Wildwood Lodge
9 North End
Hampstead
London
NW3 7HH

DESIGN CONSTRUCTION STATEMENT ADDENDUM

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APPENDICES

1.0 INTRODUCTION

1.1. This Design Construction Statement Addendum has been prepared by Taylor Whalley Spyra as requested by Canaway Fleming Architects as part of the proposed planning to extend the basement beneath the existing house and steps to access the basement from the rear garden.

1.2. The existing Design Construction Statement undertaken by Taylor Whalley Spyra in June 2012 has been reviewed and remains valid for the existing consented basement and the purpose of this addendum is to review any affects that the extended basement space may have on the existing Grade II listed structure, including the consented basement and the surrounding area, with regard to structural stability, ground / surface water flow and flooding.

1.3. The existing consented proposal is to refurbish the existing Victorian property, replace the existing 1950's extensions to the main building and form the basement areas under the house and to either side.

1.4. The information contained within this Construction Design Statement Addendum has been reviewed against Camden Planning Guidance - Basements and Lightwells (CPG4) and Camden Development Policy DP27 and has indicated the site location on the Camden Geological Hydrogeological & Hydrological Study Extracts Figures 11, 12 ,14, 15 & 16 which confirm the site is outside the influence of these areas (refer to Appendix F).

2.0 EXISTING SITE AND CONSENTED SCHEME

2.1. The site is on the corner of North End and Parfitt Close with a large rear garden approximately orientated North to South, existing level at the front is 111.000 and at the rear 109.800 (refer to Appendix A & H).

2.2. The existing Victorian building has been retained and a number of 1950's additions have been demolished. There was an existing basement under the main part of the building which has been demolished and the consented basement scheme is being constructed at the moment.

2.3. The consented scheme consisted of two basements either side of the existing house linked by a basement under the front of the existing house.

2.4. The underpinning to support the above load bearing walls to the existing house has been installed, with all sheet piling and temporary support works in place and the west side basement and basement under the existing house have been constructed. The works on site are ongoing with the remaining basement slab for the west of the house having been cast and the RC walls now being installed.

3.0 PROPOSED WORKS

3.1. The consented scheme included retaining some of the ground under the rear of the existing house between the underpinning and a newly constructed RC basement wall. The proposed basement adjustment requires the retained ground to be removed and the basement extended fully under the existing house.

3.2. From a structural aspect not having to retain the ground under the house between the newly constructed underpinning and an additional RC wall simplifies the construction and allows for the underpinning to be tied back to the extended RC Basement raft slab. This will further reduce any risk of differential settlement for the existing house.

3.3. The basement area level under the existing house which is to be extended is the highest of the basement levels at 107.110 and the west basement area level of 106.100 with the

lowest point of the actual swimming pool level of 104.850. The east basement level is 106.840.

3.4. The existing ground floors are to remain to provide additional horizontal propping.

3.5. The removal of the soil and the extending of the basement structure under the house will not affect the structural stability of the existing house or affect any adjoining properties which are not in the zone of influence of the extended basement.

4.0 GROUND WATER AND SURFACE WATER FLOW

4.1. The extension of the basement towards the rear under the existing house will not affect the ground water flow which flows in a northwest direction and the existing ground water level is below the basement slab level. There is no ground water flow within the volume of soil which was to be retained under the house. The below ground granular drainage being installed, which is to be extended under the extra basement space (refer to Appendix D), will allow any build-up of ground water to pass under the basement and flow towards the northwest maintaining the existing site condition.

4.2. The proposed surface water drainage design is designed to keep to the existing site conditions with SUDS to manage the hard and soft surface water runoff landscaped areas.

5.0 SOIL INVESTIGATION

5.1. In 2012 a full soil investigation was undertaken by MRH Geotechnical comprising 3 boreholes between 13 & 15m deep which confirms the ground conditions as Bagshot Beds approximately 4m deep overlaying Claygate Beds.

5.2. Monitoring of the groundwater has been undertaken with the ground water level of 105.950 which is below the basement slab level under the existing house (refer to Appendix E). The highest ground water level recorded was when the boreholes were originally installed at 107.150 which is approximately at structural slab level.

5.3. The ground water levels encountered during excavations on site have been low and dealt with by localised dewatering where encountered whilst underpinning along the west basement. This will not affect the adjoining properties as dewatering is controlled and restricted local only to this area.

6.0 ADJACENT PROPERTIES

6.1. None of the adjacent properties are affected by the additional basement space under the existing house. Hogarth House to the west is set back approximately 11.5m from the closest point of the proposed basement with Parfitt Close between.

6.2. North End, the road outside the site, is adjacent to the South boundary approximately 11m away from the closest point of the proposed additional basement space.

6.3. The Wildwood Property is adjacent to the East boundary with an existing boundary wall between. The House has a basement and is set back a considerable amount from North End. The front left corner of the house is 13m way from the closest point of the proposed additional basement space.

6.4. London Underground has a section of the Northern Line Tunnel running under the east of the site with a crown level of 72.400 above Ordnance Datum (refer to Appendix G). They have previously confirmed that the existing consented scheme which put the tunnel crown 33m below the lowest point of the basement was of sufficient depth not to be affected by the proposed development. The additional basement space is 35m above and on plan set back 6m from the tunnel crown so will not influence the tunnels. The

proposed additional basement space does not encroach any further, but extends parallel with the tunnel line.

6.5. All properties that are adjacent to the proposed developments have been condition surveyed and signed Party Wall Agreements with regard to The Party Wall Act 1996 are in place as part of the consented scheme.

6.6. The design of the basement and temporary support works is undertaken so as to minimise any structural disturbance to the adjoining properties, but as the nearest 2 buildings have basements and are not directly adjacent to the proposed basement works it is not envisaged that any structural disturbance to them will occur.

6.7. The existing building, adjacent buildings and the adjacent ground is being monitored with regard to movement. The results of the monitoring confirm that the limits set are within the allowable designed tolerances.

7.0 ASSESSMENT OF THE EFFECTS OF MOVEMENT ON ADJACENT STRUCTURES

7.1. There are two possible causes of ground movement which can be associated with the proposed additional basement space; the excavation of the basement and the adjustment of the ground under the net load changes. The only structure that this may affect is Wildwood Lodge itself.

7.2. In the long term the Claygate within which the basement is constructed will adjust to the changes that have taken place as a result of the net load changes and water pressure will build up on the underside of the slab. In this case, there will be a net load reduction and there will be a tendency for the structure to rise a small amount. This re-adjustment may result in small upward movement of the surrounding ground, but this is unlikely to result in any significant effect on the existing structure.

8.0 BASEMENT CONSTRUCTION SEQUENCE OF WORKS

8.1. Proposed Sequence of Works.

- Install within the site area and to the existing house and surrounding area a number of fixed monitoring nodes to monitor possible movement during the works.
- The existing house is to be retained and adjoining buildings and add-ons demolished as shown on the demolition drawing, all foundations are to be grubbed out.
- The sheet piling is to be installed with a Silent Piler similar to a Giken Rig which presses the sheet piles into the ground using the resistance of the adjoining installed sheet piles.
- The existing building is then to be underpinned with RC pins and associated support steel work.
- The ground is to be locally excavated 1m to allow installation of the steel wailers and props at high level.
- The ground is then to be locally excavated to allow installation of the steel wailers and props at low level.
- The ground is then to be excavated to formation level.
- The drainage pipes and granular drainage channels are to be installed.
- The basement RC slab build-up is to be installed and then the basement slab cast with 150mm high kickers for all the RC basement walls and internal columns.
- Install and cast all internal RC walls and columns to underside of ground floor slab.
- Once the RC basement slab has gained the required design strength the sheet piling walling beams at low level are to be removed.
- The basement RC walls are then to be cast to 600mm below the underside of the high level walling beams.
- Once the basement RC walls have gained the required design strength, install diagonal props fixed to the RC wall and RC basement slab and then remove the high level sheet piling walling beams and shoring.

- The RC ground floor slab and RC wall down stands can then be cast.
- Once the RC ground floor slab has gained the required design strength the additional diagonal props can be removed.
- During the construction period the sheet piling and surrounding ground will be monitored at regular intervals to confirm the construction tolerances are within the agreed design parameters.
- The existing structure is now supported on the new basement raft slab under, with the adjoining basement boxes either side forming a solid box construction to the whole basement structure.
- Continue with construction of remainder of the structure over.

9.0 CONCLUSIONS

9.1. The selection of the main contractor and sheet piling sub-contractor and designer of temporary works has been based on having previous experience constructing similar projects and the same contractor is used to install the proposed additional basement space as works are progressing.

9.2. Site personnel have been selected based on experience of similar projects. Selection of plant and machinery has been based on minimising noise and vibration.

9.3. Detailed analysis of the various aspects of construction has been reviewed to demonstrate that the level of sequencing will enable the proposed additional basement space to be constructed safely and with ground movements kept within acceptable tolerances.

9.4. The stability of the existing house should not be affected by the proposed additional basement space works. The underpinning has already taken place as part of the consented scheme and the ground movement and settlement locally are within the design parameters.

9.5. The temporary dewatering of the area is being designed and monitored to reduce the water level locally to the area of works for the construction of the swimming pool and is only needed for a short period of time. Water levels are being monitored.

9.6. The construction of the basement will not affect the ground water flow and incorporates perforated ground water pipes within a granular drainage channel installed under the basement slab and this is to be extended under the proposed additional basement space. This will allow the existing ground water regime to be maintained and restrict ground water building up behind the basement walls and also restrict any change in ground water flow affecting adjoining structures (refer to Appendix D).

9.7. The above ground surface water drainage design incorporates SUDS and two soakaways within the rear garden area which will reduce the existing surface water discharging into the existing public sewer and minimise any risk of localised flooding.

9.8. The project as currently being undertaken on site is being monitored as further detailed design is undertaken and as works progress on site and to keep in terms of the general construction process, structural stability, the long term integrity of adjacent buildings and the existing property and surrounding infrastructure.

