

87 HIGHGATE WEST HILL,

N6 6LU

**Basement Impact Assessment – Screening and
Scoping Report.**

**Consulting Structural Engineers
Consulting Civil Engineers**

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Ref: 120525/HH

Date: 24 August 2012

Rev No: planning



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1.0 INTRODUCTION

- 1.1 It is proposed to reduce the existing lower ground floor slab as part of a partial rebuilding of an existing garage and store room that has suffered from some structural defects.
- 1.2 This report is in response to The Camden Development Policy DP27, with reference to para. 27.3., where the proposed basement remains within the footprint of the dwelling above, and is very shallow, the dig being only about 1metre below the existing slab level.
- 1.3 Following the format guidance in The Camden Policy Guidance PG4, the stages for a Basement Impact Assessment are:

- Stage 1 - Screening; •
- Stage 2 - Scoping; •
- Stage 3 - Site investigation and study; •
- Stage 4 - Impact assessment; and •
- Stage 5 - Review and decision making.

This report follows the Flow Charts and uses the Figurative information given in the Camden Geological, Hydro-geological and Hydrological Study to submit data with relevance to the small scale of this project to address stages 1 and 2.

- 1.4 The Flowcharts of the Appendix E to the Camden Geological, Hydro-geological and Hydrological Study are completed in table format in section 3 of this report and form the screening element of this report, including:
 - Surface Flow and Flooding Impact Identification
 - Subterranean (groundwater) Flow Impact Identification
 - Slope Stability screening flowchart
- 1.5 87 Highgate West Hill is located with an arrow on the relevant Figures of the Camden Geological, Hydro-geological and Hydrological Study, appended to this report, Appendix A.
- 1.6 Again reflecting the size of the scheme, a brief scoping report is provided in section 4, to be commented upon by Camden. It is hoped this will satisfy the requirement of DP27 in terms of consideration to the Geological, Hydro-geological and Hydrological effects of the development.

2.0 SITE INFORMATION

- 2.1 The site is called 87 Highgate West Hill, as this is the main entrance to the rear of the actual main property which lies at 6 Holly Lodge. The proposed development however, is to the garage and store area which lies on Highgate West Hill.
- 2.2 The site itself is level but lies on the relatively steep hill north and west to Highgate cemetery.
- 2.3 Geological maps of the area highlight the strata as being Bagshot member; silty sands overlying Claygate member overlying London Clay Formation. A site investigation carried out by Soiltech Surveys in 2008 confirms this, although the more orange silty sand of the bagshot member is relatively shallow. The SI is appended.
- 2.4 The nearest property to the site is the garage/entrance to no. 5 Holly terrace, which lies just downhill from 87 Highgate West Hill. Uphill, lies 84A Highgate West Hill which is some 20m away from the site. The property does not share a party wall with either neighbour.
- 2.5 There are a few trees near to the site, and in the garden between the garage and main house, however it is estimated that the footings will be at sufficient depth to be outside the influence of the trees. The footings will be checked in accordance to NHBC guidelines in relations to proximity to trees. Nor will the proposed basement significantly affect the roots of trees as the proposed dig does not extend beyond the existing building's footprint.
- 2.6 Reference to the Environment Agency maps, as well as the maps appended, locate the site away from the ground source protection zones, however within a secondary aquifer as seen on the Environment Agency Map, below and Figure 8, appended.. However this is within the bedrock strata, and as such some 100m + below our site. See Figs 1 & 2 over.

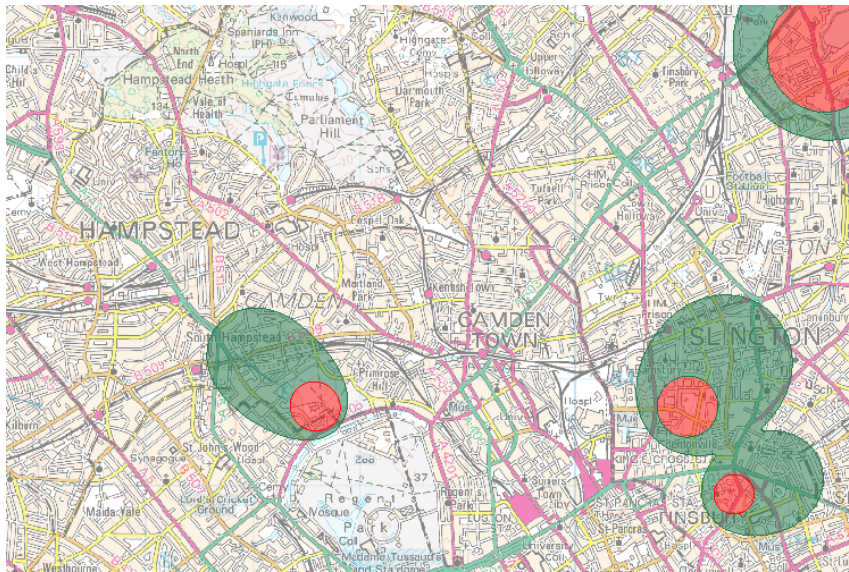


Fig 1. ground source protection zones

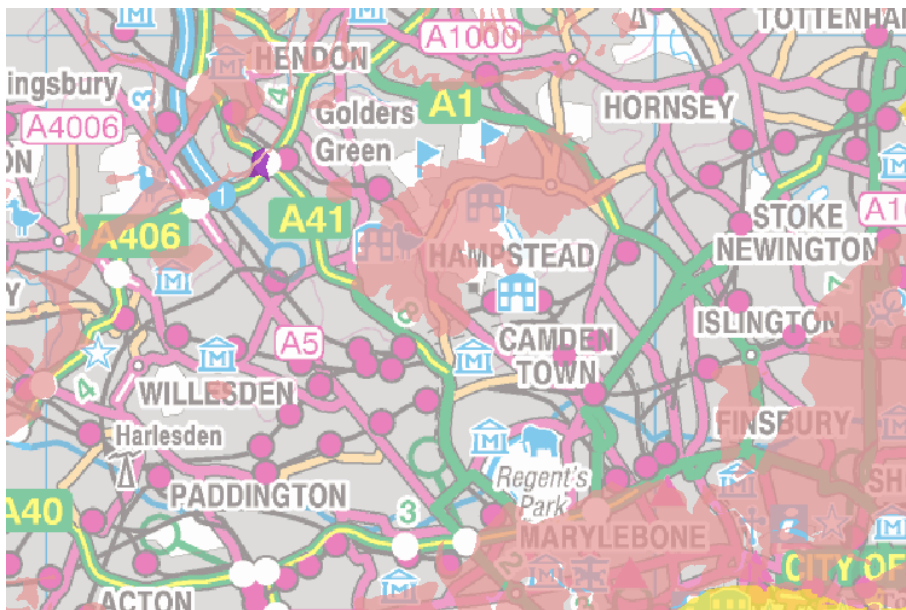


FIG 2. AQUIFER MAP BEDROCK DESIGNATION – PINK IS SECONDARY ‘A’

- 2.7 A section of the proposed basement is appended with a structural scheme marked up.

