Basement Impact Assessment: Land to the rear of No. 1 Frognal

ESI report reference: 60652R2Rev1D1

Soil Consultants report reference: 9298

Basement Impact Assessment: Land to the rear of No. 1 Frognal

Prepared for

Frognal Property Developments Ltd
17 Pennine Parade
London NW2 1NT

Report reference: 60652R2Rev1D1 Land to the rear of no.1 Frognal, November 2013
Report status: Draft for external review

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Basement Impact Assessment: Land to the rear of No.1 Frognal

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60652R2Rev1D1BIA. Draft

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Author		
Checked by		
Reviewed by		

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REPORT SUMMARY

The assessment findings are summarised as follows:

1. Impacts to surface water flows and related flooding	High	
	Med	
	Low	
2. Impacts to ground water flows and related flooding	High	
	Med	
	Low	
3. Overall risk posed by the site	High	
	Med	
	Low	

Key:

High		*There is a high potential risk*
Med		*There is medium potential risk*
Low		*There is a low potential risk*

RECOMMENDATIONS (FOR NEXT STEPS)

The development described in this report will cause no change in impermeable surface area. Therefore it is considered that peak runoff and related flooding risk from the proposed development will remain the same. Therefore there is no action required to mitigate against detrimental changes to site runoff.

The likely presence of groundwater at the Site is considered to be very low as the Site is not located above an aquifer and nearby borehole logs do not indicate any localised shallow groundwater. It is unlikely that the proposed development will encounter any water in relation to the River Westbourne. Therefore there is no action required to mitigate against impacts on groundwater

CONTENTS

FIGURES

TABLES

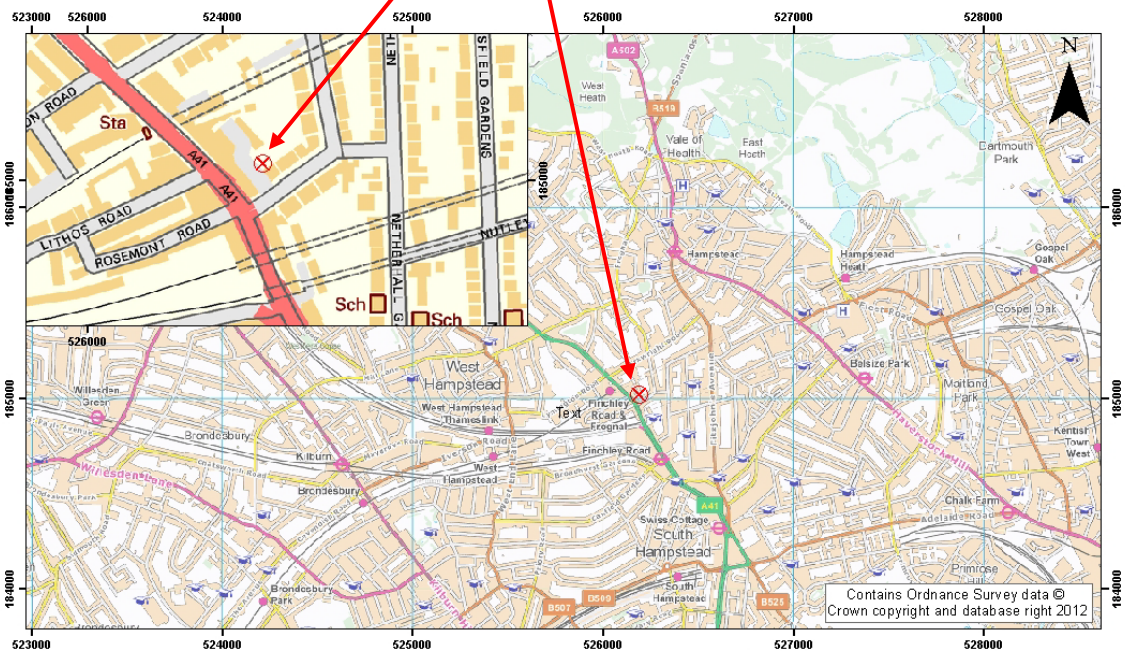
APPENDICES

1 INTRODUCTION

1.1 This Document

The following report has been written to support a planning application, for basement construction, coordinated by Shannon ISL for Frognal Property Developments Ltd, in relation to Land to the rear of 1 Frognal, London Borough of Camden, NW3 6AL (at approximate grid reference TQ 2619585020) in the Camden Borough ward of Frognal and Fitzjohns (Figure 1).

Figure 1.1 Site location
Land to the rear of 1 Frognal



In order for a planning application for basement development to be properly assessed the applicant must consider the issues set out in the Local Development Plan for the Borough and fulfil the requirements of the Camden Development Policy DP27 for basements and lightwells.