Appendix A

TWS - 8250_SK01 – Site Location Plan indicating Adjoining Properties

IMAGE 01

WILDWOOD

IMAGE 02

No. 15

IMAGE 03

North End

IMAGE 04

PUBLIC GREEN

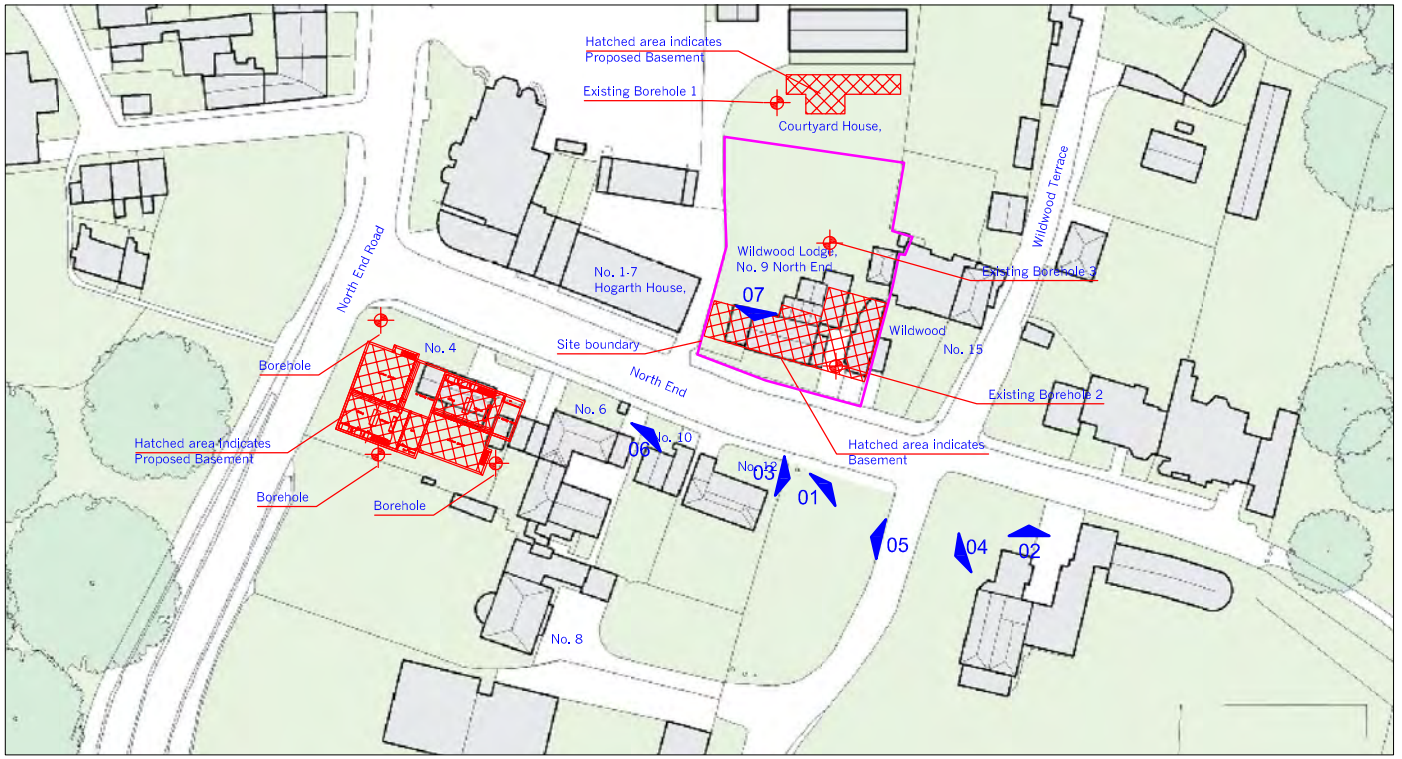

IMAGE 05

No. 12 No. 10 No. 6

IMAGE 06

1 -7 HOGARTH HOUSE

IMAGE 07

HOGARTH HOUSE
GARAGES

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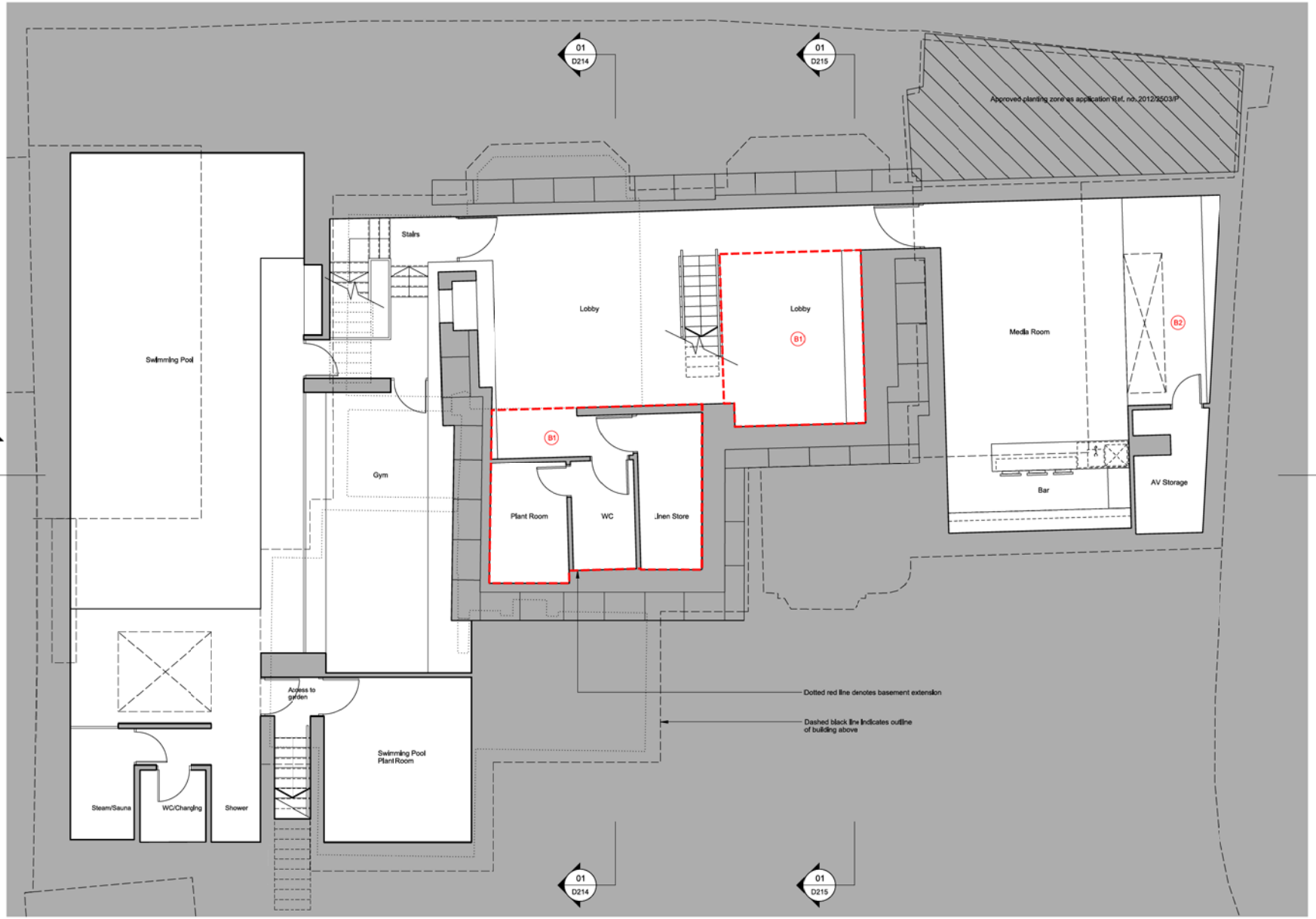
Contract	Title	Scale	Date	Drawn
WILDWOOD LODGE, 9 NORTH END LONDON NW3 7HH,	SITE LOCATION PLAN ALSO INDICATING ADJACENT PROPERTIES	NTS	24.03.11	GB
		Job No. 8250	Drawing No. SK01	Rev. -

Appendix B

Architects Basement and Ground Floor Layouts



N

0 0.5 1 5
metres

01 D200 BASEMENT PLAN
PROPOSED 1:50

Notes
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Planning
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Structural Work
All indications as to structure are for graphic purposes only and must not be relied upon for accuracy in terms of size, detail or position. All structure and temporary propping to be confirmed by a suitably qualified structural engineer before beginning works.

Key:

Dotted red line denotes new basement extension

G1 Variation reference, document 025-A-SH-01-001 rev 8

As Proposed

Rev C	27.09.13	Basement layout amended.
Rev B	18.06.13	Updated application ref: 2013/2247
Rev A	22.03.13	Basement layout amended.

Revisions

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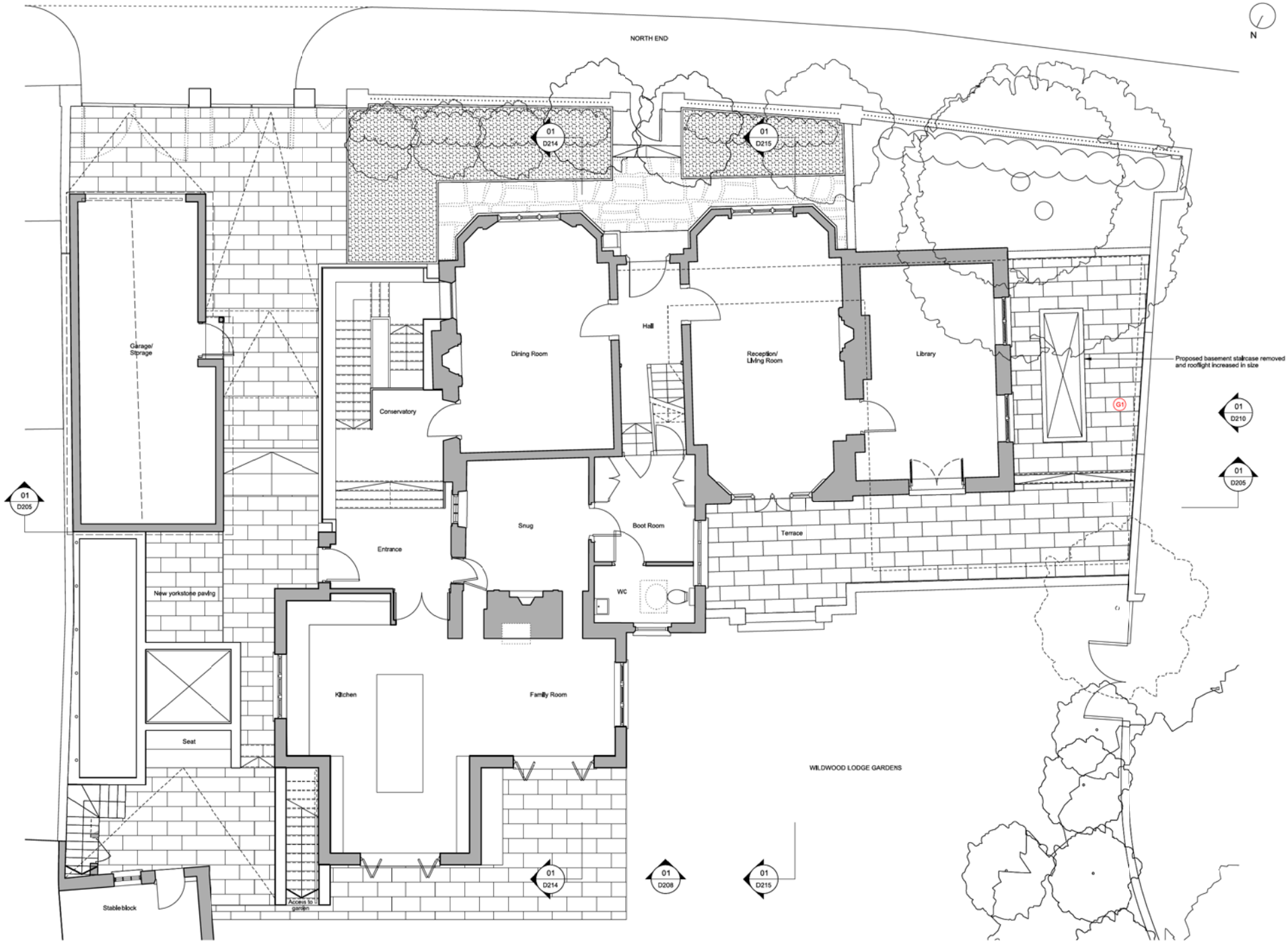
Client: Mr Avi Dodi

Project: Wildwood Lodge, North End
New Extension and Alterations

Drawing Title: Basement Extension
Proposed Basement Plan

Date: June 2013 Scale: 1:50@A1

Project	Origin	Type	Level/Vol	Package Dwg No.	Revision
025	A	P	B1	D200	C
Status: Planning			Drawn: CT		Checked: MC



01 D201 GROJND FLOOR PLAN
PROPOSED 1:50

Notes

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G1 Variation reference, document 025-A-SH-01-001 rev B

As Proposed

Rev B	27.09.13	Basement staircase removed.
Rev A	18.06.13	Updated application ref: 2013/2247

Revisions

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Client: Mr Avi Dodi

Project: Wildwood Lodge, North End
New Extension and Alterations

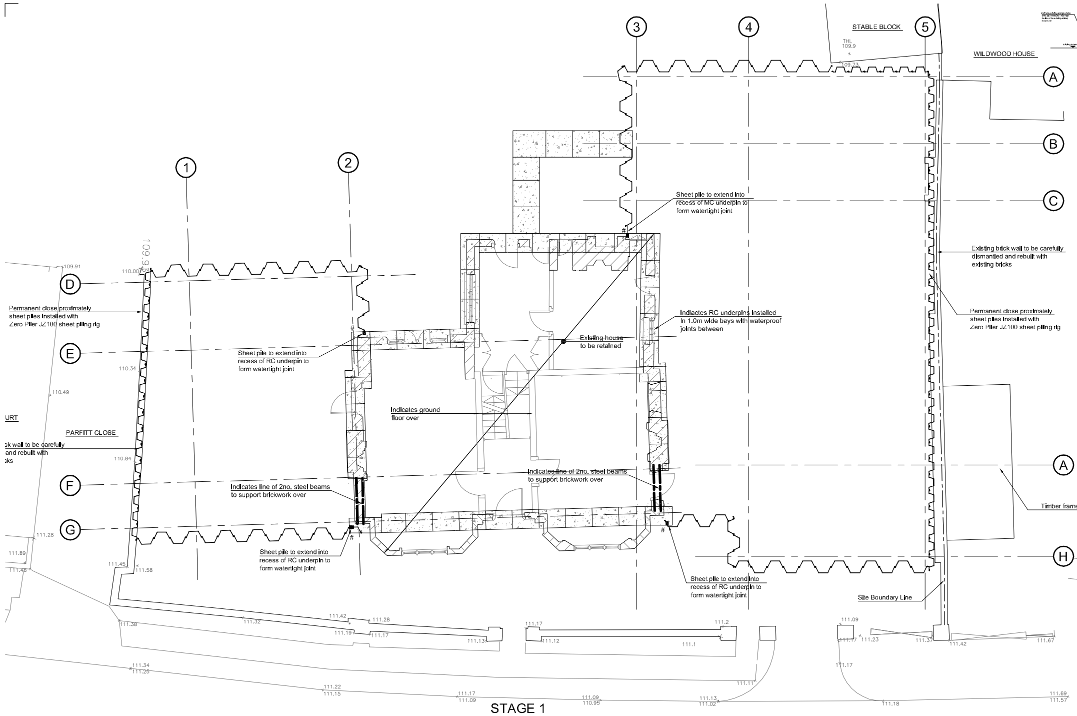
Drawing Title: Basement Extension
Proposed Ground Floor Plan

