ARBORICULTURAL ASSESSMENT REPORT

For:	[redacted]
Site:	
Refs:	

Arborist Name:	Dave O'Connell		
Title:	Senior Arborist	**Date:**	30/11/2016

OCA UK Limited

Consulting Arboriculturists

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CONTENTS

1.0 INTRODUCTION & BRIEF

1.1 [redacted]

1.2 We have been instructed to undertake a survey of the vegetation growing adjacent to the insured property in order to provide our opinion as to whether, based on the available information, any of this vegetation is likely to be influencing soil moisture levels beneath the foundations of the property, and if so, to provide recommendations as to what tree management could be implemented to effectively prevent damage continuing.

1.3 The vegetation growing adjacent to the risk address has been surveyed from the ground. All distances are measured to the nearest point of the risk address unless otherwise stated.

2.0 LIMITATIONS

2.1 Recommendations with respect to tree management are associated with the risk address as stated on the front cover of this report and following consultation with investigating engineers. The survey of trees and any other vegetation is associated with impacts on the risk address subject of this report. Matters of tree health, structural condition and/or the safety of vegetation under third party control are specifically excluded. Third party land owners are strongly advised to seek their own professional advice as it relates to the health and stability of trees under their control.

2.2 Recommendations do not take account of any necessary permission (statutory or otherwise) that must be obtained before proceeding with any tree works.

2.3 Recommendations do not take account of any requirements for survey or mitigation relating to European or other protected species, e.g. bird nesting or bats. Land owners must obtain their own professional advice in respect of any protected species.

3.0 DISCUSSION AND ANALYSIS

3.1 Soils, soil water and vegetation

All vegetation requires water to live, and this water is substantially accessed from the soil within which the plants' roots grow.

If the soil is classified as a clay soil, then it will hold very much more water than sands, gravels and loam soils. As plants abstract water from the clay soil, the soil volume will "shrink" and "swell" during the summer as water is first removed and then added by summer rainfall.

In years in which rainfall during the summer is less than the total amount of water taken from the soil by plants, shrinkage will occur. This shrinkage may remove support from building foundations, leading to cracking in the fabric of the building.

3.2 Vegetation management

The control of trees, shrubs and climbers, by removal or pruning as appropriate, are proven techniques that can control total soil water loss, thereby minimising soil shrinkage and allowing repairs to proceed.

If vegetation management works are carried out promptly, then repairs can usually proceed very quickly and the duration and distress associated with the disruption that tree related subsidence brings can be minimised.

3.3 Third party liaison and statutory controls

Tree roots do not respect physical or property boundaries and can travel for many metres beyond the above ground "dripline" of the canopy of the vegetation.

The purpose of this report is to ascertain which vegetation is the most likely substantial and/or effective contributory cause of the damage witnessed to allow for liaison with third parties or with local administrative Councils as necessary.

You can learn more about tree related subsidence of low rise buildings by visiting:

www.oca-arb.co.uk/whatissubsidence.htm

4.0 EVIDENTIAL REVIEW AND MATERIAL CONSIDERATIONS

4.1 Engineering Summary

Report dated 24th November 2016:

The engineer has described the damage to the property, its location and the likely mechanism of movement, and has concluded that the building failure is related to differential subsidence damage caused as a result of the action of vegetation.

This is a new subsidence claim and we are unaware of any previous history of subsidence at the property.

4.2 Foundations, geotechnical, and root identification

Report dated 28th October 2016:

A factual geotechnical report has described the below ground foundation design, soil and geotechnical conditions, as well as any root identification where available.

Foundations are described as being 425mm (TP1) and 900 (TP2A) below ground level.

Roots have been recovered from the trial pit(s) and subjected to laboratory analysis and the results confirm:

TP1 (USF)	10 mm	Laurus spp. (3 roots)
TP1 (USF)	1 mm	Prunus spp.
TP1 (USF)	<1 mm	Leguminosae spp.
BH1 (1.6m)	1.5 mm	Laurus spp. (2 roots)
BH1 (1.6m)	1 mm	Pomoideae gp. (2 roots)
BH1 (1.6m)	5 mm	broadleaved species, too decayed for positive identification
TP2A (USF)	2 mm	Salix spp. (2 roots)
TP2B (USF)	1.5 mm	Salix spp. (5 roots)
BH2 (2.2-3m)	<1 mm	Salix spp. (5 roots)

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Recommendations

On the basis of our findings, we have considered a practical vegetation management specification.