3.0 RESPONSE TO BIA SCREENING FLOWCHARTS

Appendix E : Camden geological, hydrological and hydrology study: Guidance for subterranean development.

3.1 Surface Flow and Flooding Impact Identification		
3.1.1	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 & 15 appended.
3.1.2	As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing one?	No, the areas of hard and permeable landscaping remains the same as the development lies under the existing footprint and surrounding landscaping is hard surfacing.
3.1.3	Will the proposed basement development result in a change in the proportion of hard surface / paved external areas?	No – as above.
3.1.4	Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?	No – the there will be no alterations to the present flows off the site as there is no change to the proportions of permeable/impermeable landscaping.
3.1.5	Will the proposed basement development result in a change to the quality of surface water being received by adjacent properties or downstream watercourses?	No change in water quality is expected.

3.2 Subterranean (groundwater) Flow Impact Identification		
3.2.1	Is the site located directly above an aquifer?	The site is over the Secondary A Aquifer , within the bedrock designation which covers the north parts of Camden, which lies under London Clay member, however is not over a source protection zone. Refer to Figure 8, Appended.
	○ Will the proposed basement extend beneath the water table surface?	The basement area is the relatively shallow Claygate member overlying London clay, therefore the site will not extend below the water table. It is doubtful that perched water could sit within the more silty sandy beds on such a slope, however dewatering may be necessary in case of heavy rains.
3.2.2	Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No, refer to Figure 11, appended
3.2.3	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 & 15 appended
3.2.4	Will the proposed basement development result in a change in the proportion of hard surface / paved areas?	No, the areas of hard and permeable landscaping remains the same as the development lies under the existing footprint.
3.2.5	As part of the site drainage, will more surface water ((e.g. rainfall and run-off) than present be discharged to the ground? (e.g. via soak-aways and/or SUDS)	No – as above.

3.3 Slope Stability screening flowchart		
3.3.1	Does the existing site include slopes, natural or manmade, greater than 7 degrees (approx. 1 in 8)?	No – the site is flat.
3.3.2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7 degrees (approx. 1 in 8)?	No, site re-profiling is not part of the scheme.
3.3.3	Does the development neighbour land, including railway cutting and the like, with a slope greater than 7 degrees (approx. 1 in 8)?	This area of Highgate West hill, whilst onto being the most significant slope, has entrances to generally holly Terrace properties which are ‘stepped’ down the hill. The pavement outside the property is 5-8 deg slope, although there do not appear to be slopes between the properties, which are levelled and stepped.
3.3.4	Is the site within a wider hill setting in which the general slope is greater than 7 degrees (approx. 1 in 8)?	Yes, the Hill has slopes of 7 degrees plus.
3.3.5	Is the London Clay the shallowest strata at the site?	No – according to the geological long section, viewed in relation to topographical information from an OS Map, it is likely that some 100m of London Clay overlies the thinner Lambeth group. Some 5-20m of Claygate member overlies the London Clay with a further layer of bagshot (sands) member on top of the Claygate member. Although the borehole records the claygate member at being 4m below ground level here.

3.3.6	Will any tree/s be felled as part of the proposed development and/or any works proposed within any tree protection zones where trees are to be retained?	No trees are to be felled as part of the proposals.
3.3.7	Is there a history of seasonal shrink-swell subsidence in the local area. and/or evidence of such effects on site?	Claygate beds do have shrinkage potential, and as such some seasonal movement is to be expected, however generally differential movement that causes subsidence is due to trees and/or drains or poor subsoil. There are signs of historical movement to the property, as well as some damage from previous continual washing of cars. This movement is to be addressed in the reconstruction of the garage and new reinforced foundations.
3.3.8	Is the site within 100m of a watercourse or potential spring line?	No, refer to Figure 11.
3.3.9	Is the site within an area of previously worked ground?	No, do refer to historical maps Appended (A).
3.3.10	Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	The site is over the Secondary A Aquifer, within the bedrock designation which covers the north parts of Camden, which lies under London Clay member, however is not over a source protection zone. Refer to Figure 8, Appended. Sustained rainfall can flow through and over bagshot beds, therefore if the construction is during a time of rainfall it is possible dewatering will be required during construction.
3.3.11	Is the site within 50m of Hampstead Heath?	No, as indicated on most of the appended maps.

3.3.12	Is the site within 5m of a Highway or pedestrian right of way?	Yes, the development is adjacent to the pavement of a public highway. The excavations to this area will need to be in a staged process with designed propping and necessary safe-hoardings and signs to warn public.
3.3.13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties.	No, as neighbouring properties lie some distance from the garage.
3.3.14	Is the site over (or within the exclusion zone of) any tunnels, e.g. railways lines?	No, there are no tunnels nearby.

4.0 SCOPING

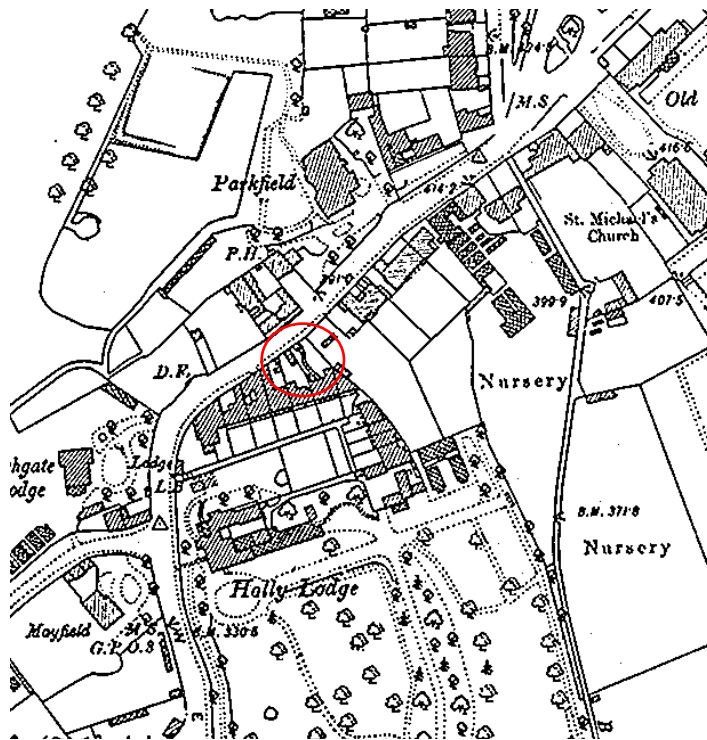
- 4.1 The screening undertaken as observations in reply to the flowcharts above highlights that the site is next to a public highway and in an area of sloped ground.
- 4.1.1 *Public highway.* The site boundary is on Highgate West Hill, a public highway. The works to be undertaken will involve underpinning the existing foundations, which will be design to resist all retained material and surcharged imposed loadings. The underpinning, being a staged process will ensure that the highway is not left undermined to any significant degree.
- 4.1.2 *Sloped Ground.* The existing site boundary to the higher ground is a buttressed retaining wall. This will be underpinned and reinforced by the proposed works, to ensure the neighbours gardens is not undermined by the works. Any property is beyond a 45 degree line and therefore would not be influenced by the proposed works. As the site is being locally lowered, this will relieve any retaining structures lower down the slope somewhat, with the basement slab being design to resist heave so that any effects of removal of over burden would be negligible. Retaining walls will be constructed in a staged process as necessary to avoid undermining the portico, entrance and front walls.
- 4.2 Refer to scheme sections drawings SSK001 & SSK002 attached as well as the Architects plans and proposal.
- 4.3 In conclusion, it is considered that there are no negative impacts anticipated in this basement proposal on the hydro-geological and hydrological conditions of the local environment that cannot be suitably addressed in the detailed design of this proposal.