Date: June 2013 Scale: 1:50@A1

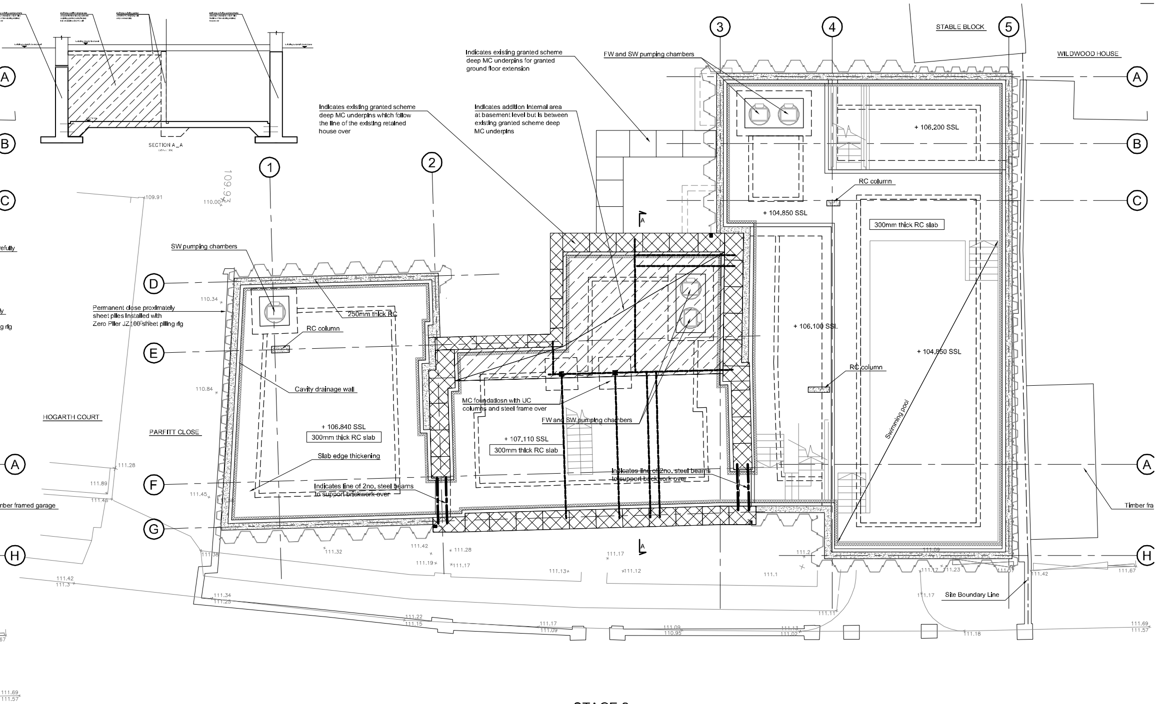
Project	Origin	Type	Level/Min	Package Dwg No.	Revision
025	A	P	00	D201	B
Status: Planning			Drawn: CT		Checked: MC

Appendix C

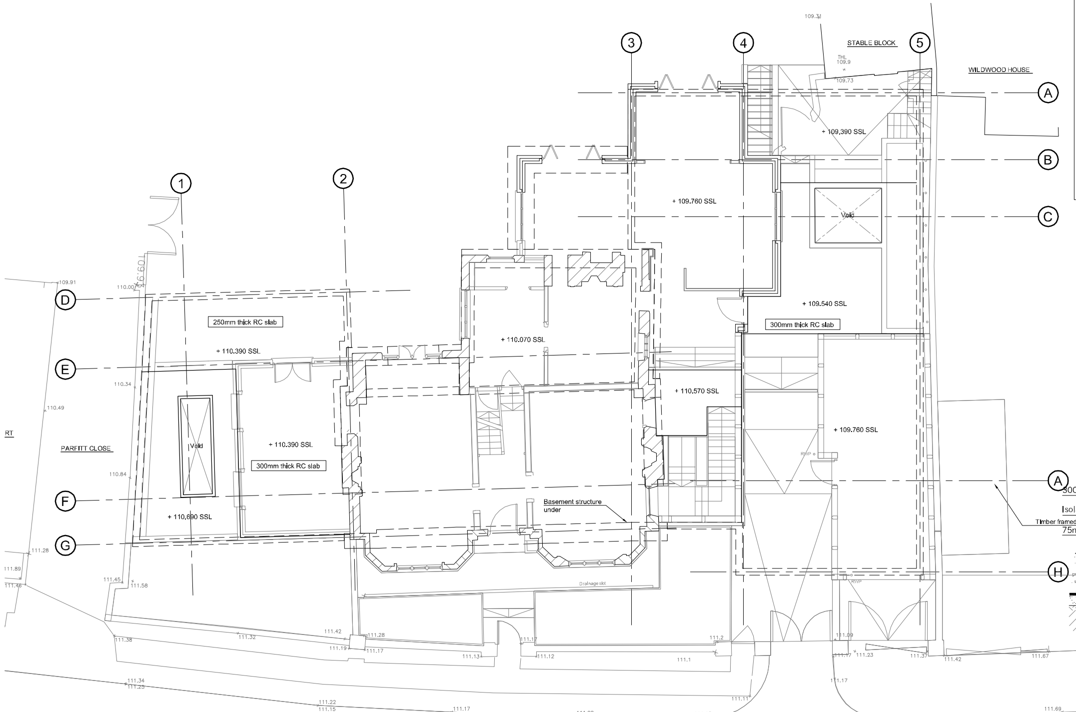
TWS - 8250_SK02 rev G – Stages Sequence to Support Existing House



STAGE 1



STAGE 2



STAGE 3

GENERAL SEQUENCE OF WORKS

The existing house is to be retained and all other additions are to be demolished

Sheet sheet piles are to be installed either side of the existing house with a sealed waterproof joint to the RC pins extending from under the existing house.

The existing area of house that is retained is to have all load bearing walls underpinned with RC Concrete pins and steel beams to supports existing brickwork structure .

Excavation can then take place in stages to allow the insertion of all temporary propping and strutting that is required.

A number of RC pins will need to be cut back to allow installation of the RC basement slab and walls.

The RC Basement Walls and RC Ground Floor Slab can be cast in the required sequence and tied to the RC underpins supporting the existing structure over.

CONSTRUCTION METHOD SEQUENCE

- Install within the site area & to the existing house and surrounding area a number of fixed monitoring nodes to monitor possible movement during the works.
- The existing house is to be retained and adjoining buildings and add-ons demolished as shown on the demolition drawing all foundations are to be grubbed out.
- The sheet piling is to be installed with a Silent Piler similar to a Giken Rig which presses the sheet piles into the ground using the resistance of the adjoining installed sheet piles.
- The existing building is then to be underpinned with RC pins and associated support steel work.
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- The ground is then to locally excavated to allow installation of the steel wailers and props at low level.
- The ground is then to be excavated to formation level.
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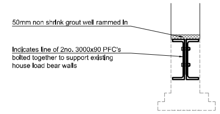
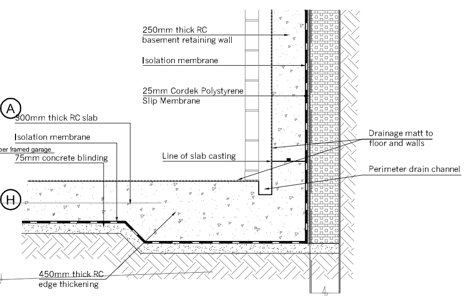
- The basement RC slab build-up is to be installed and then the basement slab cast with 150mm high kickers for all the RC basement walls and internal columns.
- Install and cast all internal RC walls and columns to underside of ground floor slab.
- Once the RC basement slab has gained the required design strength the sheet piling walling beams at low level are to be removed.
- The basement RC walls are then to be cast to 600mm below the underside of the high level walling beams.
- Once the basement RC walls have gained the required design strength, install diagonal props fixed to the RC wall & RC basement slab and then remove the high level sheet piling walling beams and shoring.
- The RC ground floor slab and RC wall down stands can then be cast.
- Once the RC ground floor slab has gained the required design strength the additional diagonal props can be removed.
- During the construction period the sheet piling and surrounding ground will be monitored at regular intervals to confirm the construction tolerances stays within the agreed design parameters.
- The existing structure is now supported on the new basement raft slab under, with the adjoining basement boxes either side forming a solid box construction to the whole basement structure.
- Continue with construction of remainder of the structure over.

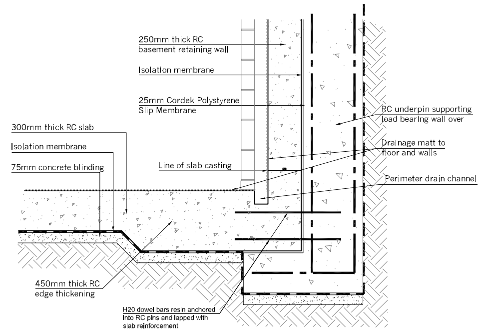
1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
2. No dimensions are to be scaled from this drawing.
3. No deviation may be made from the details shown on this drawing without prior agreement of the Engineers.
4. Any discrepancy between this drawing and any other document should be referred immediately to the Engineer.



Section of Existing Wall
Steel Support Beams



Section of RC Slab and RC Wall



Section of RC Slab and RC Underpins

Ref.	Revisions	By	Date
G	Drawing updated to show Latest Layout	GB	02.10.13
F	Drawing updated to show Revised Layout	GB	14.06.13
E	Sequence notes adjusted	GB	17.09.12
D	Sequence notes adjusted	GB	20.06.12
C	Drawing updated to latest Scheme	GB	13.06.12
B	INDICATIVE DIMS AND LEVELS ADDED	GB	02.03.12
A	Scheme updated to show revised Construction Sequence	GB	27.02.12

WILWOOD LODGE
9 NORTH END,
LONDON,
NW3 7HH,

PLANNING ISSUE DRAWING

STAGE SEQUENCE TO SUPPORT EXISTING HOUSE SHOWING PERMANENT WORKS

taylor whalley spyra
consulting civil and structural engineers

Scale at A1	Date	Drawn By
1:100	25/03/11	GB

Project No.	Drg No.	Rev.
8250	SK02	G

Appendix D

TWS - 8250_PH02 rev A – Ground Floor Level Drainage Layout
TWS - 8250_PH03 rev A – Below Slab Granular Drainage Layout

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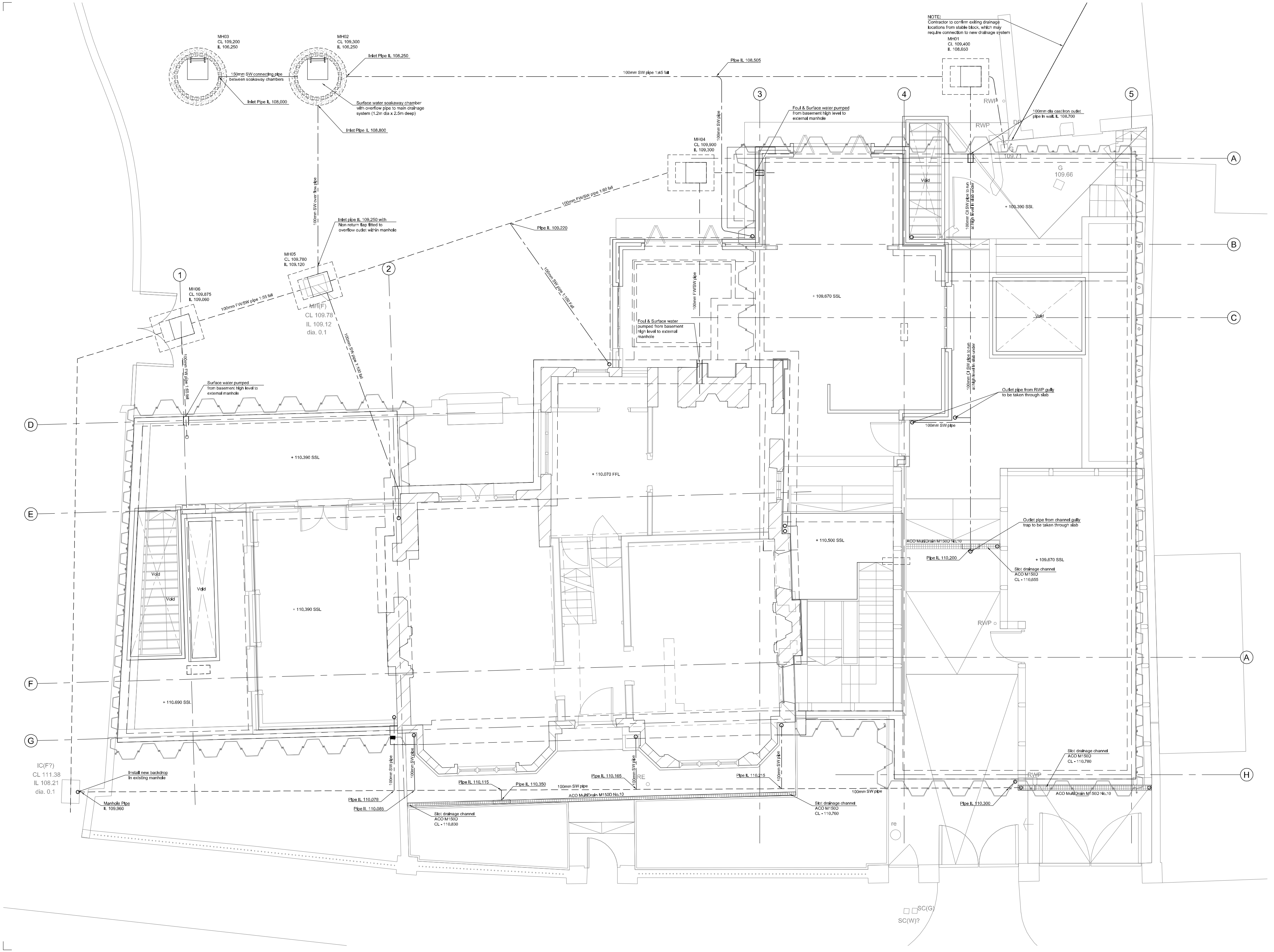