This specification will assist in reducing the impact of the adjacent vegetation on soil moisture levels, thereby potentially stabilising foundations of the affected area of the building.

Where felling has been proposed, this will be on the basis that the vegetation in question would not respond well to a severe reduction in leaf area that would inevitably lead to decay, the development of potential hazards, and an annual or other on-going management commitment and cost.

If pruning is recommended, the specification will be designed to allow continual ease of re-pruning with a reasonable prospect of a reduction in soil water use.

5.2 Recommended vegetation management to address the current subsidence:

Tree No:	Species	Works Required
T2	Willow	Fell and treat stump
C1	Wisteria	Fell and treat stump
T5	Cherry	Fell and treat stump
T6	Bay	Fell and treat stump
T7	Pyracantha	Fell and treat stump

6.0 STATUTORY CONTROLS

London Borough of Camden Website has confirmed that none of the implicated vegetation is subject to a Tree Preservation Order but is within Conservation Area controls.

7.0 APPENDIX 1: TREE TABLES

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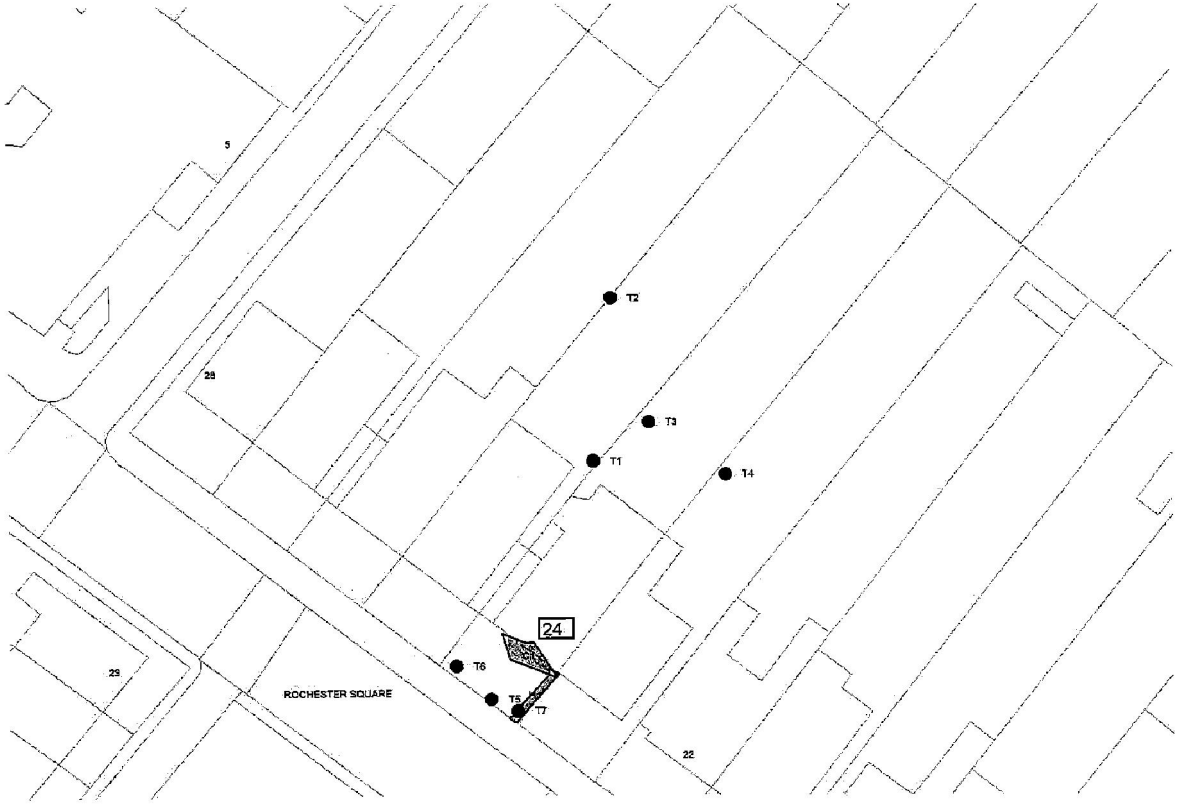
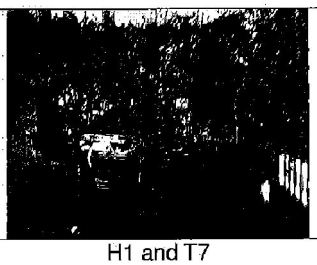
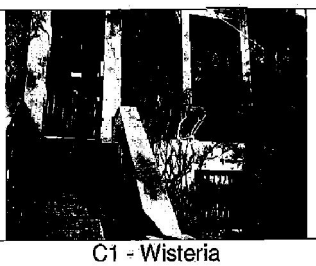
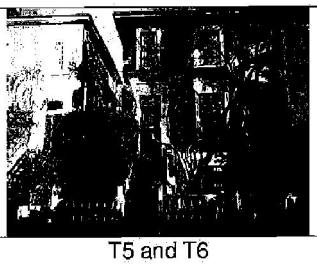
Tree No	Common Name	Age Class	Condition	Height (m)	Crown Spread (m)	Stem diam. (mm)	Dist to bldg. (m)	Pruning history	Recommendation	Tree work constraints	Notes	Owner address	Owner
T1	Elder	Semi-Mature	Fair	6	5.0	80	2.5	No significant past tree works	No work required	N/A		25 Rochester Square, London, NW1 9SA	P3P