This document is a desk study which considers the potential impact relating to the proposed basement development in terms of surface water flow and flooding and groundwater flow. It does not include any discussion on land stability: this is dealt with in a separate report (Soil Consultants report ref 9298).

The following guidance documents have been consulted in preparation of this report:

- Arup, 2010. Camden geological, hydrogeological and hydrological study: Guidance for subterranean development. Issue01, November 2010.
- Camden Council, 2011. Camden Planning Guidance: Basements and lightwells. London Borough of Camden, CPG4.

This report should be read in conjunction with Arup (2010) as the report refers specifically to the figures presented in Arup (2010).

1.2 Proposed Basement Works

The proposal is to develop existing garages into dwellings comprising of a two storey basement. The proposed basement will extend to 4.75m below ground level and the pilings will extend down to 14.5m.

Existing ground elevation is approximately 50m above Ordnance Datum (m AOD). The existing property lies in an area with a slight slope from rear to front. The floor level of the house at both front and rear is approximately level with the exterior ground level. The existing property has approximate dimensions of 12 m length and 5 m width with an approximate aerial extent of 60 m^2.

Planning drawings indicate that the completed subsurface footprint of the basement property will be approximately 18 m long at the rear with a width of around 12 m to the east side of the property and a width of 8 m to the west side of the property ; this is a maximum total footprint area of around 130 m^2. The site foul drainage will be new and will connect to the existing combined mains sewer to the west side of the property. The existing surface water drainage arrangement will not be changed.

2 SURFACE WATER

The screening stage for surface water has been considered as set out in Figure 3 of CPG4 (Camden Council, 2011) (Surface flow and flooding screening flowchart) and the results have been tabulated in Table 1 below.

Table 1 Impact of proposed basements works on surface water

Impact question	Answer	Justification	Reference
1) Is the site within the catchment of the pond chains on Hampstead Heath?	No	The site is not in this catchment, and is more than 1km southwest from the Hampstead Chain Catchment boundary.	Figure 14 Hampstead Heath Surface Water Catchments and Drainage in Arup (2010)
2) As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No	There are no plans to change the route for site drainage. Construction of the basement will not intersect sub-surface flow pathways (Section 4.1).	Site plans.
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	There will be an increase to the roof area, however this will replace existing paved / hard surface area. Therefore there will be no change to the proportion of hard surfaced areas at the front or rear of the property.	Site plans.
4) Will the proposed basement 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	There are no existing surface water features on the property or nearby. The course of a tributary of the 'lost' River Westbourne lies approximately 100m to the south of the proposed development. It is understood that the river is now artificially culverted via the storm drainage network, therefore the proposed development will have no impact on the river.	Ordnance Survey mapping Figures 11 & 12 Camden Surface Water Features Arup (2010).
5) Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	There are no existing surface water features on the property or nearby. It is highly unlikely that there will be an impact on surface water quality as a result of the proposed development.	OS mapping Figure 12 Camden Surface Water Features Arup (2010).
6) Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	No	The site is not in an area with the potential to be at risk of surface water flooding as defined by Figure 15 in Arup (2010). Figure 15 in Arup (2010) shows that Frognal flooded in 2002, however this is down gradient of the Site and there is no record of flooding on the area covered by the proposed development. (Section 4.1). The site is outside the area of a floodplain as defined by the Environment Agency and is classified as Flood Zone 1 where the risk of flooding from rivers or the sea is less than 1 in 1000 each year The nearest surface water feature (Hampstead No. 1 Pond) is more than 1 km to the northeast.	Figure 15 Flood map (Arup, 2010) Environment Agency flood mapping (http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=drinkingwater&layerGroups=default&lang=_e&ep=map&scale=10&x=525570.9375&y=183745.9375#x=526402&y=184704&lg=1,&scale=9)

3 GROUNDWATER

The screening stage for groundwater has been considered as set out in Figure 1 of CPG4 (Camden Council, 2011) (Subterranean (ground water) flow screening chart) and the results have been tabulated in Table 2 below.

Table 2 Impact of proposed basement works on groundwater

Question	Answer	Justification	Reference
1a) Is the site located directly above an aquifer?	No	The Site is located on London Clay Formation which is designated as 'Unproductive strata' by the Environment Agency (i.e. non-aquifer). The London Clay Formation at this site is understood to be around at least 80m thick based on the borehole log TQ28SE46 approximately 350m to the west of the Site According to the geological map there are no superficial deposits recorded at the site.	Figure 2 Camden 1:10,560 Geological Map (1920) in Arup (2010). Figure 3 Camden Geological Map in Arup (2010). Figure 8 Camden aquifer designation map in Arup (2010). Environment Agency aquifer mapping: (http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=drinkingwater&layerGroups=default&lang=_e&ep=map&scale=10&x=525570.9375&y=183745.9375#x=526402&y=184704&lg=1,&scale=9).