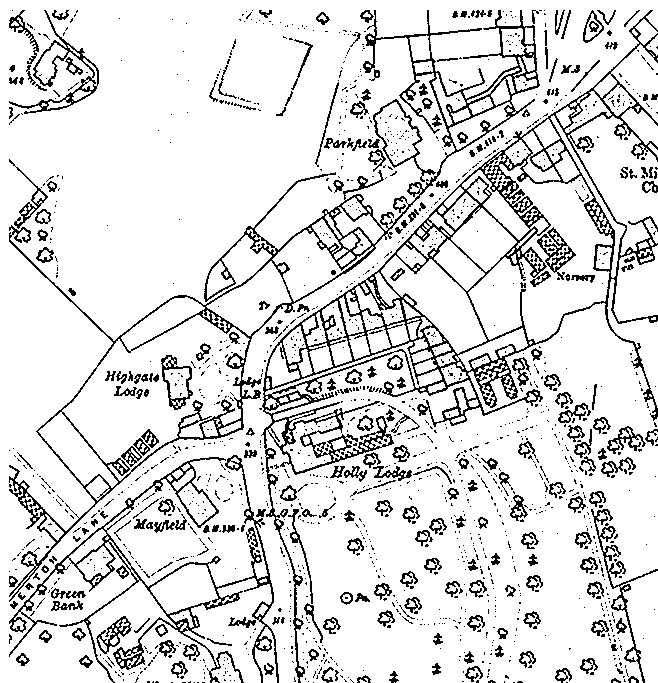
H. M .Hawker
MSc BEng (Hons) CEng MStructE

APPENDIX A

- OS MAPS 1894 & 1913
- FIGURES FROM THE CAMDEN GEOLOGICAL, HYDROGEOLOGICAL AND HYDROLOGICAL STUDY WITH 87 HIGHGATE WEST HILL MARKED.



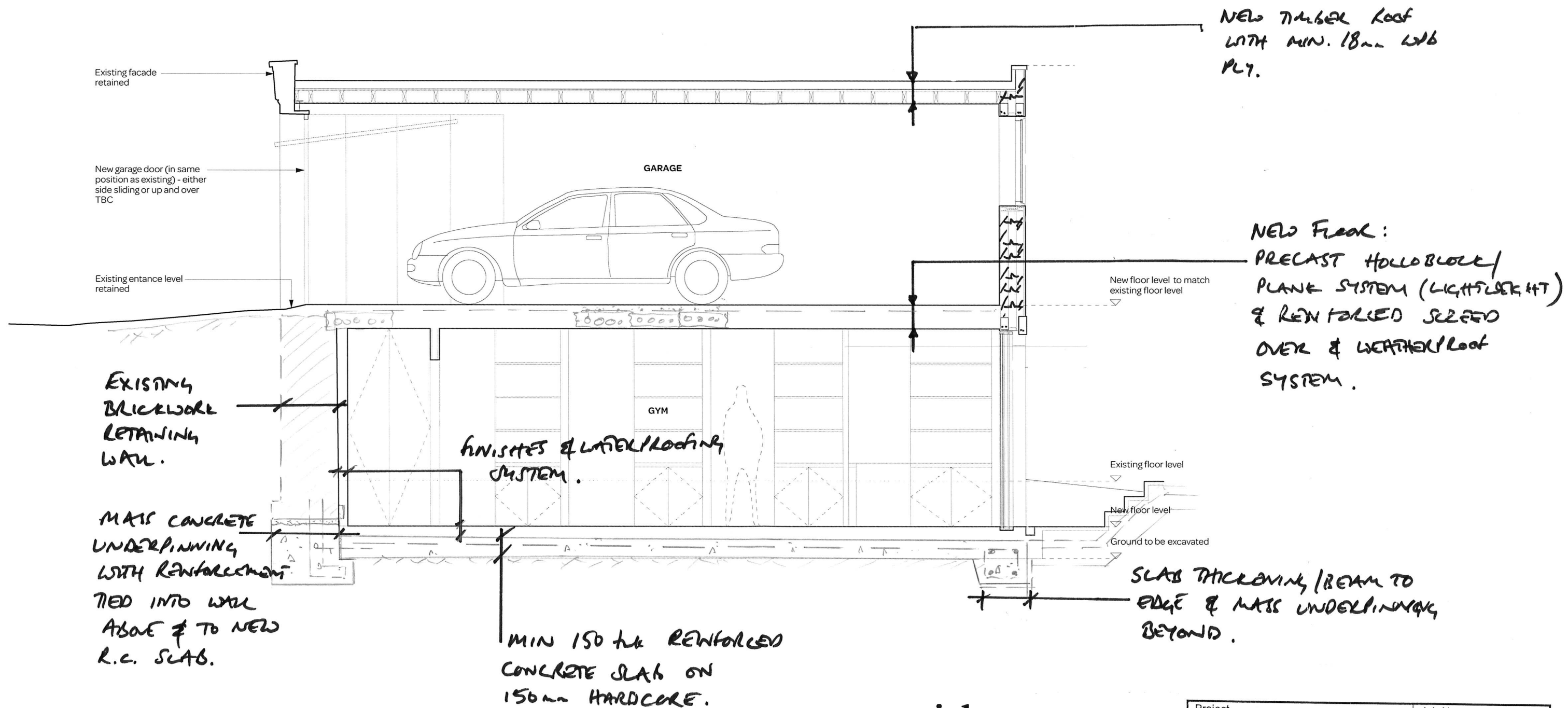
Part OS Historical Map No 19 – Highgate 1894



Part OS Historical Map No 19 - Highgate 1913

APPENDIX B

- SCHEME SECTIONS



PROPOSED SECTION AA

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Project	87 HIGHGATE WEST HILL	Job No.	120525
		Drg. No.	SSK001.
Title	STRUCTURAL SCHEME LONGITUDINAL SECTION.	Scale	1:50 @ A3.
		Date	AUG 2012
		Drawn	HH
Status	SCHEME.	Checked	HH.