Ref.	Revisions	By	Date
B	Drainage updated and Invert Levels Added	GB	12.04.13

WILWOOD LODGE
9 NORTH END,
LONDON,
NW3 7HH,

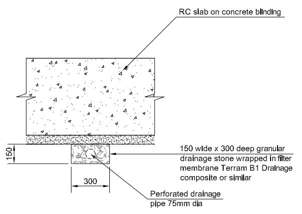
FOR CONSTRUCTION

GROUND FLOOR LEVEL
DRAINAGE LAYOUT

tws taylor whalley spyra consulting civil and structural engineers

Scale at A1	Date	Drawn By
1:50	11.11.12	GB

Project No.	Drg No.	Rev.
8250	PH02	A



DETAIL

1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
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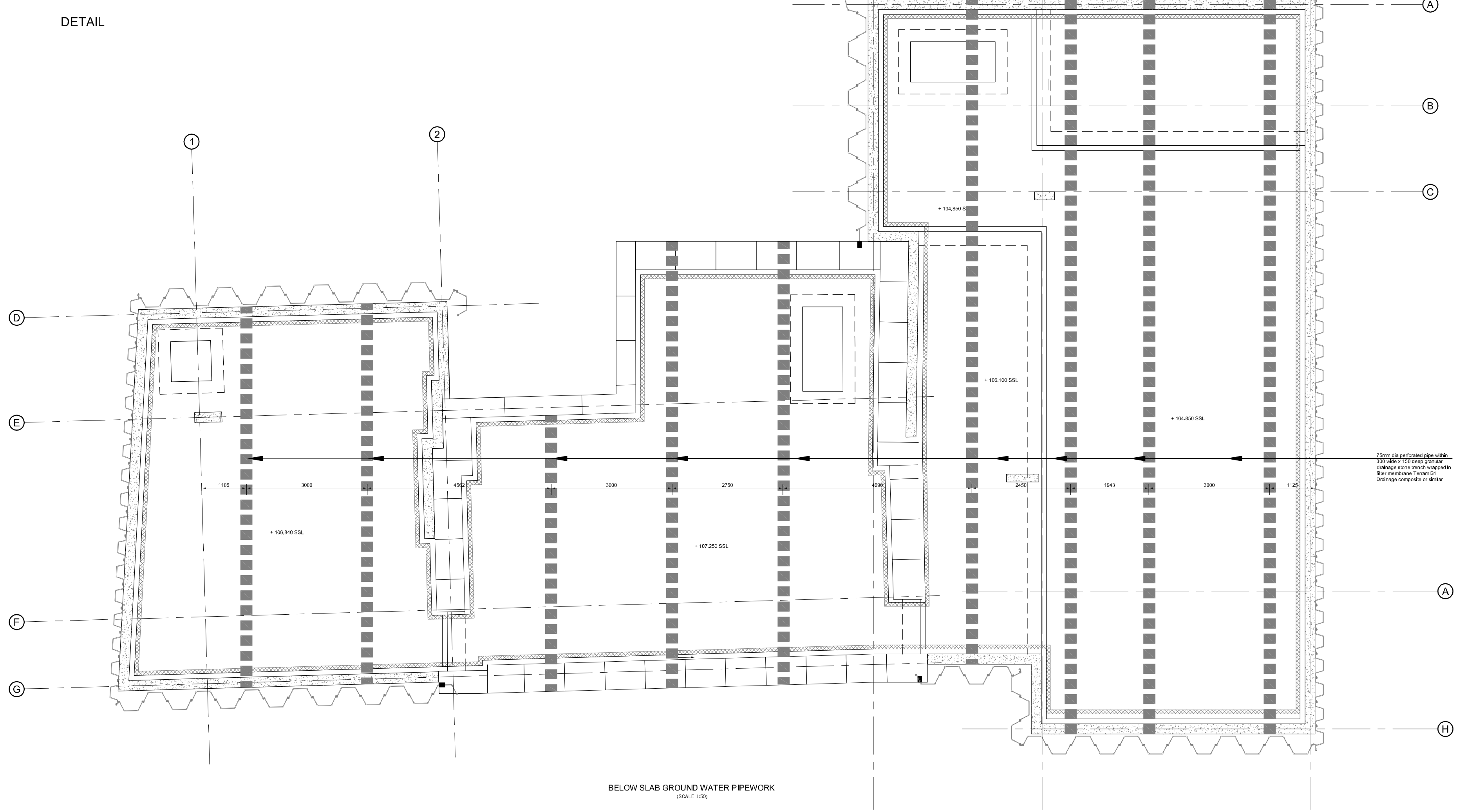


BELOW SLAB GROUND WATER PIPEWORK
(SCALE 1:50)

Ref.	Revisions	By	Date
A	Drawing Updated	GB	15.05.13

WILWOOD LODGE
9 NORTH END,
LONDON,
NW3 7HH,

FOR CONSTRUCTION

BELOW SLAB GRANULAR DRAINAGE LAYOUT

twS taylor whalley spyra — consulting civil and structural engineers

Scale at A1	Date	Drawn By
1:50	29.01.13	GB

Project No.	Drg No.	Rev.
8250	PH03	A

Appendix E

MRH Ground Investigation Report Ref 121311-January 2012

CONSULTANCY, SITE INVESTIGATION
CONSTRUCTION MATERIALS TESTING,
CONTAMINATED LAND SURVEYS, DESK
STUDIES, RISK ASSESSMENT.

MRH GEOTECHNICAL

GROUND INVESTIGATION FOR

WILDWOOD LODGE
9 NORTH END
LONDON
NW3 7HH

Job No: 121311

Date January 2012

60 Station Road, Chingford, London E4 7BE Tel: 020 8559 3134 Fax: 020 8559 3135

REPORT ON A GROUND INVESTIGATION AT WILDWOOD LODGE, 9 NORTH END, HAMPSTEAD, LONDON NW3 7HH

1 INTRODUCTION

1.1 This report has been prepared for Taylor Whalley Spyra, who are acting on behalf of Allenton Ltd.

1.2 Our brief for the investigation was to:

a) Construct three boreholes with associated soil sampling and in situ testing
b) Laboratory testing of soil samples for classification

2 DETAILS OF FIELD WORK

2.1 The fieldwork comprised the construction of three boreholes at the positions indicated in appendix A.

2.2 Soil samples were recovered at regular intervals during the drilling operations, sealed in inert, airtight containers and transported to the laboratory for testing and detailed descriptions.

2.3 Water level observations were made during the drilling works and noted on the borehole logs.

2.4 The fieldwork was carried out on the 23rd and 24th January 2012.

3 GENERAL GEOLOGY AND REVEALED STRATA

3.1 The boreholes proved Made Ground to depths varying from 1.20m - 1.60m.

3.2 The boreholes then penetrated firm silty Clay with clayey Sands and Gravels from 1.80m - 3.60m (BH 2) and 2.30m - 3.80m (BH 2).

3.3 The boreholes were extended and encountered firm to stiff, becoming stiff silty Clay with laminations of silt.

3.4 Details of the boreholes, sample depths, in situ test results and revealed stratum are given in appendix B.

3.5 The 1:50,000 scale geological map indicates the natural deposits of area to be near a boundary of The Bagshot Formation and Claygate Beds with London Clay at depth.

4 GROUNDWATER

4.1 Water seepage's were noted at depths of 3.30m (BH 1), 2.10m (BH 2) and 3.40m (BH 3).

4.2 In order to allow long term monitoring, piezometers were installed in each borehole. On completion of the drilling works, water levels of 2.80m (BH's 1 and 3), and 2.75m (BH 2) were recorded.

5 LABORATORY TESTING

5.1 The recovered soil samples were tested for moisture levels, together with ten Atterberg Limit determinations.

5.2 The results and detailed sample descriptions are tabulated in appendix C, categorising the Clay elements to be of medium to high plasticity (Plasticity Index 28% - 42%).

5.3 Although this is indicative of a moderately high susceptibility to moisture related cyclic volume change there were no indications of desiccation within the samples tested.

6 CONCLUSIONS

6.1 The findings of the boreholes indicate natural ground at depths of 1.20m - 1.60m.

6.2 We understand that the proposed development will comprise the construction of a new structure incorporating basements

6.3 The in situ tests carried out in the boreholes indicate the following bearing capacities for foundation design purposes within the natural ground. However, any open excavations would require shoring and the facility of pumping groundwater, due to the instability of the ground and high water table.:

BH No	**Depth (m)**	**Allowable Bearing Capacity (KN/m^2)**
1	2.00	105
1	2.50	110
2	1.50	110
2	2.00-2.45	160 (SPT)
3	1.50	120
3	2.00	110
3	2.50-2.95	120 SPT)

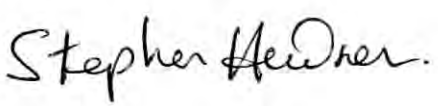
6.4 Plots of the Shear Strengths versus depth profiles are presented in appendix B (Sheet 7), while the SPT (N) values are noted on the borehole logs.

6.5 The soluble sulphate contents of the samples tested from boreholes 1 and 3 at a depth of 2.00m were 340mg/l and 360mg/l with corresponding pH values of 7.4 and 7.5 respectively.

6.6 The site can therefore be categorised as DS1 in accordance with BRE guidelines, thus not requiring any special precautions for concrete in contact with the ground.

7 REFERENCES

1) British Standard EN ISO 14688-1:2002
2) British Standard 5930: 1999
3) British Standard 1377: Parts 1-9
4) British Geological Survey Sheet 256 (1:50,000 scale) North London
5) BRE Special Digest 1: Concrete in aggressive ground (2005)
6) NHBC Standards, Chapter 4.2
7) Foundation Design and Construction (M.J. Tomlinson, Fifth Edition)



Stephen J. Hudson
mail@mrhgeotechnical.com

APPENDIX A

BOREHOLE LOCATION PLAN

BOREHOLE LOCATION PLAN

N.T.S.