T2	Willow	Early Mature	Fair	12	12	600	15	No significant past tree works	Fell and treat stump	No access to rear garden	Unsure which garden as cannot see base of stem. Dimensions estimated	25/26 Rochester Square, London, NW1 9SA	P3P
T3	Hazel (Common)	Semi-Mature	Fair	6	6	50	7	multi stemmed coppice	No work required	N/A		24 Rochester Square, London, NW1 9SA	PH
T4	Bay	Early Mature	Fair	7	5.0	110	2.5	No significant past tree works	No work required	N/A		23 Rochester Square, London, NW1 9SA	PH
C1	Wisteria	Early Mature	Fair	8	5.0	40	0.1	No significant past tree works	Fell and treat stump	None		24 Rochester Square, London, NW1 9SA	PH
H1	Privet	Early Mature	Fair	2.5	5.0	40	1	Trimmed regularly	No work required	N/A		24 Rochester Square, London, NW1 9SA	PH
T5	Cherry	Early Mature	Fair	7	5.0	230	4.7	Reduced 3 years ago	Fell and treat stump	None		24 Rochester Square, London, NW1 9SA	PH
T6	Bay	Semi-Mature	Fair	4	3.0	90	4.2	Pruned regularly	Fell and treat stump	None		24 Rochester Square, London, NW1 9SA	PH
T7	Pyracantha	Semi-Mature	Fair	2.5	2	50	4.5	No significant past tree works	Fell and treat stump	None		24 Rochester Square, London, NW1 9SA	PH

8.0 APPENDIX 2: SITE PLAN



Location:	24 Rochester Square, London, NW1 9SA
Job Ref.:	69194
Survey Date:	30th November 2016
By OCA Limited Crown copyright 2016. License number 100043594	

9.0 APPENDIX 3: SITE PHOTOGRAPHS

	
H1 and T7	C1 - Wisteria
	
T5 and T6	

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CET PROPERTY ASSURANCE
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SITE INVESTIGATION
FACTUAL REPORT

[redacted]

Home Emergency Response - Subsidence Investigation - Drainage Services – Crack & Level Monitoring – Property Video Surveys