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Consulting Structural Engineers
Consulting Civil Engineers

project

87 HIGHGATE WEST HILL.

title

STRUCTURAL SKETCH
CROSS SECTION.

job no.

120525.

drg. no.

SSK002

scale

date

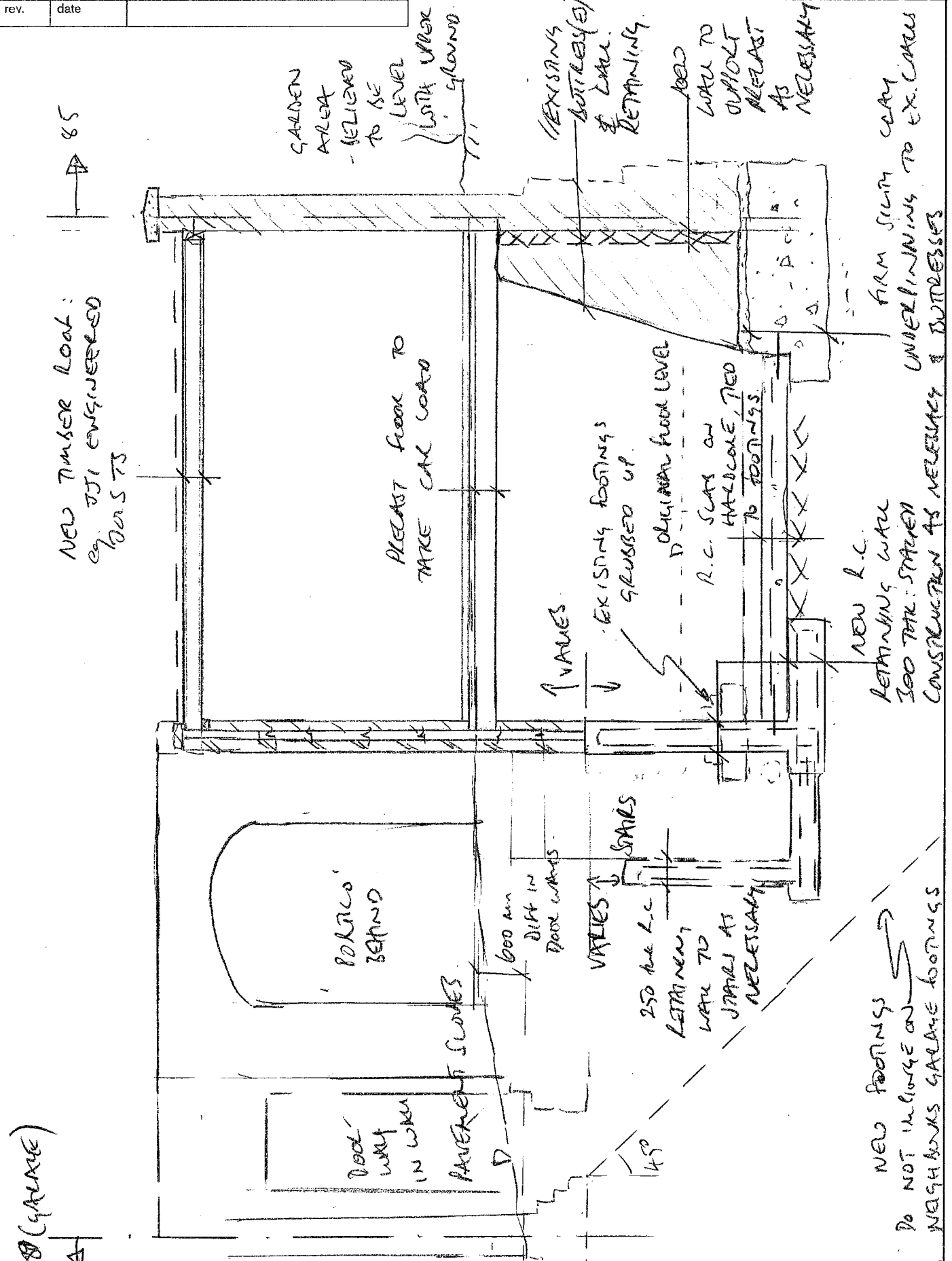
AUG 12

drawn

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APPENDIX C

ADDITIONAL SITE INFORMATION:

- SOILTECH SURVEYS SI (2008).

FACTUAL REPORT OF BOREHOLE INVESTIGATION

DATE: 08-04-2008

SITE: 87, Highgate West Hill, Highgate, London. N.6.

FOR: H B W Partnership

REF: 2770-081/DB

BY
SOILTECH SURVEYS
FOUNDATION INVESTIGATION & TEST DRILLING
UNIT 10, REEDS FARM ESTATE,
COW WATERING LANE,
WRITTLE, CHELMSFORD,
CM1 3SB