Location:	Wildwood Lodge 9 North End London NW3 7HH	**Appendix:**	A
		Job No:	121311
		Date:	January 2012

APPENDIX B

BOREHOLE LOGS

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 1
Sheet 1 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
23/01/12 - 23/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH
				Cobble paving (0.10)	0.10
				Sand (0.05)	0.15
0.50	D1			Soft grey very silty, sandy clay with rounded stones and brick fragments. MADE GROUND (1.45)	
1.00	D2	(38)			
1.50	D3	(40)			
					1.60
2.00	D4	(52)		Firm pale brown laminated orange brown very silty slightly sandy CLAY with traces of gravel (2.20)	
2.50	D5	(54)			
3.00	D6	(54)		Water standing at 2.80m	
3.50	D7	(56)		Water seepage at 3.30m	
					3.80
4.00	D8	(60)		Firm dark greenish brown with traces of orange brown very silty CLAY (0.90)	
4.50	D9	(58)			
					4.70
5.00	D10	(60)		Firm grey very silty CLAY with laminations of silt (2.40)	
5.50	D11				
6.00	D12	(64)		Piezometer installed	
6.50	D13				
7.00	D14	(74)			
					7.10
7.50	D15			Firm to stiff grey very silty CLAY (3.70)	
8.00	D16	(78)			
9.00	D17	(76)			
10.00	D18	(88)		Borehole continues on Sheet 2	

LEGEND

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.30	-	1HOUR	2.80	-	Water seepage at 3.30m, piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 1
Sheet 2 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
23/01/12 - 23/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	LEGEND
				Firm to stiff grey very silty CLAY		
11.00	D19	(110)		Stiff grey very silty CLAY (2.40)	10.80	
12.00	D20	(114)				
13.00	D21	(122)		Borehole ends, unable to penetrate obstruction	13.20	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.30	-	1HOUR	2.80	-	Water seepage at 3.30m, piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 2
Sheet 1 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
23/01/12 - 24/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	LEGEND
				Turf over topsoil (0.20)	0.20	
0.50	D1			Firm greyish brown laminated dark orange brown silty, sandy clay with occasional gravel and brick fragments. MADE GROUND (1.10)		
1.00	D2	(58)				
1.50	D3	(52)		Firm yellowish brown laminated pale bluish grey and dark orange brown very silty CLAY (0.50)	1.30	
2.00 - 2.45	D4	N=16		Medium dense orange brown silty, clayey SAND and GRAVEL (0.30)	1.80	
				Firm orange brown very silty, slightly sandy CLAY with traces of gravel (1.30)	2.10 ▽	
2.50	D5	(50)		Water seepage at 2.10m		
3.00	D6	(58)		Water standing at 2.75m		
3.50	D7	(72)		Firm to stiff dark grey very silty CLAY (2.90)	3.40	
4.00	D8	(78)				
4.50	D9	(76)				
5.00	D10	(76)				
5.50	D11					
6.00	D12	(80)		Piezometer installed		
6.50	D13			Firm to stiff dark bluish grey very silty CLAY with laminations of silt (4.50)	6.30	
7.00	D14	(76)				
7.50	D15					
8.00	D16	(76)				
9.00	D17	(82)				
10.00	D18	(94)		Borehole continues on Sheet 2		

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
2.10	-	1HOUR	2.75	-	Water seepage at 2.10m. Piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 2
Sheet 2 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
23/01/12 - 24/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	LEGEND
				Firm to stiff dark bluish grey very silty CLAY with laminations of silt		
11.00	D19	(118)		Stiff dark grey very silty CLAY (4.20)	10.80	
12.00	D20	(114)				
13.00	D21					
14.00	D22	(128)				
15.00	D23	(130)		Borehole ends	15.00	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
2.10	-	1HOUR	2.75	-	Water seepage at 2.10m. Piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 3
Sheet 1 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
24/01/12 - 24/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH
				Black sandy topsoil with traces of fine gravel and brick fragments. MADE GROUND (0.60)	
0.50	D1				0.60
1.00	D2			Friable pale brown silty clay with traces of brick fragments. MADE GROUND (0.60)	
1.50	D3	(60)		Firm pale brown laminated bluish grey and yellowish brown silty CLAY (1.10)	1.20
2.00	D4	(54)			
2.50 - 2.95	D5	N=12		Medium dense yellowish brown silty clayey SAND with some gravel and black rounded pebbles (1.50)	2.30
3.00	D6			Water standing at 2.80m	
3.50 - 3.95	D7	N=19		Water seepage at 3.40m	
4.00	D8	(66)		Firm to stiff dark grey laminated dark bluish grey very silty CLAY with laminations of silt (3.30)	3.80
4.50	D9	(58)			
5.00	D10	(64)			
5.50	D11				
6.00	D12	(76)		Piezometer installed	
6.50	D13				
7.00	D14	(94)			
7.50	D15			Stiff dark grey very silty CLAY with laminations of silt (6.10)	7.10
8.00	D16	(104)			
9.00	D17	(112)			
10.00	D18	(106)		Borehole continues on Sheet 2	

LEGEND

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.40	-	1HOUR	2.80	-	Water seepage at 3.40m. Piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

BOREHOLE LOG - M R H GEOTECHNICAL

HOLE NO. BH 3
Sheet 2 of 2

CLIENT	SITE
Allenton Ltd	Wildwood Lodge, 9 North End, London NW3 7HH

DATE OF FIELDWORK	SCALE	LEVEL/POSITION	OPERATOR	LOGGED BY	JOB NO.
24/01/12 - 24/01/12	1:50	GROUND / AS APPENDIX A	PA/SA	SH	121311

SAMPLE DEPTH	RECORD TYPE	SPT N (Cu-kN/m^2)	Standp/ Piezo	DESCRIPTION OF STRATUM (thickness)	DEPTH	LEGEND
				Stiff dark grey very silty CLAY with laminations of silt		
11.00	D19	(116)				
12.00	D20	(126)				
13.00	D21	(130)				
				Borehole ends, unable to penetrate obstruction	13.20	

GROUNDWATER AND CASING INFORMATION

DEPTH STRUCK	DEPTH CASED	ELAPSED TIME	WATER LEVEL	DEPTH SEALED	REMARKS ON GROUNDWATER AND CASING
3.40	-	1HOUR	2.80	-	Water seepage at 3.40m. Piezometer installed

BORING METHOD AND REMARKS

Mechanical auger
Piezometer installed

KEY: D = Disturbed Sample B = Bulk Sample
U = Undisturbed Sample W = Water Sample
All dimensions are in metres unless otherwise stated

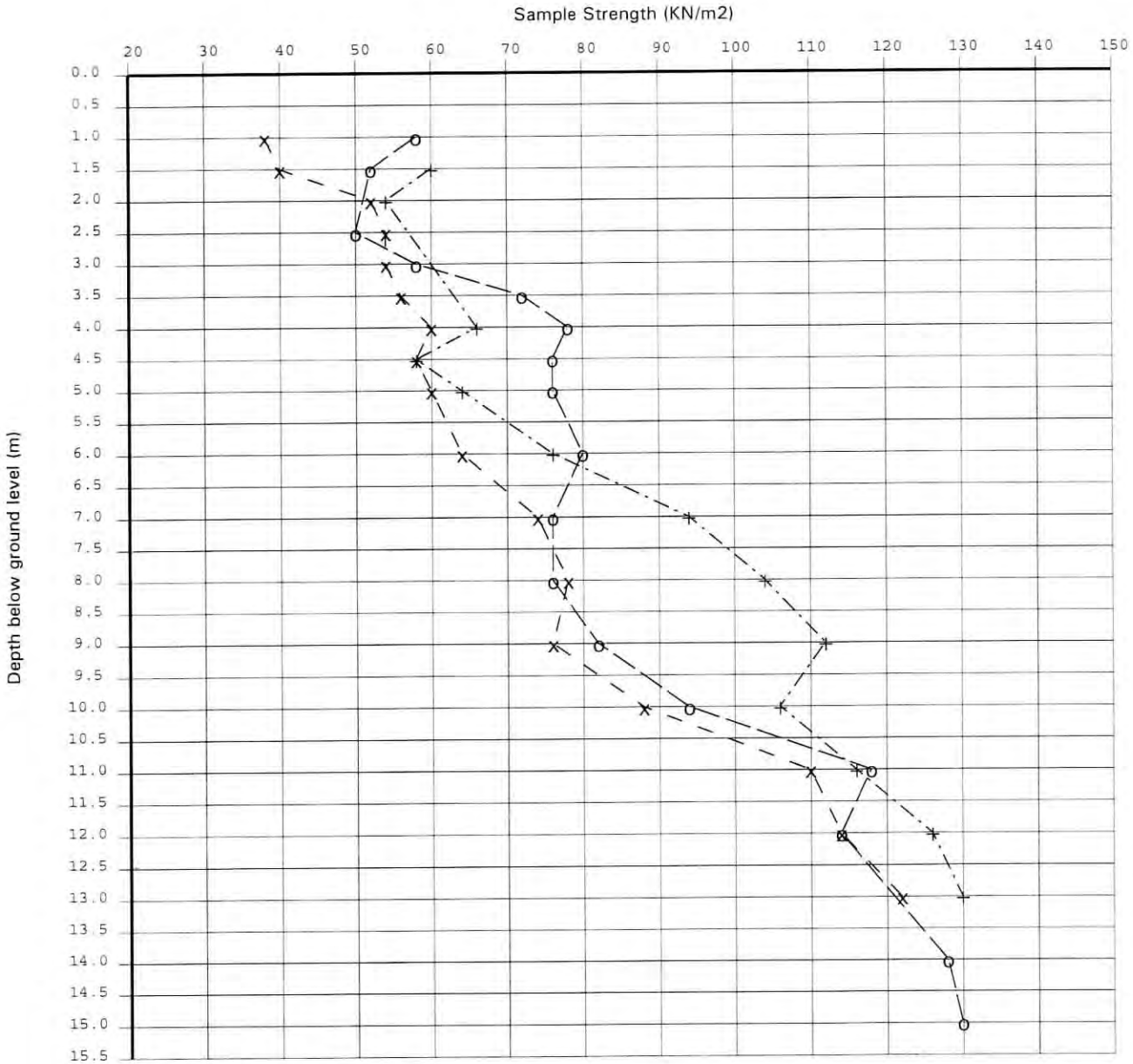
TEST REPORT.

ISSUED BY : M R H GEOTECHNICAL

Appendix B PAGE 7

Contract Job No.
Wildwood Lodge, 9 North End, 121311
London NW3 7HH

Sample Strength (KN/m2) vs Depth below ground level (m)



Key to Data Points	x : BH 1	o : BH 2	+ : BH 3					

MRPLOT

APPENDIX C

MOISTURE CONTENT TEST RESULTS
AND
ATTERBERG LIMIT DETERMINATIONS

TEST REPORT.

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Appendix C PAGE 1

Contract Job No.
Wildwood Lodge, 9 North End, 121311
London NW3 7HH

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

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	Description (BS 5930:1981:41)
BH 1	0.50	D1	32	-	-	-		Soft grey very silty, sandy clay with rounded stones and brick fragments. MADE GROUND
BH 1	1.00	D2	30	-	-	-		Soft grey very silty, sandy clay with rounded stones and brick fragments. MADE GROUND
BH 1	1.50	D3	30	-	-	-		Soft grey very silty, sandy clay with rounded stones and brick fragments. MADE GROUND
BH 1	2.00	D4	20	46	16	30	0.13	Firm pale brown laminated orange brown very silty slightly sandy CLAY with traces of gravel. CI: CLAY of medium plasticity. (97% passing 425um)
BH 1	2.50	D5	21	-	-	-		Firm pale brown laminated orange brown very silty slightly sandy CLAY with traces of gravel
BH 1	3.00	D6	23	48	19	29	0.14	Firm pale brown laminated orange brown very silty slightly sandy CLAY with traces of gravel. CI: CLAY of medium plasticity. (94% passing 425um)
BH 1	3.50	D7	27	-	-	-		Firm pale orange brown very silty CLAY
BH 1	4.00	D8	27	59	24	35	0.09	Firm dark greenish brown with traces of orange brown very silty CLAY with laminations of silt. CH: CLAY of high plasticity. (100% passing 425um)
BH 1	4.50	D9	29	-	-	-		Firm dark greenish brown with traces of orange brown very silty CLAY with laminations of silt
BH 1	5.00	D10	30	66	26	40	0.10	Firm grey very silty CLAY with laminations of silt. CH: CLAY of high plasticity. (100% passing 425um)
BH 1	5.50	D11	30	-	-	-		Firm grey very silty CLAY with laminations of silt
BH 1	6.00	D12	29	-	-	-		Firm grey very silty, slightly sandy CLAY
BH 1	6.50	D13	32	-	-	-		Firm grey very silty CLAY
BH 1	7.00	D14	32	-	-	-		Firm grey very silty CLAY with laminations of silt
BH 1	7.50	D15	31	-	-	-		Firm to stiff grey very silty CLAY
BH 1	8.00	D16	31	-	-	-		Firm to stiff grey very silty CLAY

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : 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 moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