Question	Answer	Justification	Reference
1b) Will the proposed basement extend beneath the water table surface?	No	London Clay Formation is designated as 'Unproductive strata' by the Environment Agency (i.e. non-aquifer). Basement works will extend to a maximum of 6 m below the ground surface. The ground at the site is at an elevation of around 50 m AOD. The following borehole logs have been consulted TQ28SE46, TQ28SE488, TQ28NE130 and TQ28NE129. Only one borehole proved the full thickness of the London Clay Formation. It is likely that the London Clay Formation is at least 80m thick beneath the proposed development site. Therefore the excavation will remain entirely within the London Clay Formation and it is unlikely that significant volumes of groundwater will be encountered during the excavation. Borehole logs TQ28SE129 and TQ28NE130 show that no water strikes were encountered during excavation, however 2 months after drilling both recorded water at 11.1m and 1.6m respectively below ground level (i.e. to 59.2mAOD and 50.9mAOD) (Appendix A). In contrast, borehole log TQ28SE46 shows that no water strike occurred in a borehole drilled to 177m below ground level (mbgl). It is probable that the water seeping into the first two boreholes is very localised as indicated by the different depths, and is highly unlikely to extend as far as the proposed development.	As above and site plans. British Geological Survey (BGS) Geoindex: (http://www.bgs.ac.uk/GeoIndex/) Digital Terrain Model (DTM) from the Ordnance Survey. Figure 7 Geological Long Section (NW – SE) in Arup (2010). Figure 11 Watercourses in Arup (2010). Appendix A.
2) Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	The proposed development site lies approximately 100m from the previous (pre-1800s) course of the Westbourne River. See Section 4.2. There are no well water levels or water wells within 800m of the site according to the BGS Geoindex. The proposed development site does not lie within a Source Protection Zone (SPZ) The proposed development site does not lie in any groundwater vulnerability zone, which reflects the low permeability nature of the overlying London Clay Formation. There are no known springs in the area. There is no change in geological structure or lithology which would suggest the presence of a spring line.	OS mapping. Figure 12 Camden Surface Water Features in Arup (2010). BGS Geoindex: (http://www.bgs.ac.uk/GeoIndex/). Environment Agency aquifer mapping: (http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=drinkingwater&layerGroups=default&lang=_e&ep=map&scale=10&x=525570.9375&y=183745.9375#x=526402&y=184704&lg=1,&scale=9) Figure 3 Camden Geological Map in Arup (2010).

Question	Answer	Justification	Reference
3) Is the site within the catchment of the pond chains on Hampstead Heath?	No	The site is not in this catchment.	Figure 14 Hampstead Heath Surface Water Catchments and Drainage in Arup, (2010)
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	The proposed works involve excavating a basement that does not extend further than the footprint of the existing building	Site plans.
5) As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No	The new foul drainage will be connected to the existing combined mains sewer to the west side of the proposed development. Existing surface water drainage arrangements will be unchanged. Soakaways will not function effectively in this area due to the low permeable nature of the subsurface.	Site plans.
6) Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line.	No	The lowest point of the excavation is understood to be around 54 m AOD. There are no local ponds or surface water features within 1 km of the site.	As for question 2.

4 SEWER FLOODING

Sewer records with invert levels are not available for the proposed development. It is understood that the nearest drains were adopted by Thames Water Utilities in October 2011. A combined drain is situated approximately 3.5m away from the west side of the Site, to which the proposed development will connect.

Records obtained from Thames Water (Appendix C) indicate there have been no reported incidences of flooding from sewers in the vicinity of the proposed development.

5 DISCUSSION

5.1 Peak Runoff and Potential for Surface Water Flooding

The site is currently occupied by a building with an approximate footprint of 60 m^2. The proposed development will include an increase to the footprint of roof space to 130 m^2. However this will replace existing paved / hard surface areas. Therefore it is considered that peak runoff from the property will be similar to existing runoff rates. In the area of the property outside the roof space, the subsoils and underlying strata are clay, with a very low permeability and very low infiltration capacity. Therefore under conditions of peak runoff, when the ground is saturated, the outside space is essentially also impermeable.

Frognal is not within a designated flood plain however it is a street which is recorded as flooding in 2002 (Figure 15 Flood map, Arup 2010). Site surface water drainage currently either soaks into the ground or runs off and the Site is situated up gradient from the junction with Frognal. Frognal then slopes downwards to Finchley Road. Historical surface water flooding is likely, therefore, to have occurred along the low lying areas of Frognal, due to the road levels. Surface water flooding within the low lying areas is highly unlikely to propagate back up to the proposed development.