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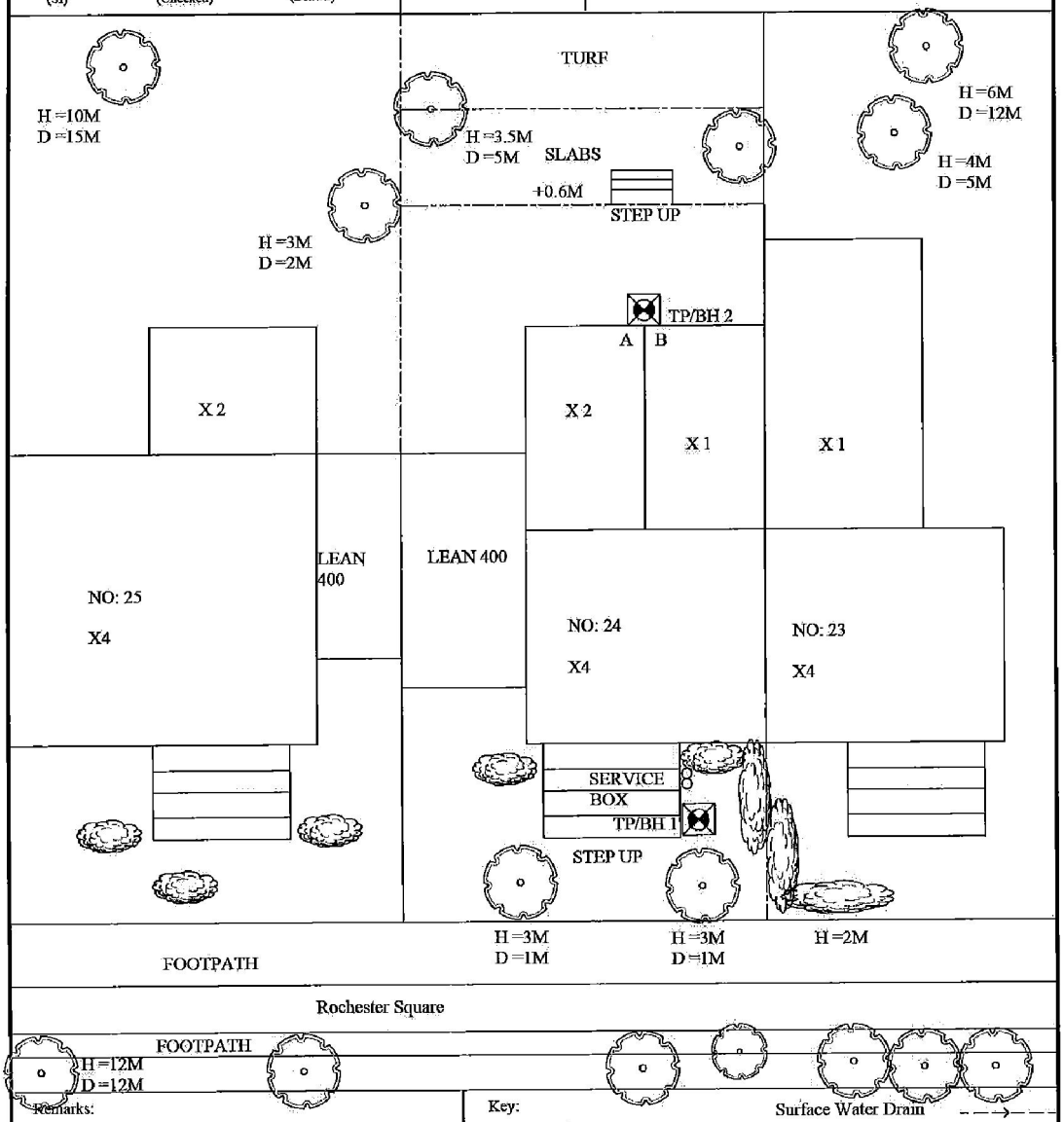
Investigation Layout Plan

Sheet: 1 of 1
Job No: 383693
Date: 28/10/2016
Weather: DRY

Site: 24 Rochester Square
Work carried out for: Cunningham Lindsey

MH (SI) SA (Checked) PS (Drawn)



Remarks:

Scale: N.T.S.