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Appendix C PAGE 2

Contract
Wildwood Lodge, 9 North End,
London NW3 7HH

Job No.
121311

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

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	Description (BS 5930:1981:41)
BH 1	9.00	D17	36	-	-	-		Firm to stiff grey very silty CLAY with numerous laminations of silt
BH 1	10.00	D18	32	-	-	-		Firm to stiff grey very silty CLAY with laminations of silt
BH 1	11.00	D19	30	-	-	-		Stiff grey very silty CLAY
BH 1	12.00	D20	29	-	-	-		Stiff grey very silty CLAY
BH 1	13.00	D21	29	-	-	-		Stiff grey very silty CLAY
BH 2	0.50	D1	23	-	-	-		Firm greyish brown silty, sandy clay with occasional gravel, topsoil and brick fragments. MADE GROUND
BH 2	1.00	D2	22	-	-	-		Firm dark brown laminated dark orange brown very silty, sandy clay with occasional gravel and brick fragments. MADE GROUND
BH 2	1.50	D3	23	48	19	29	0.14	Firm yellowish brown laminated pale bluish grey and dark orange brown very silty CLAY. CI: CLAY of medium plasticity. (98% passing 425um)
BH 2	2.00 -2.45	D4	15	-	-	-		Medium dense orange brown silty, clayey SAND and GRAVEL
BH 2	2.50	D5	23	-	-	-		Firm orange brown very silty, slightly sandy CLAY with traces of gravel
BH 2	3.00	D6	27	-	-	-		Firm orange brown very silty, slightly sandy CLAY with traces of gravel
BH 2	3.50	D7	28	66	24	42	0.10	Firm to stiff dark grey laminated brown very silty CLAY. CH: CLAY of high plasticity. (100% passing 425um)
BH 2	4.00	D8	28	-	-	-		Firm to stiff dark grey very silty CLAY
BH 2	4.50	D9	28	-	-	-		Firm to stiff dark grey very silty CLAY with laminations of silt
BH 2	5.00	D10	29	-	-	-		Firm to stiff dark grey very silty CLAY
BH 2	5.50	D11	29	-	-	-		Firm to stiff dark bluish grey very silty CLAY

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : 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 moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

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Appendix C PAGE 3

Contract
Wildwood Lodge, 9 North End, London NW3 7HH

Job No.
121311

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

Borehole/ Pit No	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	Description (BS 5930:1981:41)
BH 2	6.00	D12	31	68	28	40	0.08	Firm to stiff dark grey very silty CLAY. CH: CLAY of high plasticity. (100% passing 425um)
BH 2	6.50	D13	34	-	-	-		Firm to stiff dark bluish grey very silty CLAY with numerous laminations of silt
BH 2	7.00	D14	31	-	-	-		Firm to stiff dark bluish grey very silty CLAY with laminations of silt
BH 2	7.50	D15	30	-	-	-		Firm to stiff dark bluish grey very silty CLAY
BH 2	8.00	D16	31	-	-	-		Firm to stiff dark bluish grey very silty CLAY with laminations of silt
BH 2	9.00	D17	31	-	-	-		Firm to stiff dark bluish grey very silty CLAY with laminations of silt
BH 2	10.00	D18	29	-	-	-		Firm to stiff dark bluish grey very silty CLAY
BH 2	11.00	D19	28	-	-	-		Stiff dark grey very silty CLAY
BH 2	12.00	D20	29	-	-	-		Stiff dark grey very silty CLAY with laminations of silt
BH 2	13.00	D21	28	-	-	-		Stiff dark grey very silty CLAY
BH 2	14.00	D22	27	-	-	-		Stiff dark grey with traces of orange brown very silty CLAY, occasional laminations of silt
BH 2	15.00	D23	27	-	-	-		Stiff dark bluish grey very silty CLAY
BH 3	0.50	D1	30	-	-	-		Black sandy topsoil with traces of fine gravel and brick fragments. MADE GROUND
BH 3	1.00	D2	15	-	-	-		Friable pale brown silty clay with traces of brick fragments. MADE GROUND
BH 3	1.50	D3	23	47	19	28	0.14	Firm pale brown laminated bluish grey and yellowish brown silty CLAY. CI: CLAY of medium plasticity. (99% passing 425um)
BH 3	2.00	D4	26	-	-	-		Firm pale brown laminated bluish grey and yellowish brown silty CLAY

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : 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 moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

TEST REPORT.

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Appendix C PAGE 4

Contract
Wildwood Lodge, 9 North End, London NW3 7HH

Job No.
121311

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

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	Description (BS 5930:1981:41)
BH 3	2.50 -2.95	D5	14	-	-	-		Medium dense yellowish brown silty clayey SAND with some gravel
BH 3	3.00	D6	15	-	-	-		Medium dense yellowish brown silty clayey SAND and GRAVEL with some black rounded pebbles
BH 3	3.50 -3.95	D7	11	-	-	-		Medium dense yellowish brown silty, clayey, sandy GRAVEL
BH 3	4.00	D8	29	66	25	41	0.10	Firm to stiff dark bluish grey very silty CLAY. CH: CLAY of high plasticity. (100% passing 425um)
BH 3	4.50	D9	29	-	-	-		Firm to stiff dark grey very silty CLAY with numerous laminations of silt
BH 3	5.00	D10	31	-	-	-		Firm to stiff dark grey laminated dark bluish grey very silty CLAY with laminations of silt
BH 3	5.50	D11	30	68	27	41	0.07	Firm to stiff dark grey laminated dark bluish grey very silty CLAY. CH: CLAY of high plasticity. (100% passing 425um)
BH 3	6.00	D12	28	-	-	-		Firm to stiff dark grey silty CLAY
BH 3	6.50	D13	28	-	-	-		Firm to stiff dark grey laminated dark bluish grey very silty CLAY
BH 3	7.00	D14	28	-	-	-		Firm to stiff dark grey silty CLAY with occasional white shell debris
BH 3	7.50	D15	28	-	-	-		Stiff dark grey silty CLAY with occasional white shell debris
BH 3	8.00	D16	29	-	-	-		Stiff dark bluish grey very silty CLAY
BH 3	9.00	D17	29	-	-	-		Stiff dark bluish grey very silty CLAY
BH 3	10.00	D18	33	-	-	-		Stiff dark grey very silty CLAY with laminations of silt
BH 3	11.00	D19	32	-	-	-		Stiff dark grey very silty CLAY with laminations of silt
BH 3	12.00	D20	29	-	-	-		Stiff dark grey very silty CLAY
BH 3	13.00	D21	30	-	-	-		Stiff dark grey silty CLAY

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : 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 moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

Appendix F

Camden Geological-Hydrogeological & Hydrological Study
Extracts Figures 11, 12, 14, 15 & 16

9 NORTH END

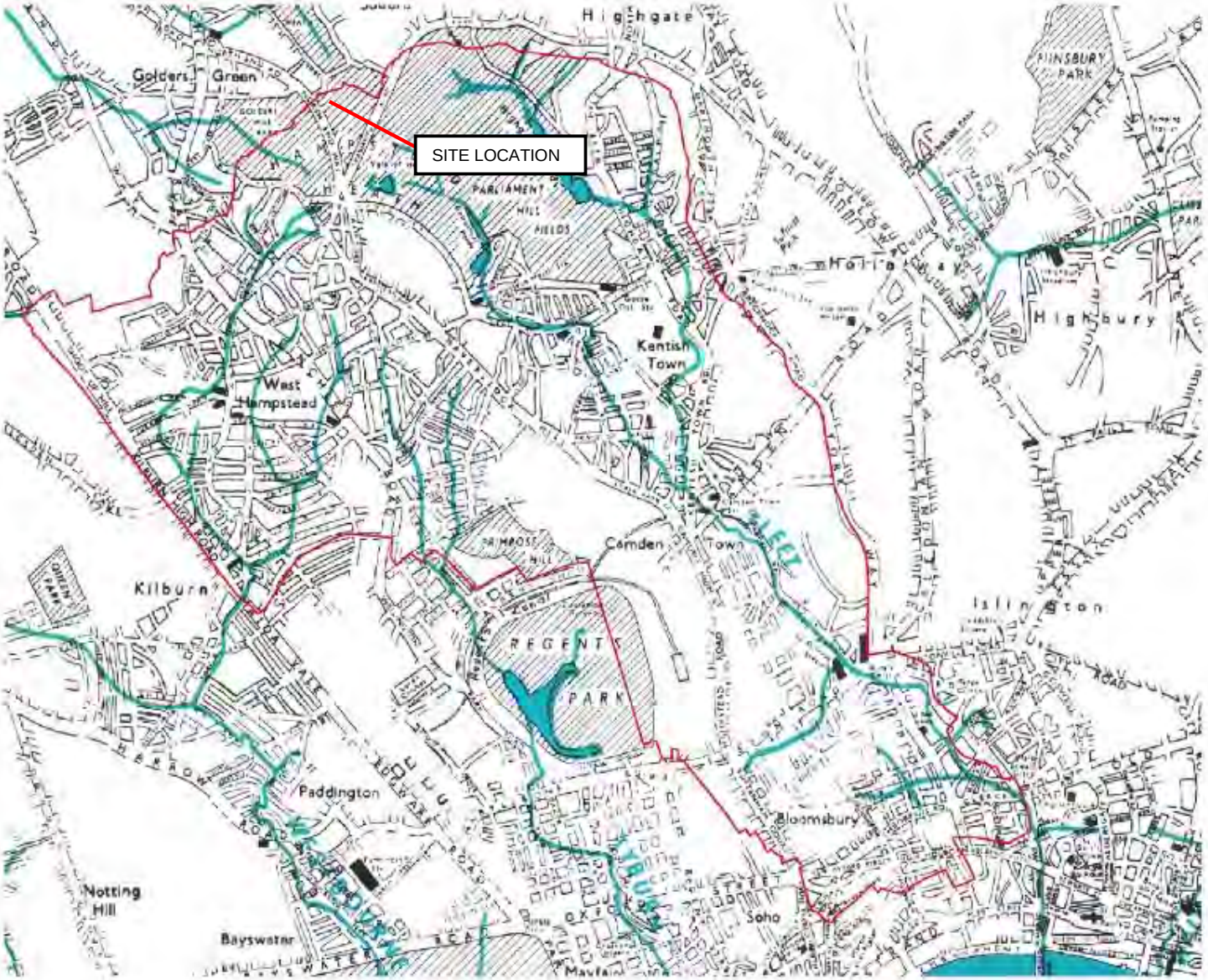
HAMPSTEAD

LONDON, NW3 7HH

CAMDEN GEOLOGICAL, HYDROGEOLOCICAL AND HYDROLOGICAL STUDY EXTRACTS

FIGURES 11 - WATERCOURSES
FIGURES 12 – CAMDEN SURFACE WATER FEATURES
FIGURES 14 – HAMPSTEAD HEATH SURFACE WATER CATCHMENTS AND DRAINAGE
FIGURES 15 – FLOOD MAP
FIGURES 16 – SLOPE ANGLE MAP