5.2 Westbourne River

The Westbourne was a stream that arose from Hampstead and flowed southwards through Kilburn down to the Serpentine in Hyde Park. A scan from Barton (1992) shows that Frognal lies close to where one of tributaries which formed the Westbourne River used to be (Figure 2). According to Arup (2010) water is culverted into the sewer system, although some may be flowing through the fill of these infilled tributaries.

Although unlikely, it is possible that the proposed excavation may intersect one of these subterranean infilled channels and water ingress may occur into the excavation. If such an infilled channel is intersected, the structure of the proposed basement development would act as a hydraulic barrier to any subsurface water flow. This may have the potential to create shallow, subsurface flooding if the flow of water is restricted by the basement structure.

It is understood that an intrusive site investigation will be carried out before piling is commenced. It is strongly recommended that if such a channel or water ingress is encountered that the water is permitted to flow unrestricted to its down gradient discharge point to prevent localised flooding. Care should be taken during the construction phase to ensure that the inlet and outlet point of any such channel or water ingress are in adequate hydraulic connection to prevent localised flooding.

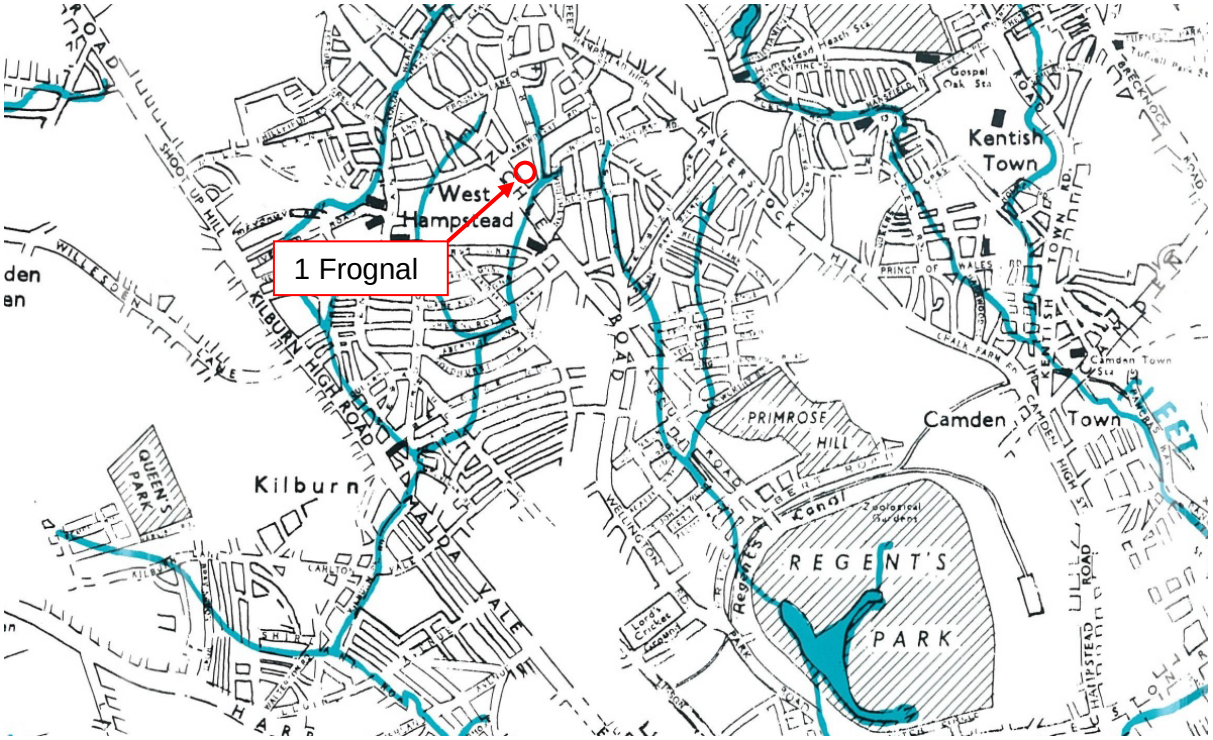


Figure 5.1 Site location in relation to 'lost' Westbourne Stream

6 CONCLUSIONS

The potential impacts of the proposed basement development at Frognal have been considered as set out in CPG4. The following summary conclusions are made:

- Frognal is within flood zone 1 which has a risk of flooding of less than 1 in 1000 years. It is a street which is recorded as flooding in 2002 Figure 15 Flood map, Arup 2010. However the position of the site is sufficiently up gradient from Frognal that it is highly unlikely that any surface water flooding would propagate towards the proposed development.
- Although the roof area of the proposed development will increase, this will replace existing paved / hard surfaced areas, so that there will be no increase in the extent of impermeable surfaces. Therefore it is considered that peak runoff from the proposed development will be unchanged from the existing peak runoff.
- Proposed works include a residential dwelling and will result in an increase in sewerage discharge volume from the property. This should be communicated to the sewer undertaker (Thames Water) to allow them to determine whether this poses a risk of sewer overloading downstream.
- From the available information, it is unlikely that significant quantities, if any, groundwater is present at the site at depths which will be reached by the proposed development. It is highly unlikely that there will be any discernible impact on groundwater flow or quality.
- The River Westbourne flowed close to the Site, however it is understood that before building began in this area the river was culverted and now flows through the storm drains network. It is unlikely that the proposed development will encounter any water in relation to the River Westbourne. An intrusive site investigation will be carried out before piling commences. If any permeable deposits are encountered then appropriate mitigation measures will need to be designed.

REFERENCES

Arup, 2010. Camden geological, hydrogeological and hydrological study: Guidance for subterranean development. Issue01, November 2010.

Barton, N., 1992. The Lost Rivers of London, revised edition. Historical Publications Ltd. London.

British Geological Survey, 1994. Geological map for North London. England and Wales Sheet 256, Solid and Drift Edition.

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Camden Council, 2011. Camden Planning Guidance: Basements and lightwells. London Borough of Camden, CPG4.

Ellison, R.A., Woods, M.A., Allen, D.J., Forster, A., Pharoah, T.C., King, C., 2004. Geology of London. British Geological Survey.

Soil Consultants Ltd. 2012. Basement Impact Assessment Screening Report: 'Slope Stability'. Ref.: 9298/SCW/JRCB, November 2012.

Websites:

Environment Agency – What's in your backyard website at http://maps.environment-agency.gov.uk/wiyby

British Geological Survey – GeoIndex at http://www.bgs.ac.uk/GeoIndex/

APPENDICES

APPENDIX A

BGS Borehole logs

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

GeoIndex Onshore

Key | Map layers | Go to location | Search | Print/Export | Measure

Scale: 1: 5000 Location: 526070, 185496
Full Transparency None

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Investigation No. FGE/1491

Appendix A
Sheet No. 2

T. E. Extension

HAMPSTEAD

BOREHOLE LOG

TQ 28 NE/129
2594 8515

Borehole No. 1
Ground Level 62·0m A.O.D (approx.)
Date 11th - 12th, 16th - 18th June 1981

Note:-
1. Light Cable Percussion Borehole
2. Casing - 250mm dia. to 1·8m below G.L
Open hole boring from 1·8 to 29·5m below G.L
3. Standpipe installed - details below

Description of Strata	Legend	Sample	Depth (m)	O.D. (m)	Remarks
CONCRETE			G.L	62·0	
MADE GROUND:- CLAY, sandy, brown, soft to firm, contains scattered cinders, brick fragments and flints with lenses and layers of soft organic clay		9	0·2 0·7 1·2	61·8	Standpipe installed to 29·0m below G.L. Bottom 3m of pipe slotted and surrounded by a 4·0m response zone of gravel. Gravel response zone sealed by a 2·0m thick Bentonite plug. Hole backfilled with clay.
MGRD					
CLAY, Brown, firm, silty, lightly fissured with occasional thin orange silt/sand layers Class? CH		28	1·5 2·0 2·5	60·5	
LC (W)					
CLAY, Brown mottled blue grey, firm to stiff, silty, fissured. Contains scattered small Gypsum crystals throughout which are occasionally concentrated into thin layers and pockets, there are also a few small isolated carbonaceous pockets Class? CH	LW	44	3·5 4·0		Reduced to 200mm dia. boring from 4·0m below G.L
CLAY, as above, becoming stiff with more pronounced fissuring Class? CH		56	5·0 5·5		
CLAY, Brown, stiff, silty, well fissured, with scattered small Gypsum crystals throughout and occasional very thin layers of orange silt/sand		59	6·5 7·0		
CLAY, as above, becoming darker brown Class? CH		31	8·0 8·5		
CLAY, Grey brown, stiff, fairly silty, well fissured, with numerous small Gypsum crystal throughout (WEATHERED LONDON CLAY)		41	9·5 10·0	52·0	Water added in small quantities to assist boring throughout

contd.

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Investigation No. FGE/1491

Appendix A
Sheet No. 3

T. E. Extension

HAMPSTEAD

BOREHOLE LOG

TQ 28 NE 129
2594 8515

Borehole No. 1 contd.
Ground Level
Date

Note:-

Description of Strata	Legend	Sample	Depth (m)	O.D. (m)	Remarks
CLAY, as previous sheet (WEATHERED LONDON CLAY)	LW		10·0	52·0	
CLAY, Grey, stiff, fairly silty, well fissured with scattered small pockets of brown silt. Class? CH		101	10·5 11·0 11·1	51·5 50·9	▼ Ground water level at 11·1m below G.L on 27·8·81
CLAY, as above with the addition of a few scattered fossil shell fragments		68	11·5 12·5 13·0		
CLAY, as above, contains a few small nodules of Pyrites. Class? CH	L	64	14·0 14·5		
		30	15·5 16·0		
		21	17·0 17·5		
CLAY, as above, becoming stiffer and very fissured with a blocky and brittle structure. Class? CH		69	18·5 19·0		Reduced to 150mm dia. boring from 19·0m below G.L
(LONDON CLAY)			20·0	42·0	

contd.