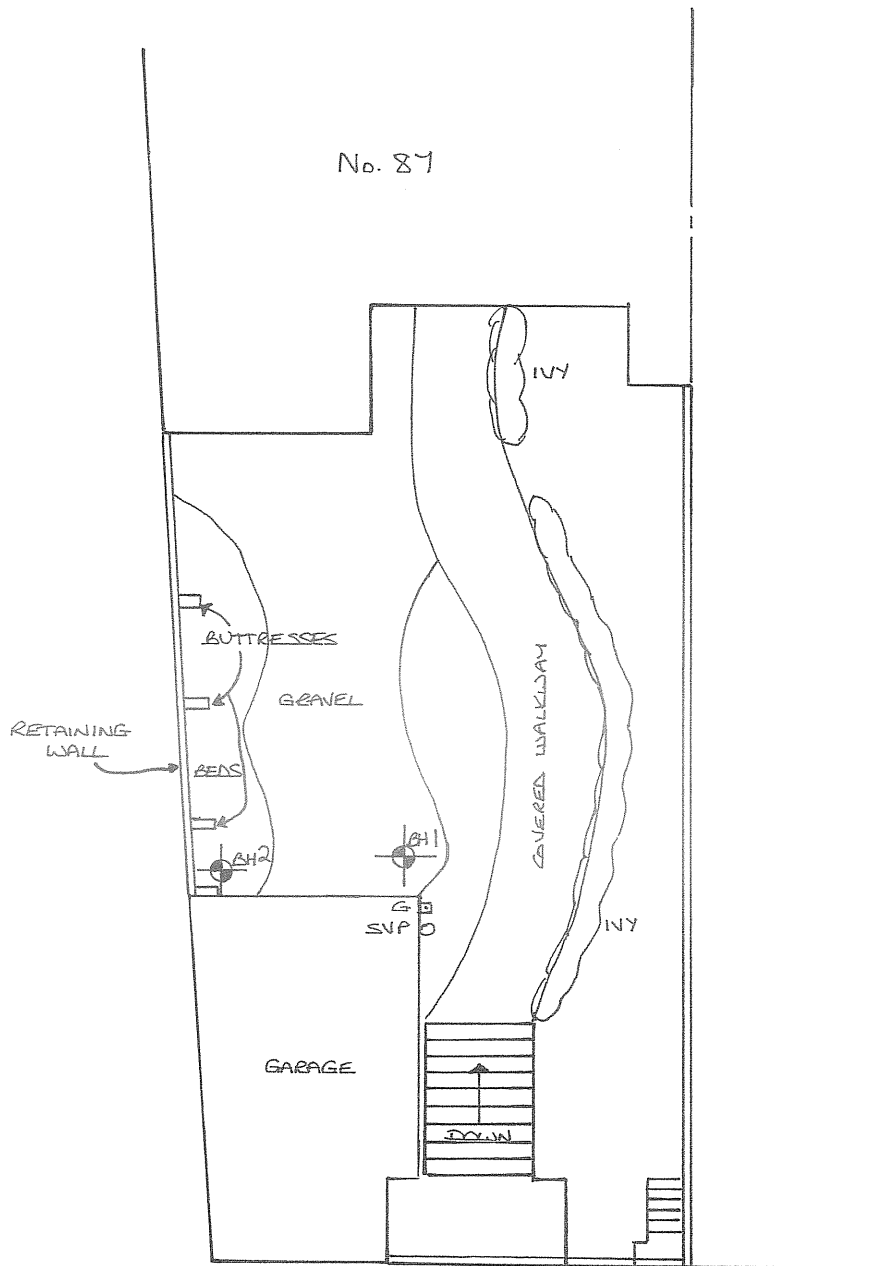


CLEAR STRUCTURES LTD
30 East Street, Southend on Sea

29 APR 2008

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WITH THANKS




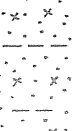

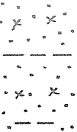

Site Plan:	Sheet: 1 of 1	Soiltech Surveys Foundation Investigation & Test Drilling Tel/Fax: 01245 496389
	Ref No: 2770-081/DB	
Not to scale:	Date: 08-04-2008.	Site: 87, HIGHGATE WEST HILL, HIGHGATE, LONDON, N6.
Client: HBW PARTNERSHIP.		



Remarks:	Key:	
Tree identification not authenticated.	T.P = Trial pit.	IC = Inspection chamber.
	B.H = Borehole.	IL = Invert level.
	H = Approximate height.	RWP = Rainwater pipe
	G = Gully.	
	SVP = Soil vent pipe.	

Soiltech Surveys Foundation Investigation & Test Drilling								Borehole Log.	
Unit 10, Reeds Farm Estate, Cow Watering Lane, Writtle, Chelmsford, CM1 3SB Tel: 01245 496389								Borehole No. 1	
Location: 87, Highgate West Hill, Highgate, London, N6.				Client: H B W Partnership.				Sheet: 1 of 2	
Equipment used: 100mm diameter C F A.								Ref. No. 2770-081/DB	
								Date: 08-04-2008	
Depth Metres	Description	Thickness	Legend	Samples		Tests		Field comments	Depth to water
				Type	Depth	Type	Depth		
G.L.	Shingle over MADE GROUND soft moist dark brown gravelly clayey topsoil.	0.200						0.1m occasional roots of live appearance to 2mm diameter To 0.7m.	
0.200	MADE GROUND soft moist mid brown – orange very silty clay.	0.200							
0.400	Soft moist light brown – orange grey veined very silty CLAY.	2.1		D	0.5				
				D	1.0	V	40 48		
				D	1.5	V	40 48		
				D	2.0	M	7 12 12 12		
2.5	Soft moist light brown orange laminated very SILTY CLAY and SILTY SAND. (claygate beds)	0.400		D	2.5			2.5m fuel / oil smell and staining 2.5m to 2.6m.	
2.9	Medium dense wet orange SILTY SAND / SANDY SILT.	1.1		D	3.0	M	30 23 20 40	Water strike.	2.9m
				D	3.5				
4.0	Firm / medium dense wet orange laminated SANDY SILT and very SILTY CLAY. (claygate beds)	2.5		D	4.0	M	32 40 39 40		
				D	4.5				

Key:
 U = Undisturbed sample. D = Small disturbed sample. B = Bulk sample. W = Water sample. S.P.T. = Standard penetration test.
 V = Hand pilcon shear vane test. M = Mackintosh probe penetration test.

Soiltech Surveys Foundation Investigation & Test Drilling Unit 10, Reeds Farm Estate, Cow Watering Lane, Writtle, Chelmsford, CM1 3SB Tel: 01245 496389								Borehole Log.	
								Borehole No. 1	
Location: 87, Highgate West Hill, Highgate, London, N6.				Client: H B W Partnership.				Sheet: 2 of 2	
Equipment used: 100mm diameter C F A.								Ref. No. 2770-081/DB	
								Date: 08-04-2008	
Depth Metres	Description	Thickness	Legend	Samples		Tests		Field comments	Depth to water
				Type	Depth	Type	Depth		
6.5	Firm / medium dense wet mid brown – orange laminated very SILTY CLAY and SANDY SILT. (claygate beds)	1.5		D	5.0	M 29 40 50(60) 50(60)			
				D	5.5				
				D	6.0				
				D	6.5				
				D	7.0				
				D	7.5				
8.0	Borehole ends at 8.0m.			D	8.0			Borehole collapsing from 2.9m. Standing water 2.8m below G.L. on completion.	

Key:
U = Undisturbed sample. D = Small disturbed sample. B = Bulk sample. W = Water sample. S.P.T. = Standard penetration test.
V = Hand pilcon shear vane test. M = Mackintosh probe penetration test.