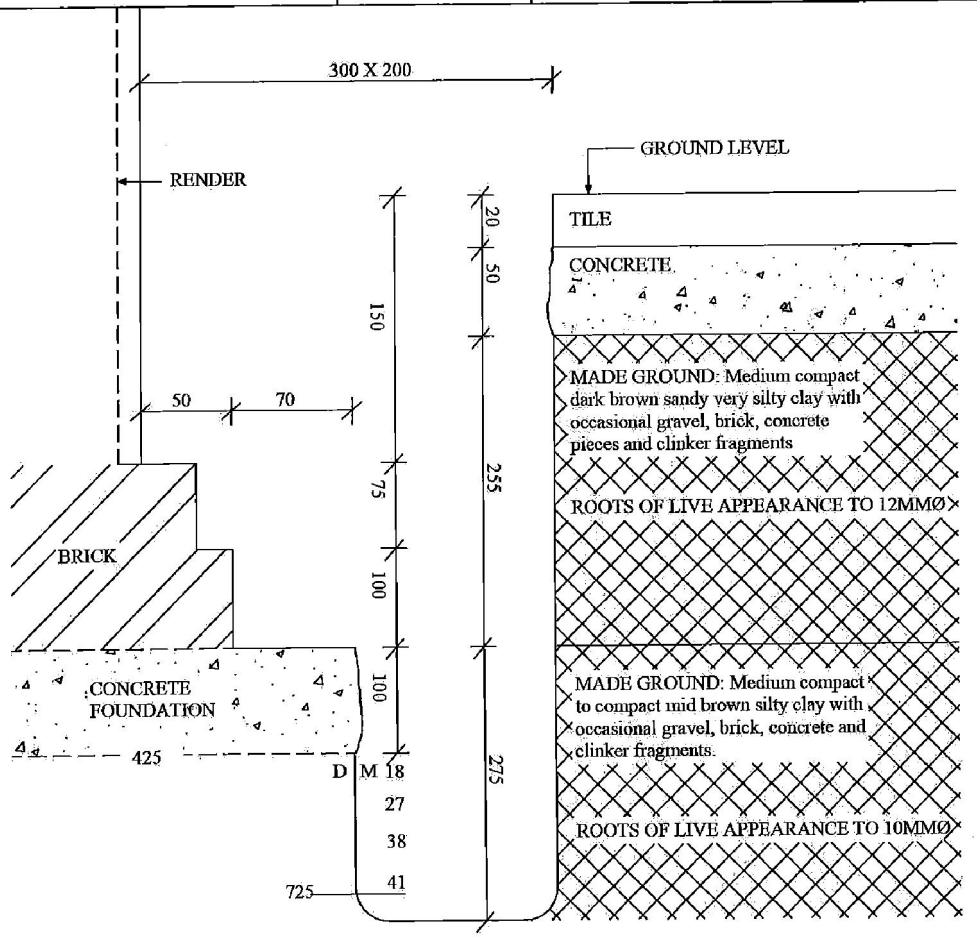
Key:

Combined Gulley	RWWG
Manhole	MH
Rain Water Pipe	RWP
Rain Water Gulley	RWG
Soil Vent Pipe	SVP
Waste Gulley	WG
Waste Pipe	WP

Surface Water Drain
Foul Water Drain
Tree / Bush (approx. ht in m)
Trial Pit
Borehole
O/D - Open Discharge

Trial Pit No: 1

Sheet: 1 of 1	Site: 24 Rochester Square, NW1		
Job No: 383693			
Date: 28/10/16	Work carried out for: Cunningham Lindsey		
Hand Tools	Drawn by: SL		
Weather: DRY	Ground Level mOD:		



FOR STRATA BELOW 600MM SEE BH LOG 1

Remarks: All measurements in millimetres. Small trial pit dug due to services in area, no mac probes done underside sample.

Key:

D	Small disturbed sample	J	Jar sample
B	Bulk disturbed sample	V	Pilcon Vane (kPa)
W	Water sample	M	Mackintosh probe
TDTD	Too dense to drive		

Logged: MH	Checked: SA	Approved:	Scale: N.T.S.