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Investigation No. FGE/1491

Appendix A
Sheet No. 4

T. E. Extension

HAMPSTEAD

BOREHOLE LOG

TQ 28 NE/129
2594 8515

Borehole No. 1 contd.
Ground Level
Date

Note:-

Description of Strata	Legend	Sample	Depth (m)	O.D. (m)	Remarks
CLAY, as previous sheet		55	20·0	42·0	
			20·5		
		85	21·5		
			22·0		
CLAY, becoming very stiff and extremely fissured and brittle below 24·0m B.G.L. Too hard to sample, threads sheared on sampling tubes when attempting withdrawal. Clay contains numerous fossil fragments, pyrites and fairly frequent thin layers and lenses of dark grey silt/sand	L	65	23·0		
			23·5		
Class'd CH		(52)	24·7		
		(57)	26·2		
		(47)	27·7		
(LONDON CLAY)		(64)	29·2		No water entries observed during boring
			29·5	32·5	Borehole dry on completion of boring
					End of borehole

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Investigation No. FGE/1491

Appendix A
Sheet No. 5

T.E. Extension

HAMPSTEAD

BOREHOLE LOG

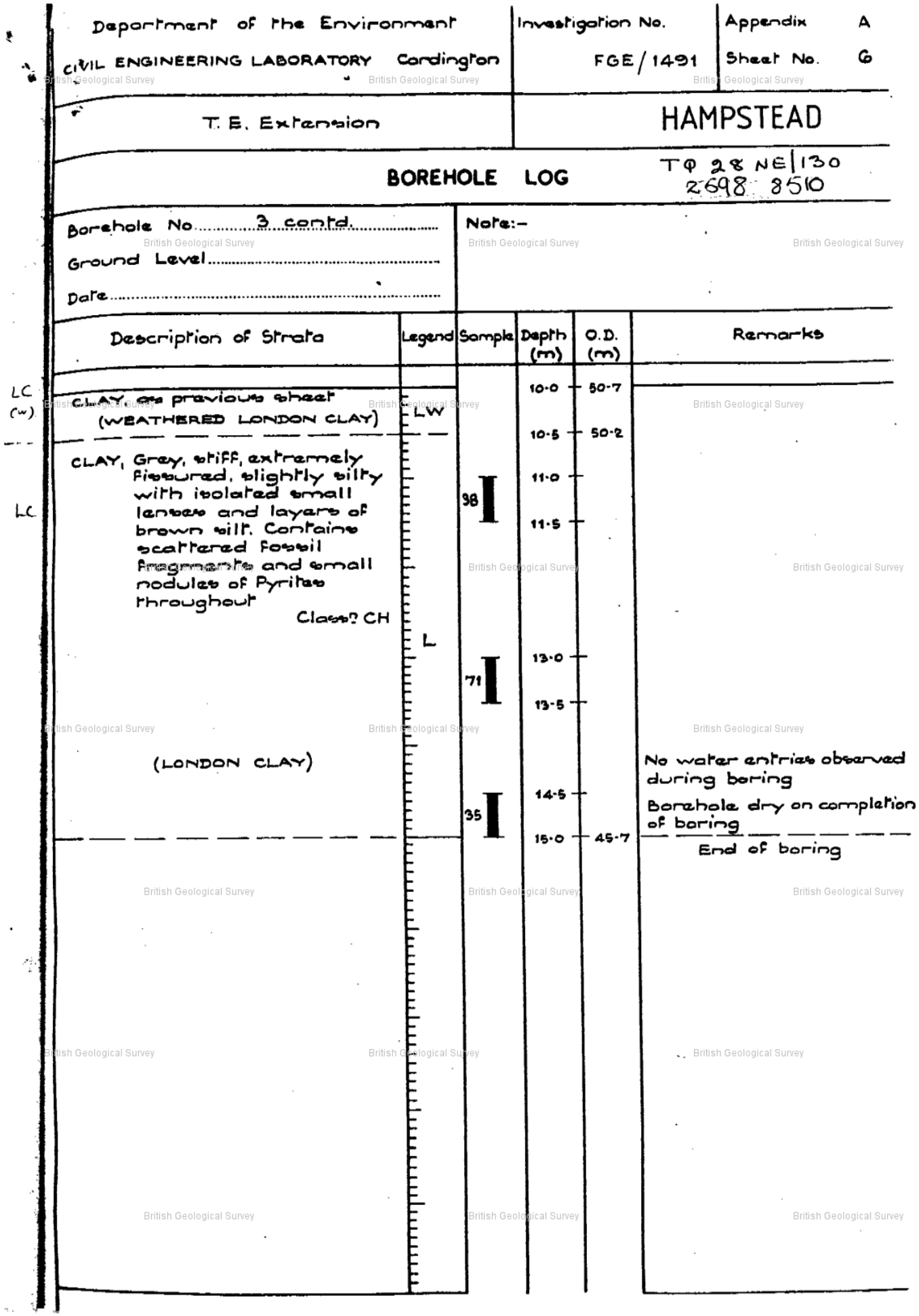
TQ 28 NE/130
2598 8510

Borehole No. 3
Ground Level 60·7 m A.O.D (approx)
Date 23rd – 25th June 1981

Note:-
1. Light Cable Percussion Borehole
2. Casing – 200mm dia. to 1·8m below G.L
Open hole boring from 1·8m to 15·0m below G.L
3. Standpipe installed – details below

Description of Strata	Legend	Sample	Depth (m)	O.D. (m)	Remarks
REINFORCED CONCRETE			G.L	60·7	Standpipe installed to 15·0m below G.L
MADE GROUND; Clay, very sandy, soft and organic with flints and brick fragments etc.			0·3	60·4	Pipe slotted over whole length
MGRD			0·7		Hole backfilled with gravel