Soiltech Surveys Foundation Investigation & Test Drilling								Borehole Log.	
Unit 10, Reeds Farm Estate, Cow Watering Lane, Writtle, Chelmsford, CM1 3SB Tel: 01245 496389								Borehole No: 2	
Location: 87, Highgate West Hill, Highgate, London, N6.				Client: H B W Partnership.				Sheet: 1 of 1	
Equipment used: Hand tools.								Ref. No: 2770-081/DB	
								Date: 08-04-2008	
Depth Metres	Description	Thickness	Legend	Samples		Tests		Field comments	Depth to water
				Type	Depth	Type	Depth		
G.L.	MADE GROUND loose dark brown sandy silty gravelly topsoil.	0.300						0.1m several roots of live appearance to 2mm diameter. 0.3m several roots of live appearance to 40mm diameter. 0.6m several roots of live appearance to 2mm diameter To 1.0m.	
0.300	MADE GROUND firm mid brown – orange very silty clay with pieces of brick rubble and crushed brick.	0.600		D	0.5				
0.900	Firm moist light brown – orange grey veined slightly gravelly very silty CLAY.	0.200		D	1.0	V	60 64		
1.1	Soft to firm light brown – orange grey veined very silty CLAY.	1.1		D	1.5	V	46 56		
2.2	Stiff / medium dense moist light brown – orange very silty sandy very gravelly CLAY.	0.700		D	2.0	M	7 50 50(70) 50(70)		
2.9	Medium dense wet orange SILTY SAND / SANDY SILT.	0.400		D	2.5				
3.3	Firm / medium dense wet orange laminated SANDY SILT and very SILTY CLAY. (claygate beds)	0.700		D	3.0	M	17 21 24 22	Water strike.	2.9m.
4.0	Borehole ends at 4.0m.			D	3.5				
					4.0	M	18 40 48 50(70)	Borehole collapsing from 2.9m. Standing water 2.9m below G.L. on completion.	

Key:

U = Undisturbed sample. D = Small disturbed sample. B = Bulk sample. W = Water sample. S.P.T. = Standard penetration test.
V = Hand pilcon shear vane test. M = Mackintosh probe penetration test.

Meridian Soils Limited

Highwood Cottage, Ingatestone Road, Highwood, Essex. CM1 3RA
Telephone :- 01277 356688 Fax :- 01277 354031

Our Ref: S.3783

Location: 87 Highgate West Hill, Highgate, London, N6.

Client Ref:

Date: 22nd April 2008

TP/BH No.	Sample No.	Depth mtrs.	Moisture Content %	Passing 0.425um sieve %	Equivalent Moisture %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Soil Class	Water Soluble Sulphate (g/l ⁻¹ SO ₄)	pH value	Sulphate Class	Linear Shrinkage %
1		0.50	25										
		1.00	26	99	26	42	19	23	CI				
		1.50	25										
		2.00	27	98	28	37	18	19	CI				
		2.50	24										
		3.00	33										

References

BS 1377:Part 2:1990

BS 5930:1981

REPORT NOTES

Equipment Used:

Hand tools, mechanical concrete breaker & spade, hand augers and 100mm diameter continuous flight auger (access permitting)

Insitu tests:

By Pilcon hand shear vane tester (kN/m²) in clay soils, and or Mackintosh probe penetration test in granular soil or made ground.

Note:

Details reported in trial pits and boreholes relate to positions investigated only, as instructed by the client, on the date shown only. We therefore do not accept any responsibility for changes in soil conditions not investigated any variations due to climate, seasons, vegetation and varying ground water levels.

Full terms and conditions are available upon request.

By
SOILTECH SURVEYS
FOUNDATION INVESTIGATION AND TEST DRILLING.
Unit 10, Reeds Farm Estate,
Cow Watering Lane,
Writtle, Chelmsford,
Essex.
CM1 3SB

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Consulting Civil and Structural Engineers