Borehole 1

Sheet:	1 of 1	Site:	24 Rochester Square
Job No:	383693		
Date:	28/10/2016		
Boring Method:	Hand Auger	Ground Level:	
Client:	Cunningham Lindsey - Morley (Leeds)		
Diameter (mm):	75	Weather:	Dry

Depth (m)	Soil Description	Thickness	Legend	Samples and Tests Depth	Type	Result
0.00	See Trial Pit	0.60				
0.60	MADEGROUND medium compact to compact mid brown silty sandy clay with gravel, brick and concrete pieces.	0.10				
0.70	Very Stiff mid brown, grey veined silty CLAY with partings of orange silt and fine sand with claystone nodules.	0.70		1.00	DV	140+
						140+
1.40	Very Stiff mid brown, grey veined silty gravelly CLAY with partings of orange silt and fine sand.	0.20		1.50	DV	140+
1.60	End of BH					140+

Remarks:
BH ends at 1.6m, gravel obstruction, too dense to hand auger. BH dry and open on completion. Dead and decomposing roots to 1.6m.

Key:
D - Disturbed Sample
B - Bulk Sample
W - Water Sample
J - Jar Sample
V - Pilcon Shear Vane (kP
M - Mackintosh Probe
TDTD - Too Dense To Drive
Roots
Roots
Roots
Depth to Water (m)

To Depth (m)	Max Dia (mm)
1.60	2

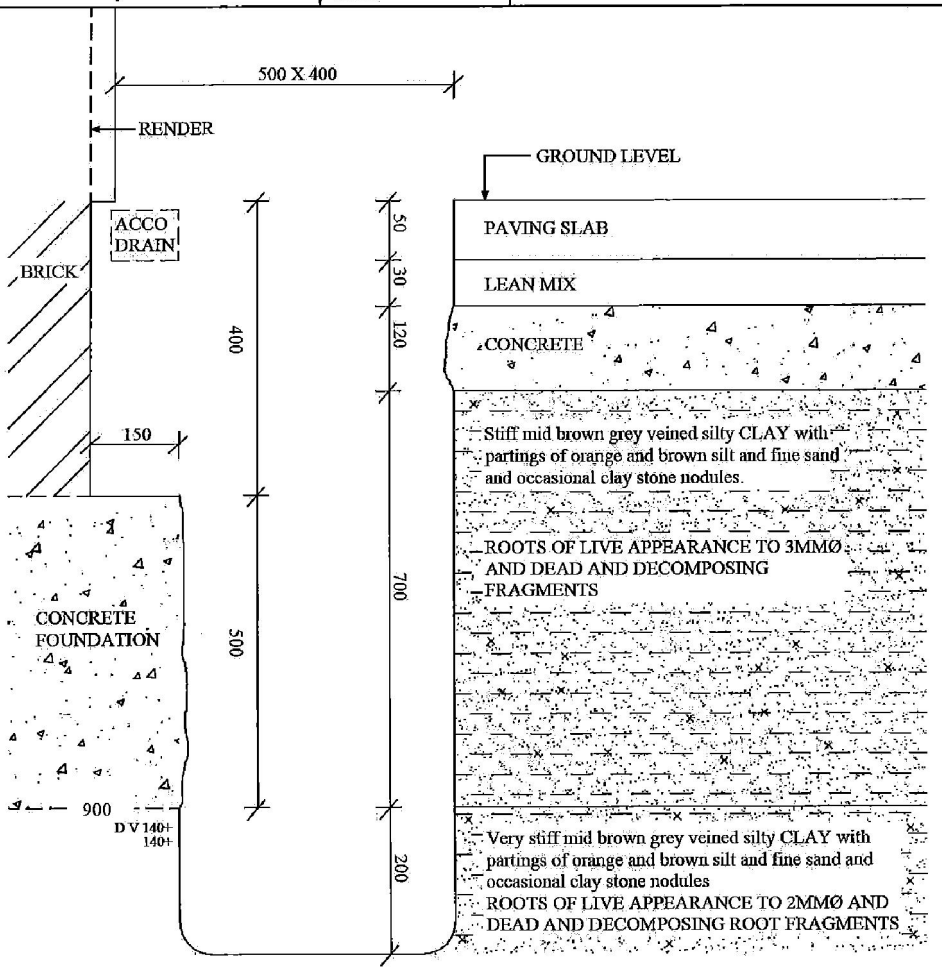
Logged:	AC	SA	Checked:	Approved:	Version	V1.0 28/01/16	N.T.S.