CLAY, Orange brown, slightly sandy, structureless with scattered rounded stones (SOLIFLUCTION DEPOSIT?)	C	22	0·9	59·8	
K			1·2		
			1·5	59·2	▼ Ground water level at 1·5m below G.L on 27·8·81
CLAY, Brown, stiff, slightly silty, extremely fissured and brittle with occasional small carbonaceous pockets Class? CH		22	2·0		
			2·5		
CLAY, as above but fissuring so pronounced as to cause samples from 3·5 to 6·5m to fall apart during extrusion. There was no evidence of any polishing along the fissure surfaces Class? CH	LW	22	3·5		
LC (w)			4·0		Water added in small quantities to assist boring from 4·0m below G.L onwards
		50	5·0		
			6·5		
		42	6·5		
			7·0		
CLAY, Dark brown, stiff, silty, very fissured with numerous small Gypsum crystals. Contained a few thin layers of weakly cemented yellow iron pan		45	8·0		
			8·5		
(WEATHERED LONDON CLAY)			9·5		Borehole dia. 200mm throughout
		40	10·0	50·7	

contd.



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Investigation No. FGE/1491

Appendix A
Sheet No. 6

T. E. Extension

HAMPSTEAD

BOREHOLE LOG

TQ 28 NE/130
2698 8510

Borehole No. 3 contd.
Ground Level
Date

Note:-

Description of Strata	Legend	Sample	Depth (m)	O.D. (m)	Remarks
LC (w) CLAY, as previous sheet (WEATHERED LONDON CLAY)	LW		10·0	50·7	
			10·5	50·2	
LC CLAY, Grey, stiff, extremely fissured, slightly silty with isolated small lenses and layers of brown silt. Contains scattered fossil fragments and small nodules of Pyrites throughout Class? CH		98	11·0		
			11·5		
	L		13·0		
		71	13·5		
(LONDON CLAY)					No water entries observed during boring
			14·5		Borehole dry on completion of boring
		35	15·0	45·7	End of boring