Bespoke Solutions

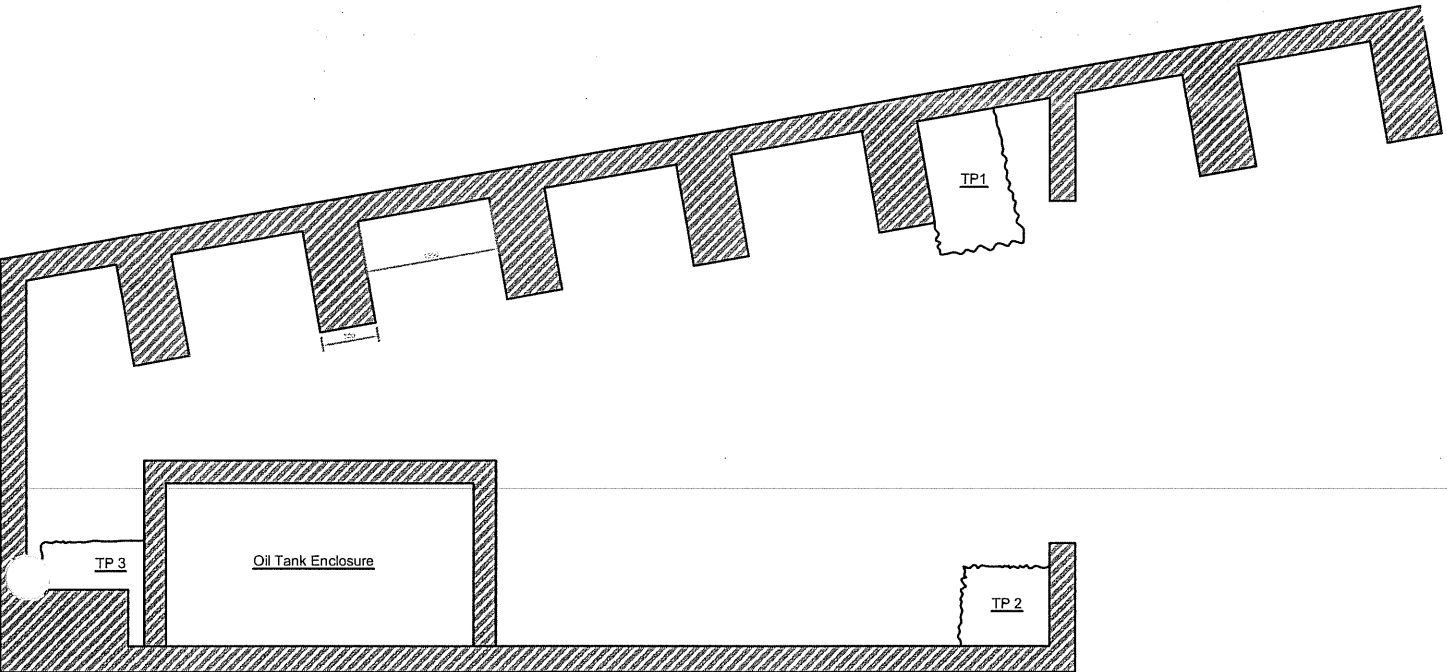
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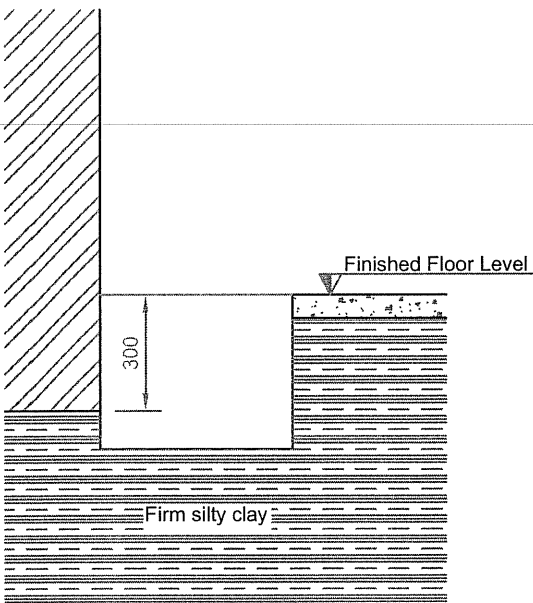
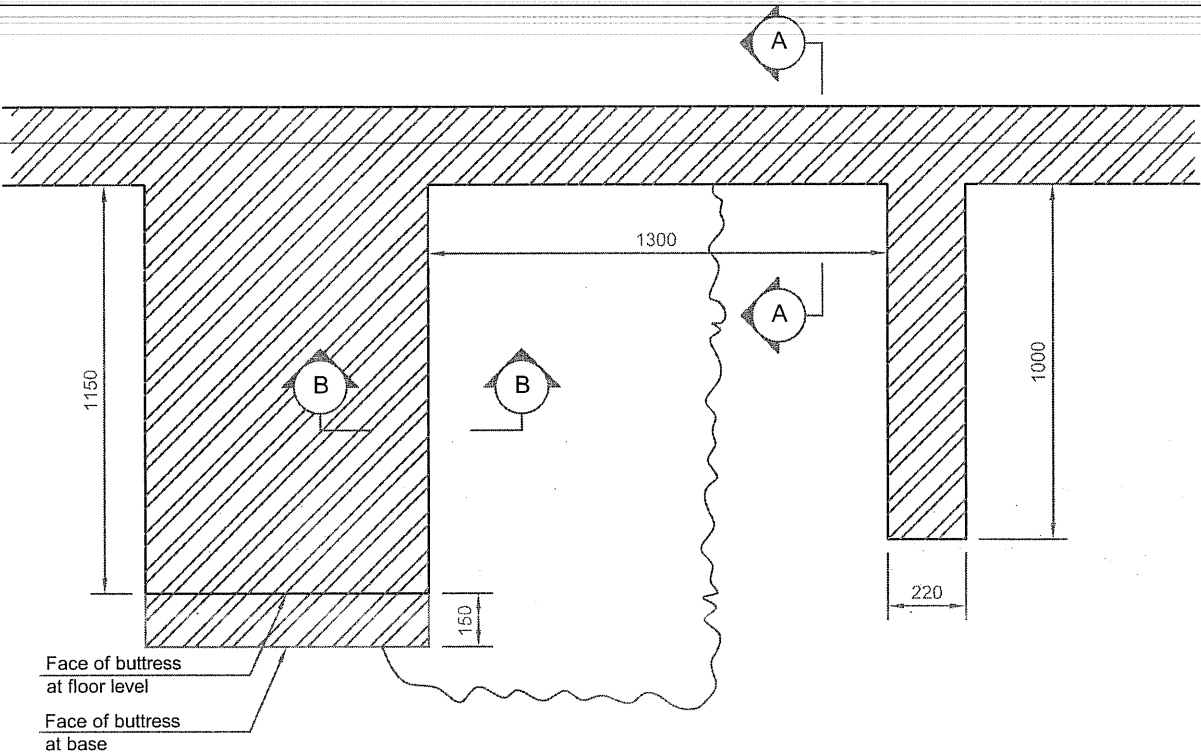
Website: www.clearstructures.co.uk
Email: info@clearstructures.co.uk

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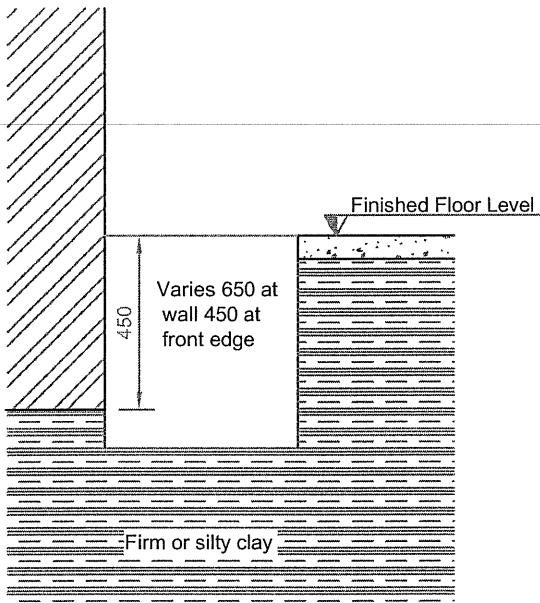


Revision Form 09/2003

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DRAWN BY	CHKD BY	DATE	SCALE	TITLE				DRG No.	REV	
LS	SB	17.01.08	1:60	Building Plan				001	-	