3 Dufferin Avenue,
Barbican, London, EC1Y 8PQ
T: 020 7253 2626
F: 020 7253 2767
E: tws@tws.uk.com
W: www.tws.uk.com

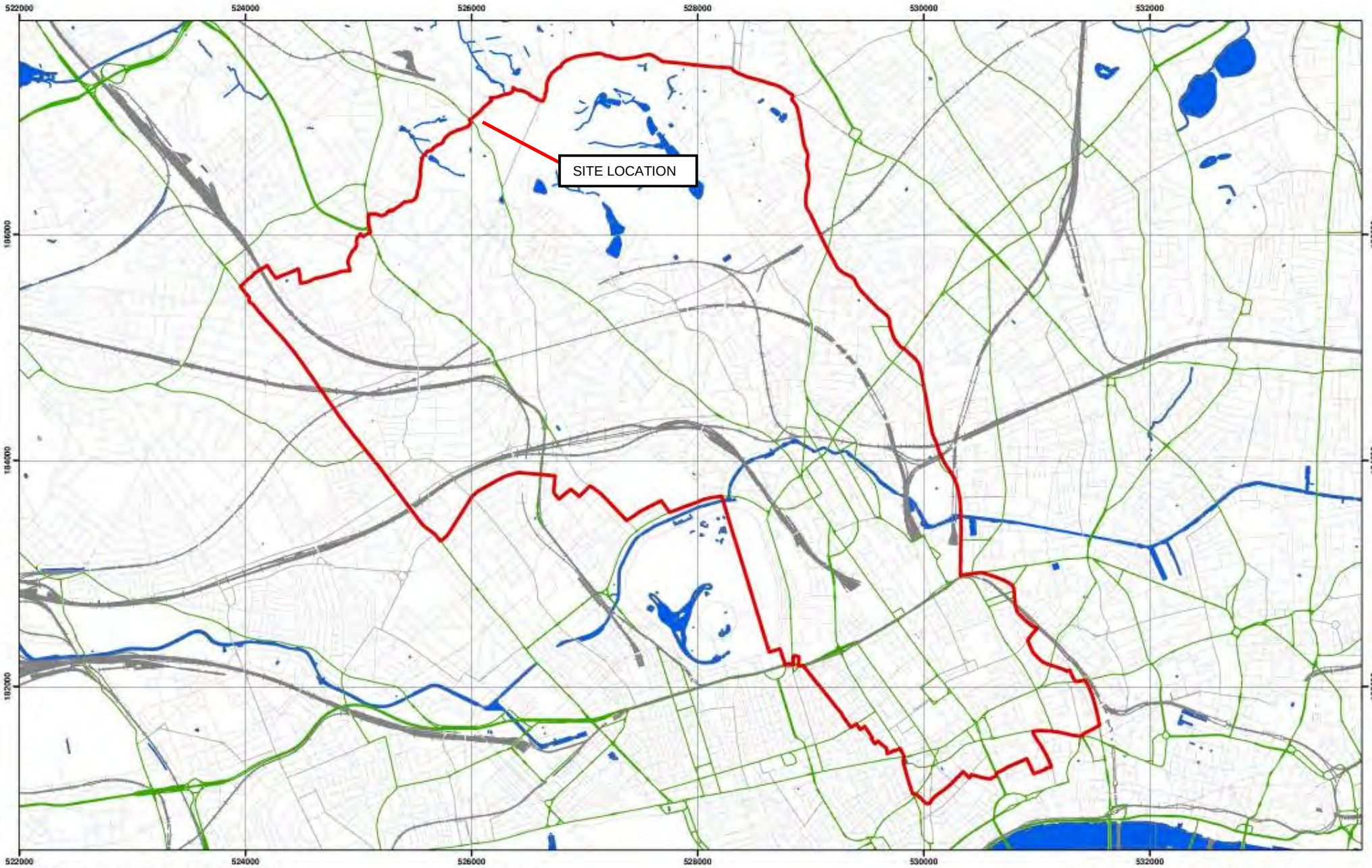


Source – Barton, Lost Rivers of London

Camden Geological, Hydrogeological and Hydrological Study
Watercourses

213923

FIGURE **11**



Data Source: London Borough of Camden, 2010

N

Scale at A3: 1:30,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

Legend

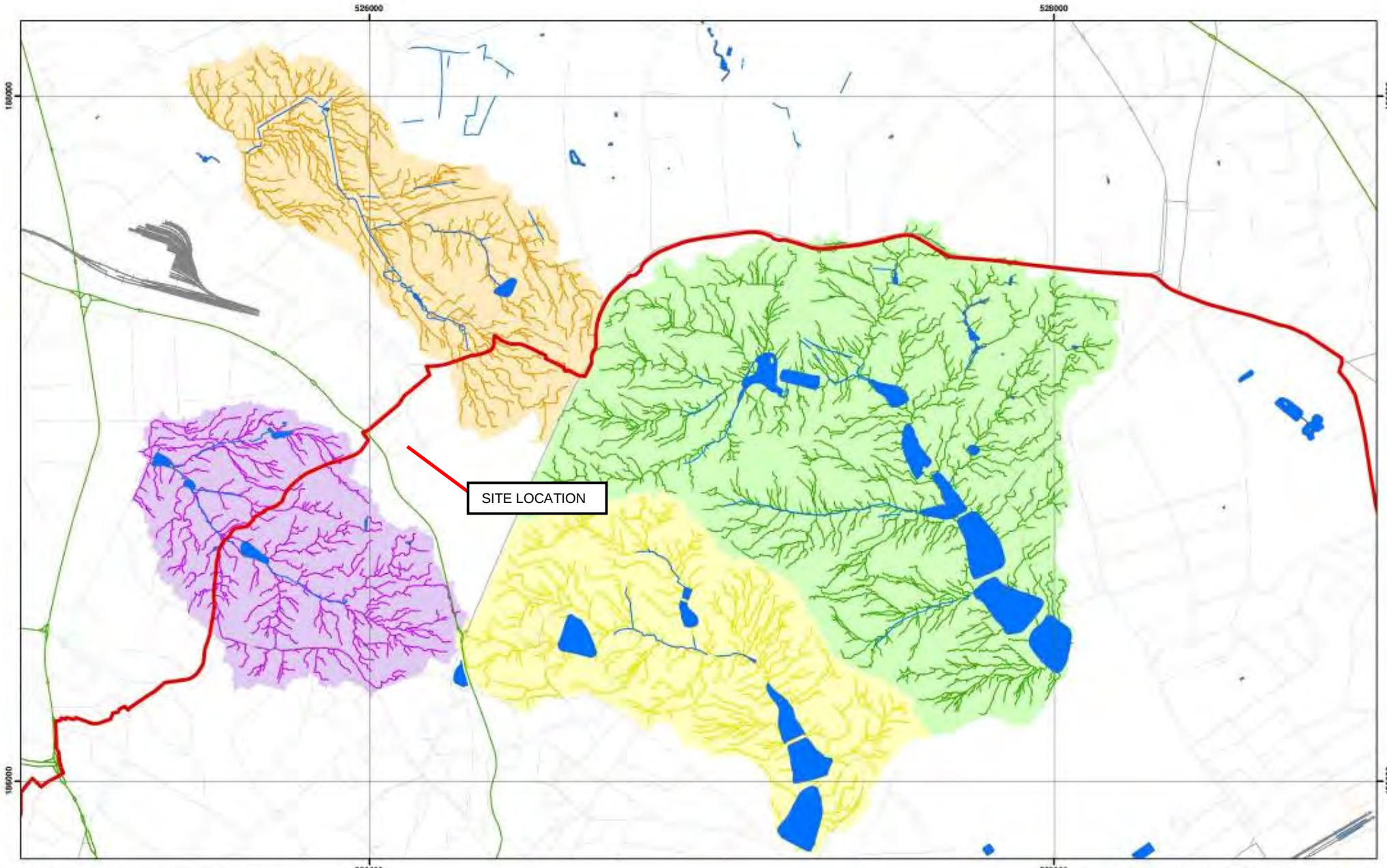
- London Borough of Camden
- Surface water
- Railway Lines
- A Roads

Camden Geological, Hydrogeological and Hydrological Study

Camden Surface Water Features

213923

FIGURE 12



Catchments and Drainage after Haycock, 2010

N

Scale at A3: 1:10,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.125 0.25 0.5 0.75 1
Kilometers

Legend

- London Borough of Camden
- Railway Lines
- A Roads
- Surface Water
- Highgate Chain Catchment
- Golders Hill Chain Catchment
- Hampstead Chain Catchment
- Hampstead Heath Extension Chain Catchment

Camden Geological, Hydrogeological and Hydrological Study

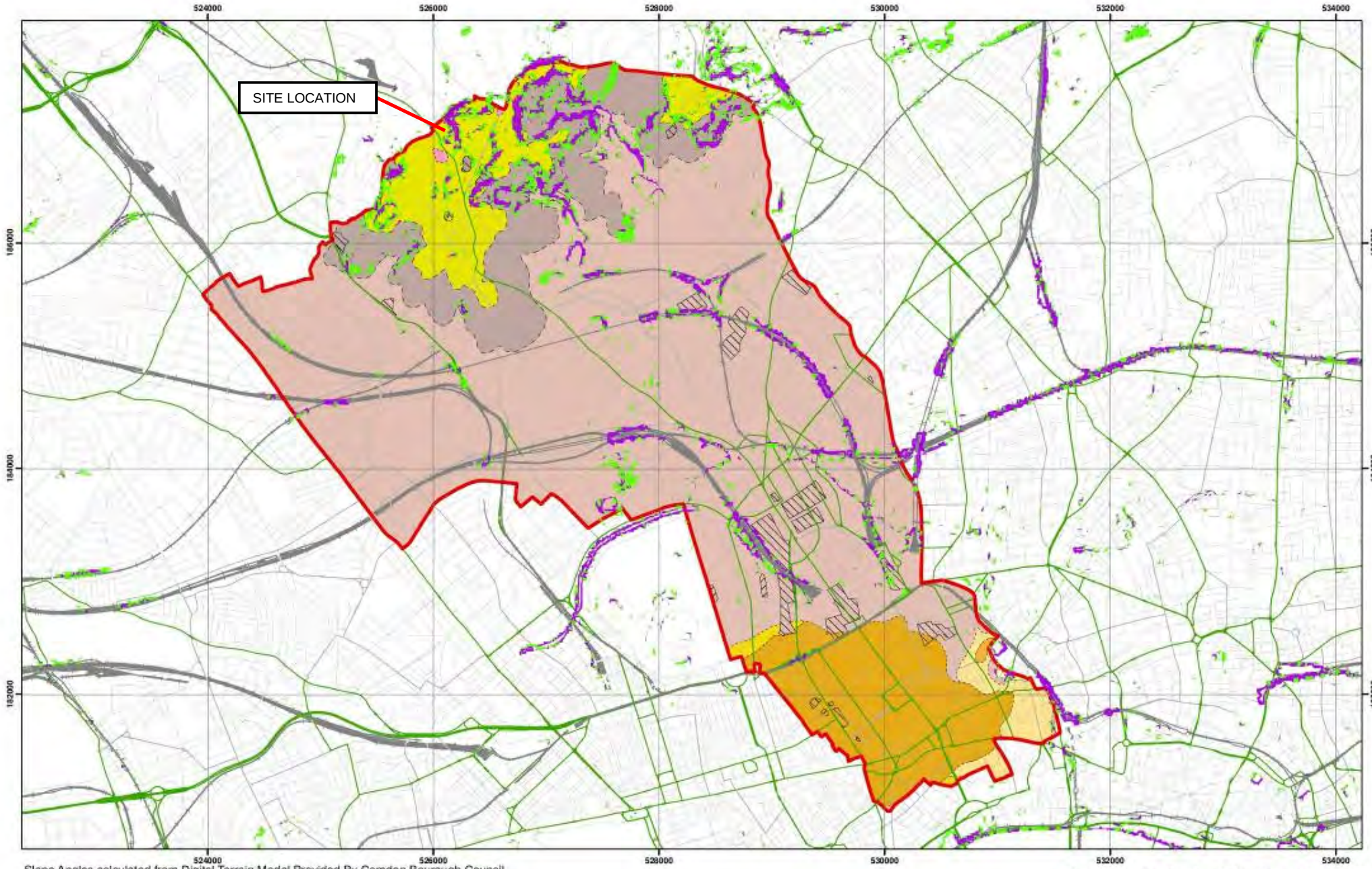
Hampstead Heath Surface Water Catchments and Drainage

213923 FIGURE **14**

Figure 5 from Core Strategy, London Borough of Camden

Camden Geological, Hydrogeological and Hydrological Study
Flood Map

213923 FIGURE **15**



Slope Angles calculated from Digital Terrain Model Provided By Camden Bourough Council

N

Scale at A3: 1:30,000

1:10,000 BGS Mapping
Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

Legend

Slope
- 0° - 7°
- 7° - 10°
- > 10°
- London Borough of Camden
- Railway Lines
- A Roads

BGS 1:10K Artificial Ground
- MADE GROUND
- WORKED GROUND

BGS 1:10K Drift Geology
- ALLUVIUM
- HACKNEY GRAVEL FORMATION
- LANGLEY SILT FORMATION
- LYNCH HILL GRAVEL FORMATION
- STANMORE GRAVEL FORMATION

BGS 1:10K Solid Geology
- BAGSHOT FORMATION
- CLAYGATE MEMBER
- LAMBETH GROUP
- LONDON CLAY FORMATION

NB. Geological boundaries are largely indicative based on available geological mapping data