Trial Pit No: 2 A

Sheet: 1 of 2
Job No: 383693
Date: 28/10/2016

Site: 24 Rochester Square, NW1
Work carried out for: Cunningham Lindsey

Hand Tools
Weather: Dry
Drawn by: SL
Ground Level mOD:



FOR STRATA BELOW 1100MM SEE BH LOG 2

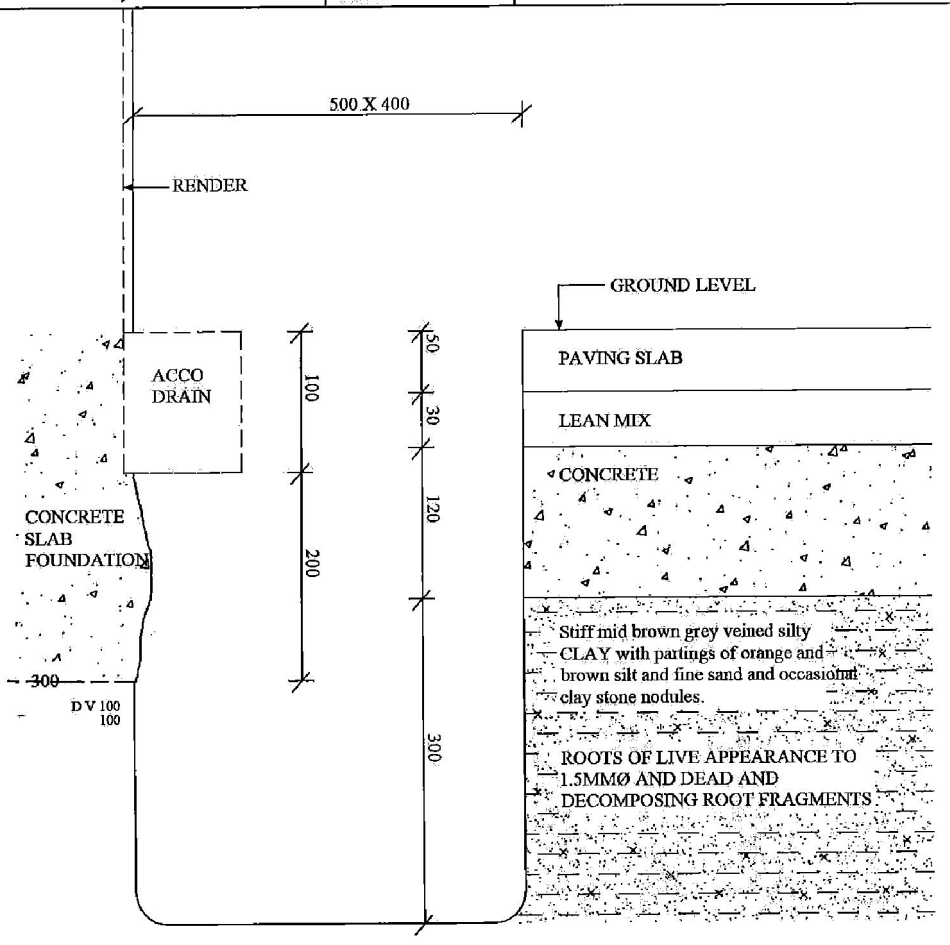
Remarks: All measurements in millimetres.

Key:
D Small disturbed sample
B Bulk disturbed sample
W Water sample
TDTD Too dense to drive
J Jar sample
V Pilcon Vane (kPa)
M Mackintosh probe

Logged: MH | Checked: SA | Approved: | Scale: N.T.S.

