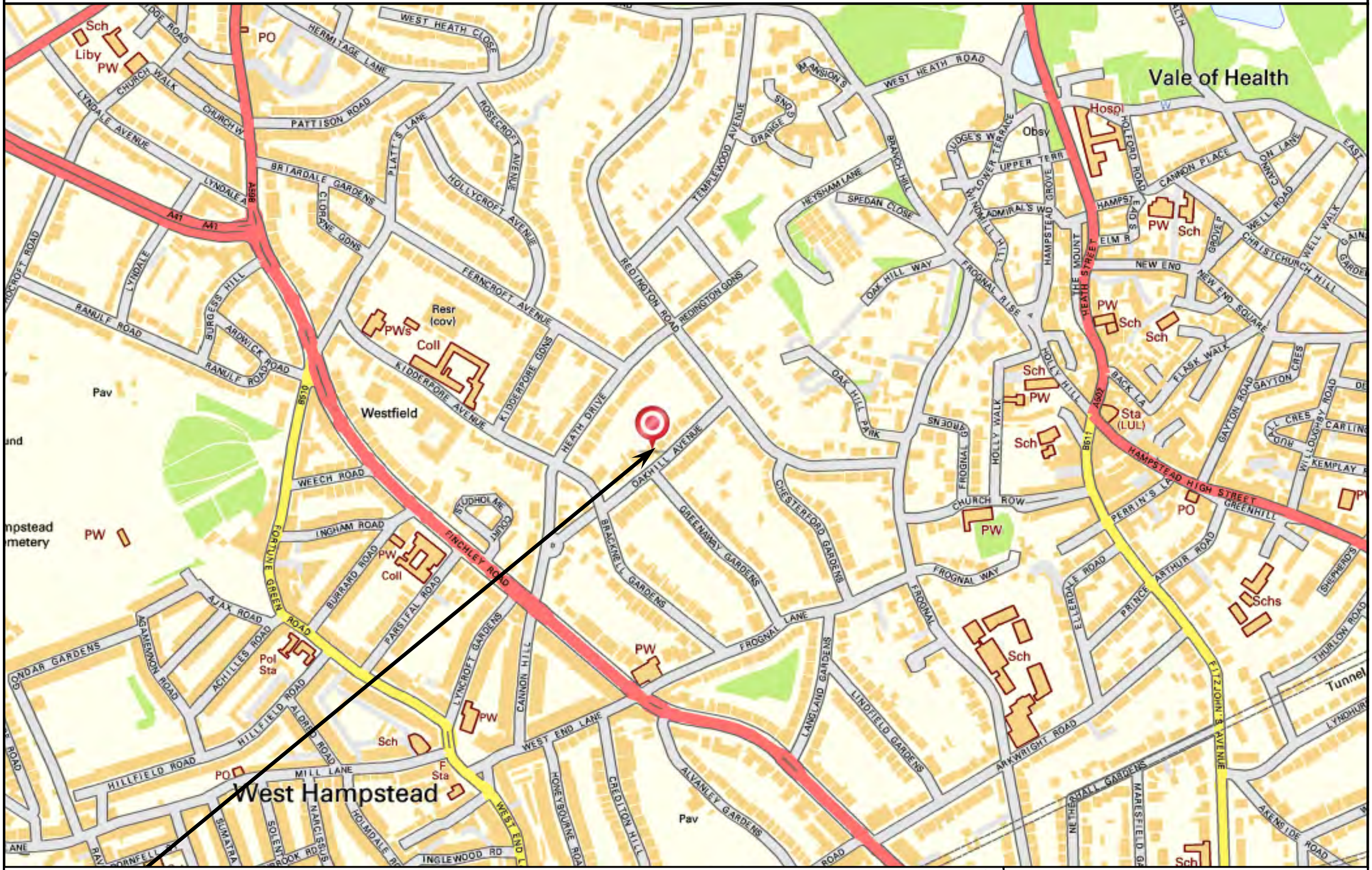
Soil Consultants

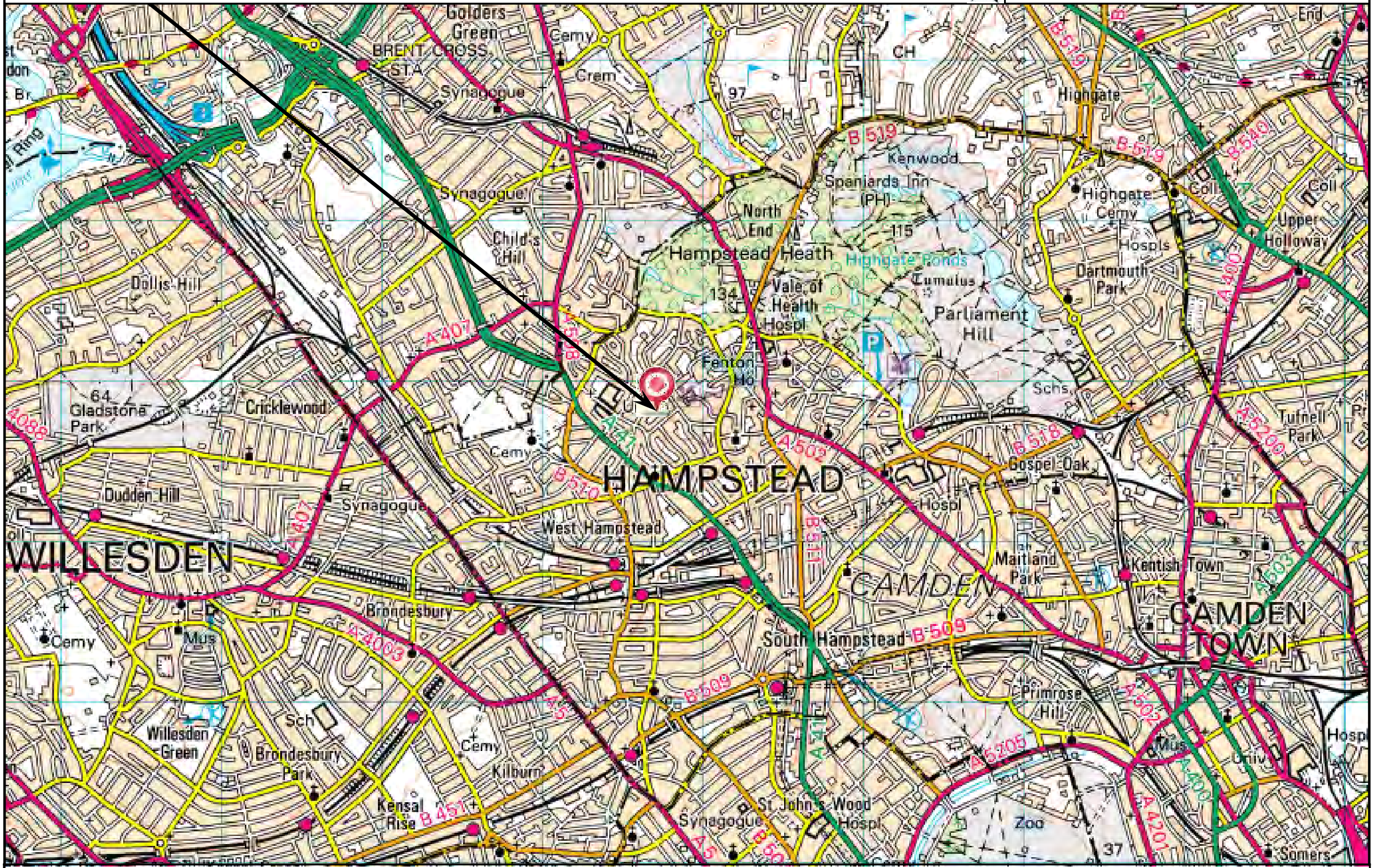
Site & Location	10a Oakhill Avenue London NW3 7RE	Report No: **9374/MC**

Location Maps



SITE LOCATION: approximate NGR 525690E, 185715N

Contains Ordnance Survey data © Crown copyright and database right 2012



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