Section A-A



Section B-B

CLIENT				PROJECT		PROJ No.	
HBW Partnership				87 Highgate, West Hill		085827	
DRAWN BY	CHKD BY	DATE	SCALE	TITLE		DRG No.	REV
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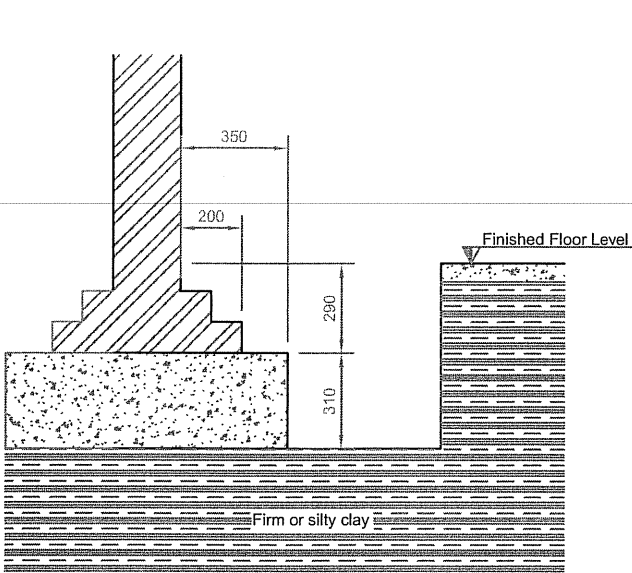
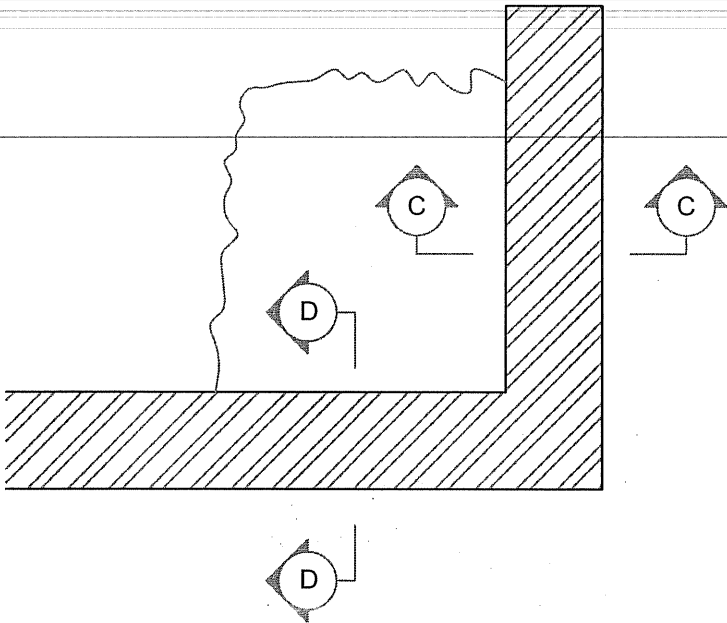
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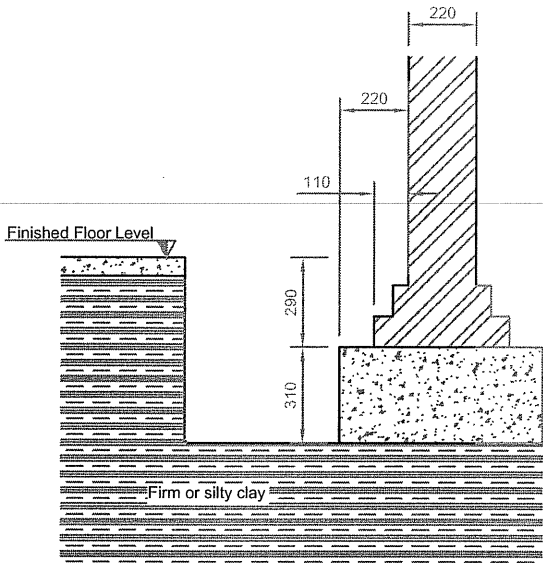
Tel: +44 (0) 1702 618266
Fax +44 (0) 1702 601746

Website: www.clearstructures.co.uk
Email: info@clearstructures.co.uk

D22



Section C-C



Section D-D

Standard Form 04/2003

CLIENT

HBW Partnership

DRAWN BY

LS

CHKD BY

SB

DATE

17.01.08

SCALE

1:25 @ A4

REV

BY

DATE

DESCRIPTION

PROJECT

87 Highgate, West Hill

PROJ No.

085827

TITLE

Trial Pit 2

DRG No.

003

REV

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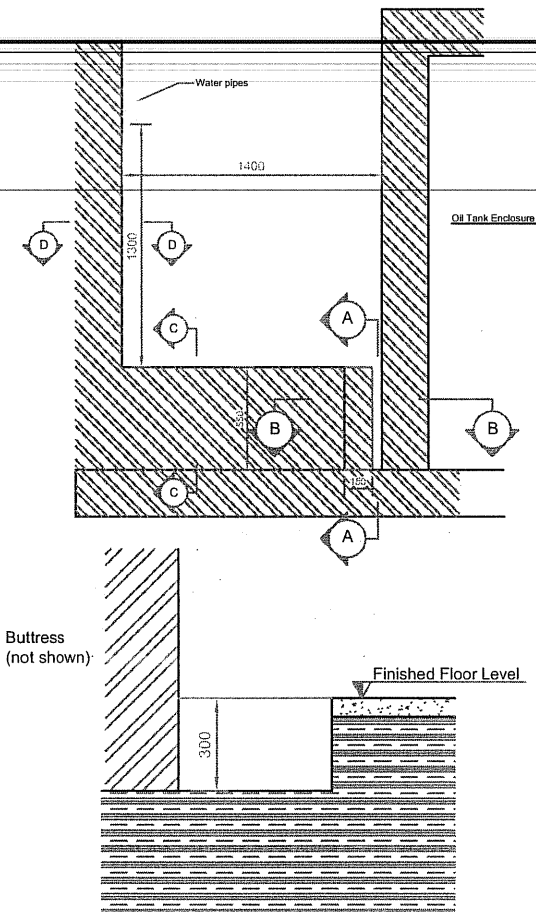
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Fax +44 (0) 1702 601746

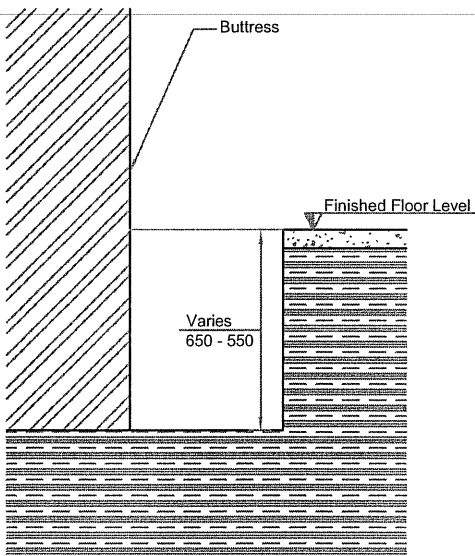
Website: www.clearstructures.co.uk
Email: info@clearstructures.co.uk

D22

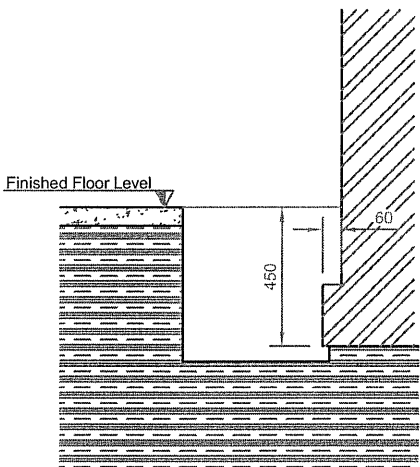


Section A-A

Section B-B



Section C-C



Section D-D

Rev 2/04/2004

CLIENT				REV	BY	DATE	DESCRIPTION	PROJ No.	
HBW Partnership				PROJECT				87 Highgate, West Hill	
DRAWN BY				TITLE				DRG No.	REV
LS				Trial Pit 3				004	-
CHKD BY				SCALE					
SB				1:25 @ A4					
DATE									
17.01.08									