Camden Geological, Hydrogeological and Hydrological Study

Slope Angle Map

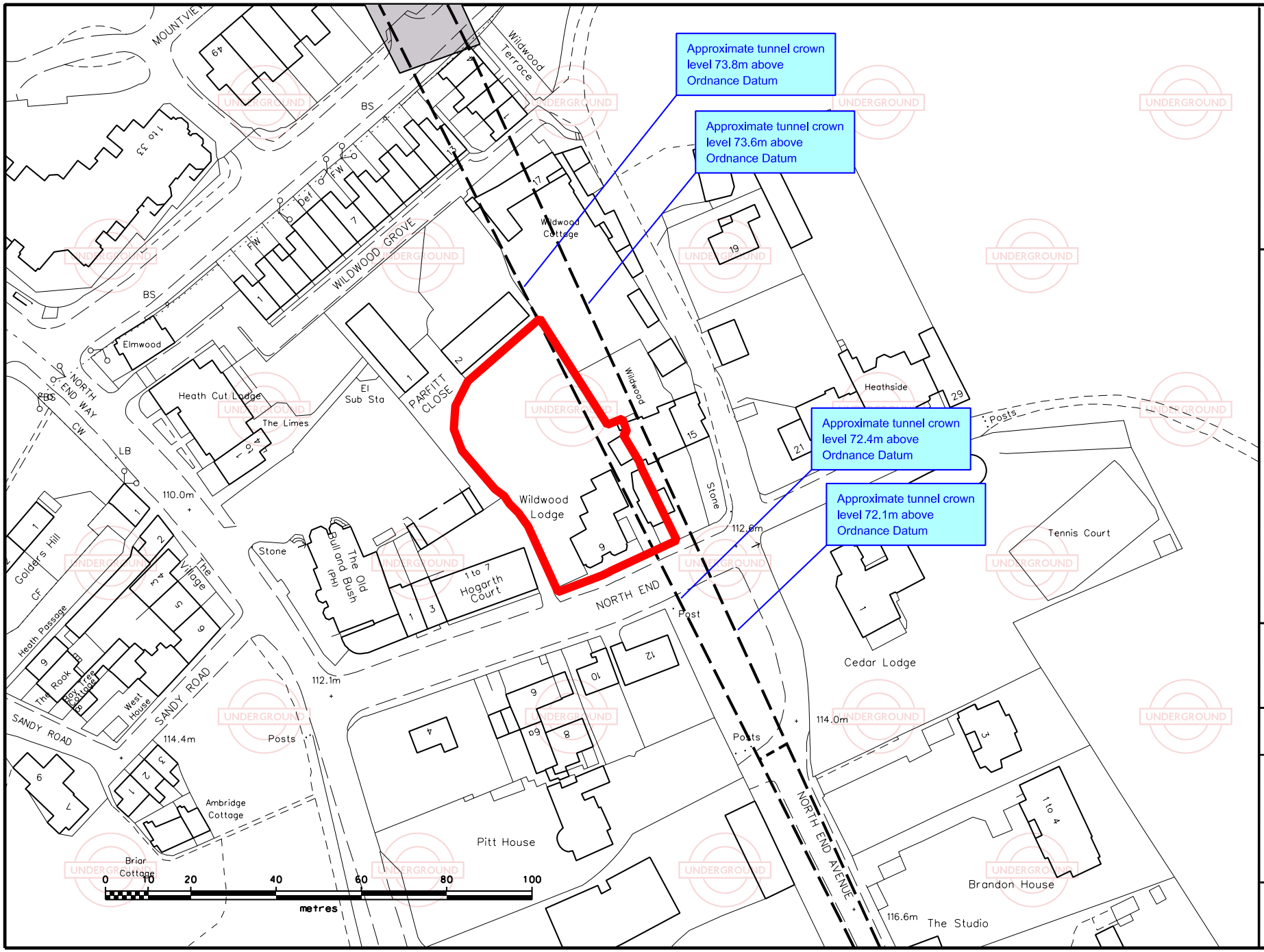
213923

FIGURE **16**

Appendix G

London Underground Limited Tunnel Location Drawing ND-W001
TWS - 8250_SK07 rev A – Basement Layout Showing LUL Tunnel Crowns

distill_pdf_inprotA4L
V:*WIP*LUPESV8*PLTDRV*LUPES_PEN.TBL



UNDERGROUND

London Underground Limited

Infrastructure Protection
2nd Floor - 25 Eccelstone Place,
London, SW1W 9NF
Telephone: 0207 126 2774
Email: nathan.darroch@tube.tfl.gov.uk

Positions and depths of the LUL structures are approximate

Do Not Scale

Note:

Contact LU at Planning Stage

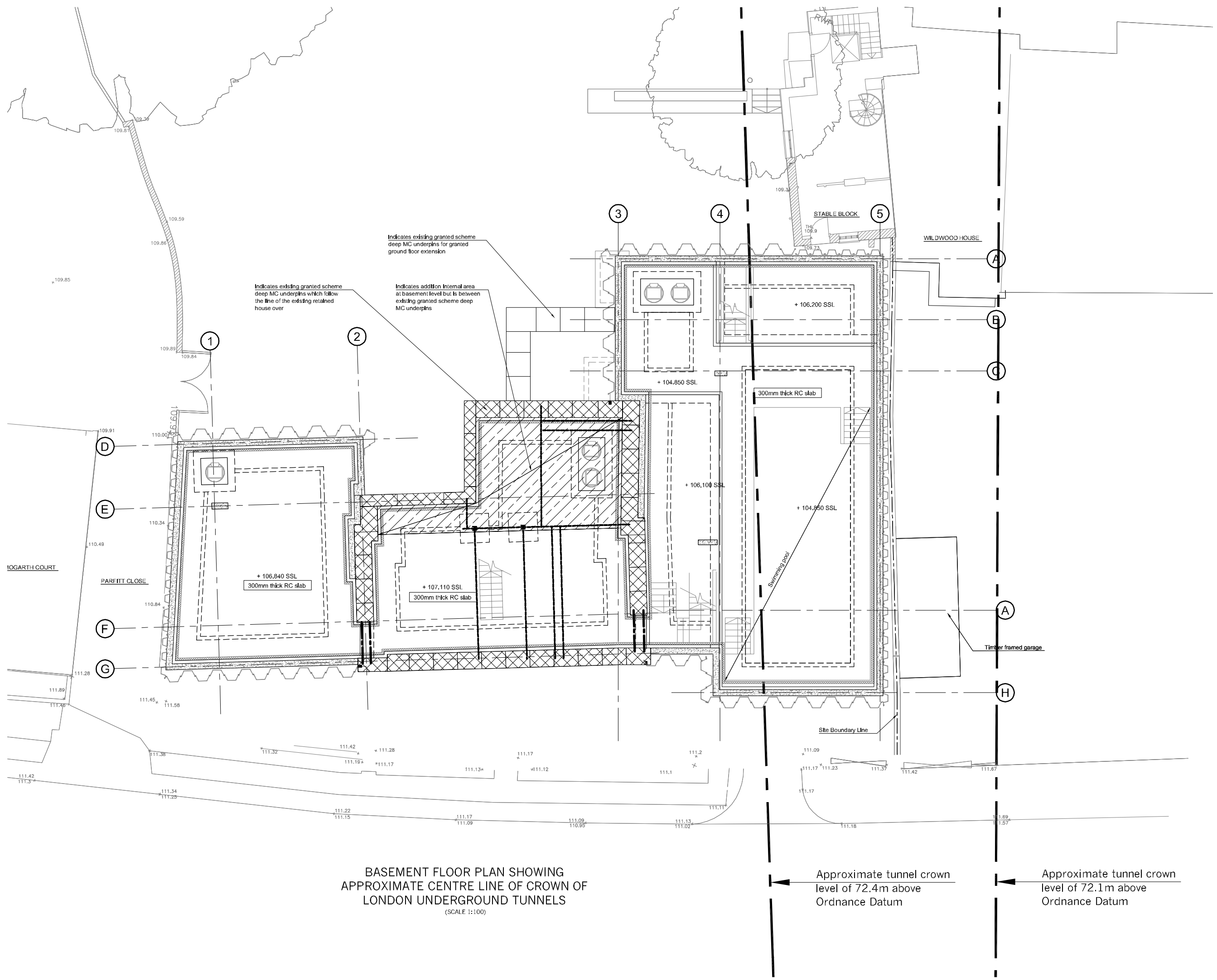
Location Code	W001
LUPES ID	ND-W001

Site address

The Courtyard House/Wildwood Lodge and 4 North End ,
Hampstead,
London,
NW3 7HH

Date	19-Apr-10	
Scale	1:1250	at A4
Author	darrocNa1	

1. This Drawing to be read in conjunction with all other Engineers, Architects and Specialists drawings and specifications.
2. No dimensions are to be scaled from this drawing.
3. No deviation may be made from the details shown on this drawing without prior agreement of the Engineers.
4. Any discrepancy between this drawing and any other document should be referred immediately to the Engineer.



BASEMENT FLOOR PLAN SHOWING APPROXIMATE CENTRE LINE OF CROWN OF LONDON UNDERGROUND TUNNELS
(SCALE 1:100)

Ref.	Revisions	By	Date
A	Basement Layout Updated	GB	14.06.13

WILWOOD LODGE
9 NORTH END,
LONDON,
NW3 7HH,

PLANNING ISSUE DRAWING

BASEMENT LAYOUT SHOWING LOCATIONS OF LUL TUNNEL CROWNS

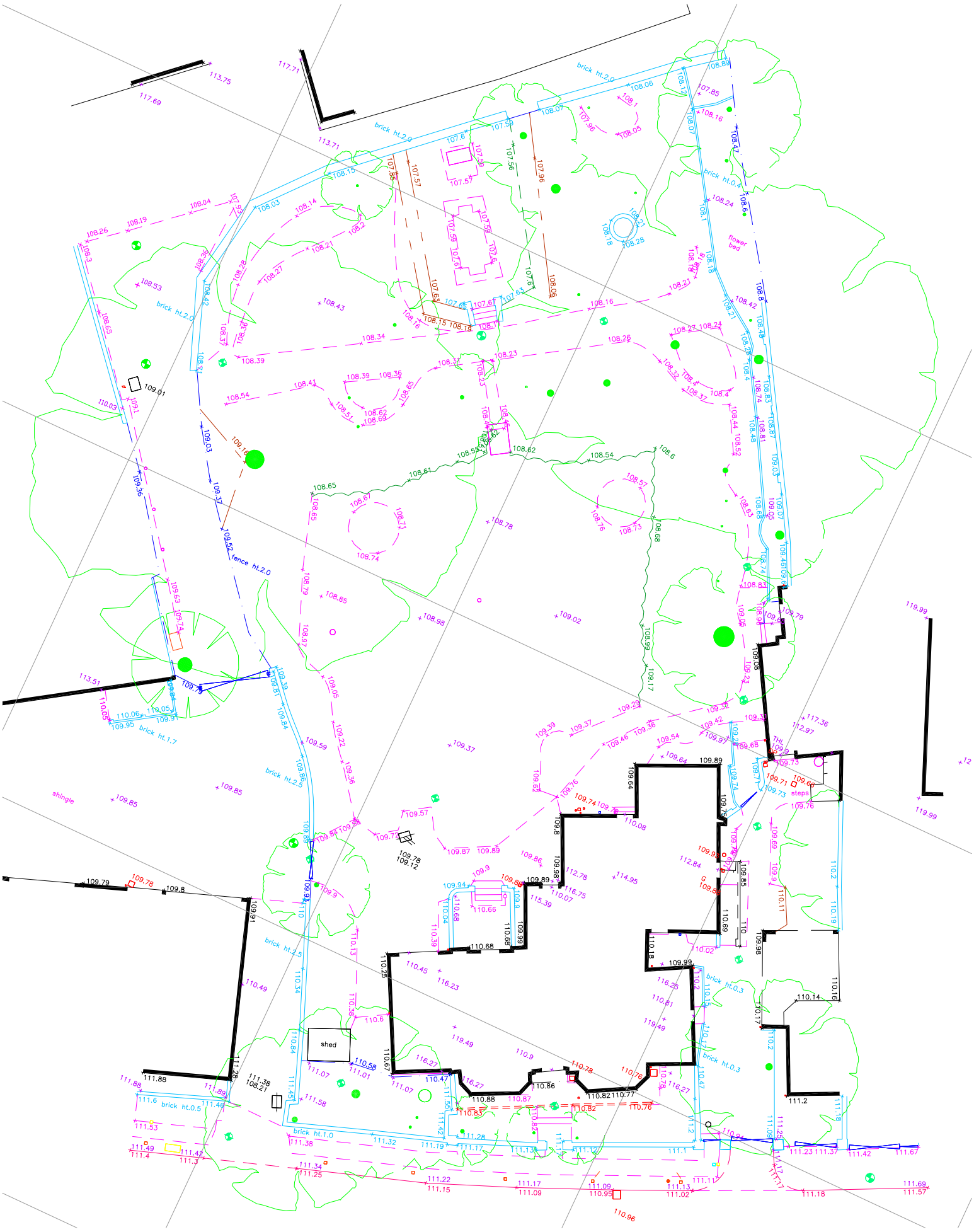
taylor whalley spyra
consulting civil and structural engineers
3 Dufferin Avenue, Barbican, LONDON EC1Y 8PQ
Tel (020) 7253 2626 Fax (020) 7253 2767
E-mail: tws@tws.uk.com Website: www.tws.uk.com

Scale at A1	Date	Drawn By
1:100	28/06/12	GB

Project No.	Drg No.	Rev.
8250	SK07	A

Appendix H

Topographical Survey Drawing 11025-P-SI-rev 2


brick ht.2.0
brick ht.2.0
brick ht.2.0
brick ht.0.3
flower bed
fence ht.2.0
brick ht.1.7
brick ht.2.5
shingle
brick ht.2.5
brick ht.0.5
brick ht.1.0
brick ht.0.3
shed
steps