Trial Pit No: 2 B

Sheet: 2 of 2	Site: 24 Rochester Square, NW1		
Job No: 383693			
Date: 28/10/2016	Work carried out for: Cunningham Lindsey		
Hand Tools	Drawn by: SL		
Weather: Dry	Ground Level mOD:		



FOR STRATA BELOW 500MM SEE BH LOG 2

Remarks: All measurements in millimetres.

Key:

D	Small disturbed sample	J	Jar sample
B	Bulk disturbed sample	V	Pilcon Vane (kPa)
W	Water sample	M	Mackintosh probe
TDTD	Too dense to drive		

Logged: MH	Checked: SA	Approved:	Scale: N.T.S.

Borehole	2		Sheet:	1 of 1	Site:	24 Rochester Square
			Job No:	383693		
			Date:	28/10/2016		
Boring Method:	Hand Auger		Ground Level:		Client:	Cunningham Lindsey - Morley (Leeds)
Diameter (mm):	75	Weather:	Dry			

Depth (m)	Soil Description	Thickness	Legend	Samples and Tests: Depth	Type	Result
0.00	See Trial Pit	1.10				
1.10	Very Stiff mid brown, grey veined silty CLAY with partings of orange silt and fine sand with claystone nodules.	1.90		1.50	DV	140+
						140+
				2.00	DV	140+
						140+
				2.50	DV	140+
						140+
3.00	End of BH			3.00	DV	140+
						140+

Remarks:
BH ends at 3.0m. BH dry and open on completion. No live roots observed below 2.2m.
Dead and decomposing roots to 3.0m.

Key:
D - Disturbed Sample
B - Bulk Sample
W - Water Sample
J - Jar Sample
V - Pilcon Shear Vane (kPa)
M - Mackintosh Probe
TDTD - Too Dense To Drive

	To Depth (m)	Max Dia (mm)
Roots	2.20	1
Roots		
Roots		
Depth to Water (m)		

Logged:	AC	SA	Checked:	Approved:	Version	V1.0 28/01/16	N.T.S.

EPSL ***European Plant Science Laboratory***	Sheet: 1 of 1 Job No: **383693** Date: **03/11/2016** Order No: **901535** EPSL Ref: **R16341**	Site: **24 Rochester Square,** Work carried out for: **Cunningham Lindsey**

Certificate of Analysis

The following work was commissioned by CET on behalf of their client. Root samples were obtained in sealed packets from the above site with no reference given as to the types of tree or shrub from which they may have originated.
The results were as follows -

Trial pit/ Borehole number	Root diameter (mm)	Tree, shrub or climber from which root originates	Result of starch test
TP1 (USF)	10 mm	Laurus spp. 3 roots	Positive
TP1 (USF)	1 mm	Prunus spp.	Positive
TP1 (USF)	<1 mm	Leguminosae spp.	Negative
BH1 (1.6m)	1.5 mm	Laurus spp. 2 roots	Positive
BH1 (1.6m)	1 mm	Pomoideae gp. 2 roots	Positive
BH1 (1.6m)	5 mm	broadleaved species, too decayed for positive identification	Negative
TP2A (USF)	2 mm	Salix spp. † 2 roots	Positive
TP2B (USF)	1.5 mm	Salix spp. † 5 roots	Positive
BH2 (2.2-3m)	<1 mm	Salix spp. † 5 roots	Negative

Laurus spp. include bay laurel (the bay tree).
Prunus spp. include blackthorn, cherry, cherry-laurel, Portuguese laurel, peach, plum, and related species.
Leguminosae spp. include laburnum, Robinia (false acacia or locust), broom, the pagoda tree and the climber wisteria.
Pomoideae gp include apple, cotoneaster, hawthorn, pear, pyracantha, quince, rowan, snowy mespil and whitebeam.
Salix spp. are willows.

† EPSL research has developed a unique ability to differentiate Willows from Poplars. We believe no other laboratory in the UK can currently provide this service. We now offer this benefit at no extra cost.

[redacted]
MDM

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