Report an issue with this borehole

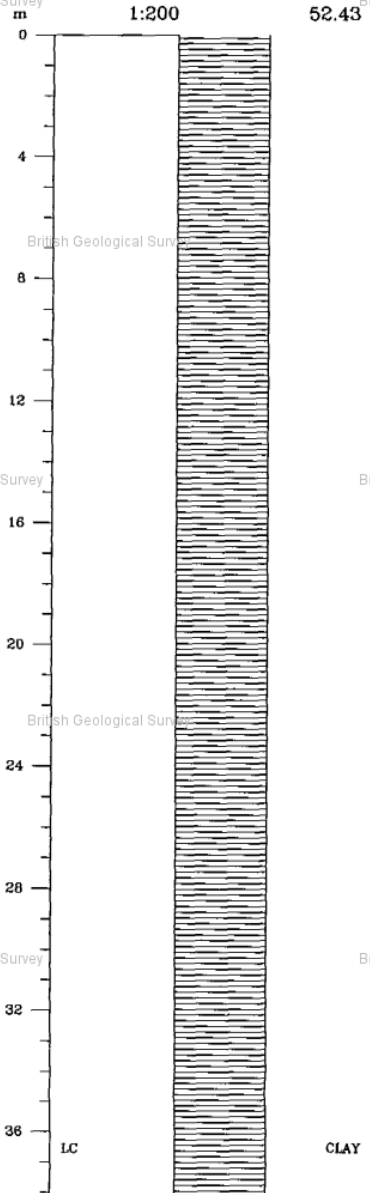
<< < Prev Page 1 of 2 Next > >>

46 TQ28SE 46

N–ELECTRIC LIGHT STN LITHOS RD

Grid Reference: 25840 84879

Scale: 1:200 Ordnance Datum: 52.43

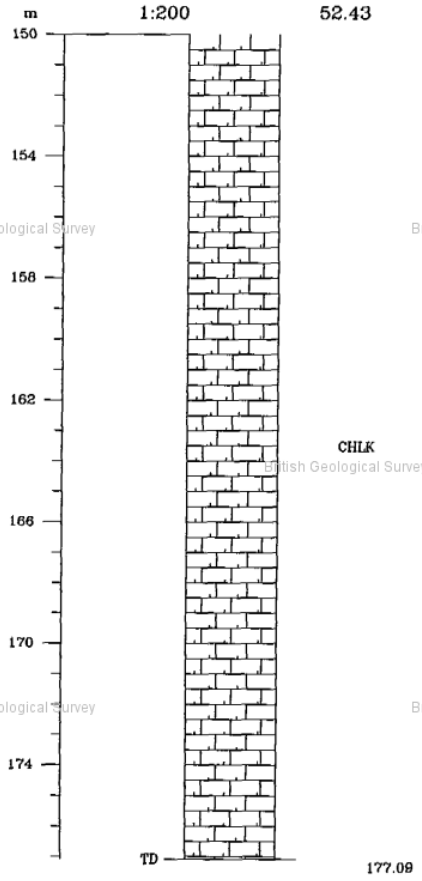


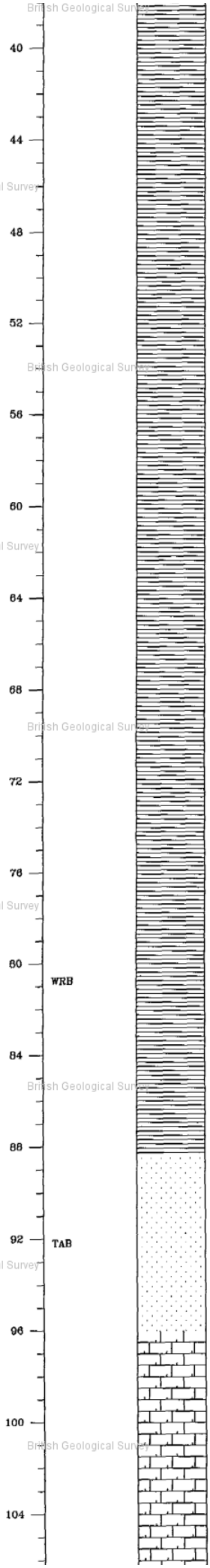
46 TQ28SE 46

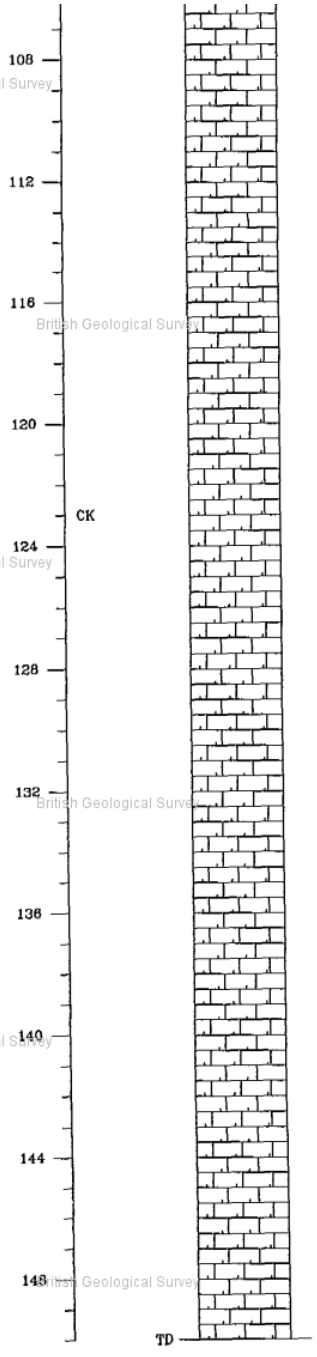
N–ELECTRIC LIGHT STN LITHOS RD

Grid Reference: 25840 84879

Scale: 1:200 Ordnance Datum: 52.43

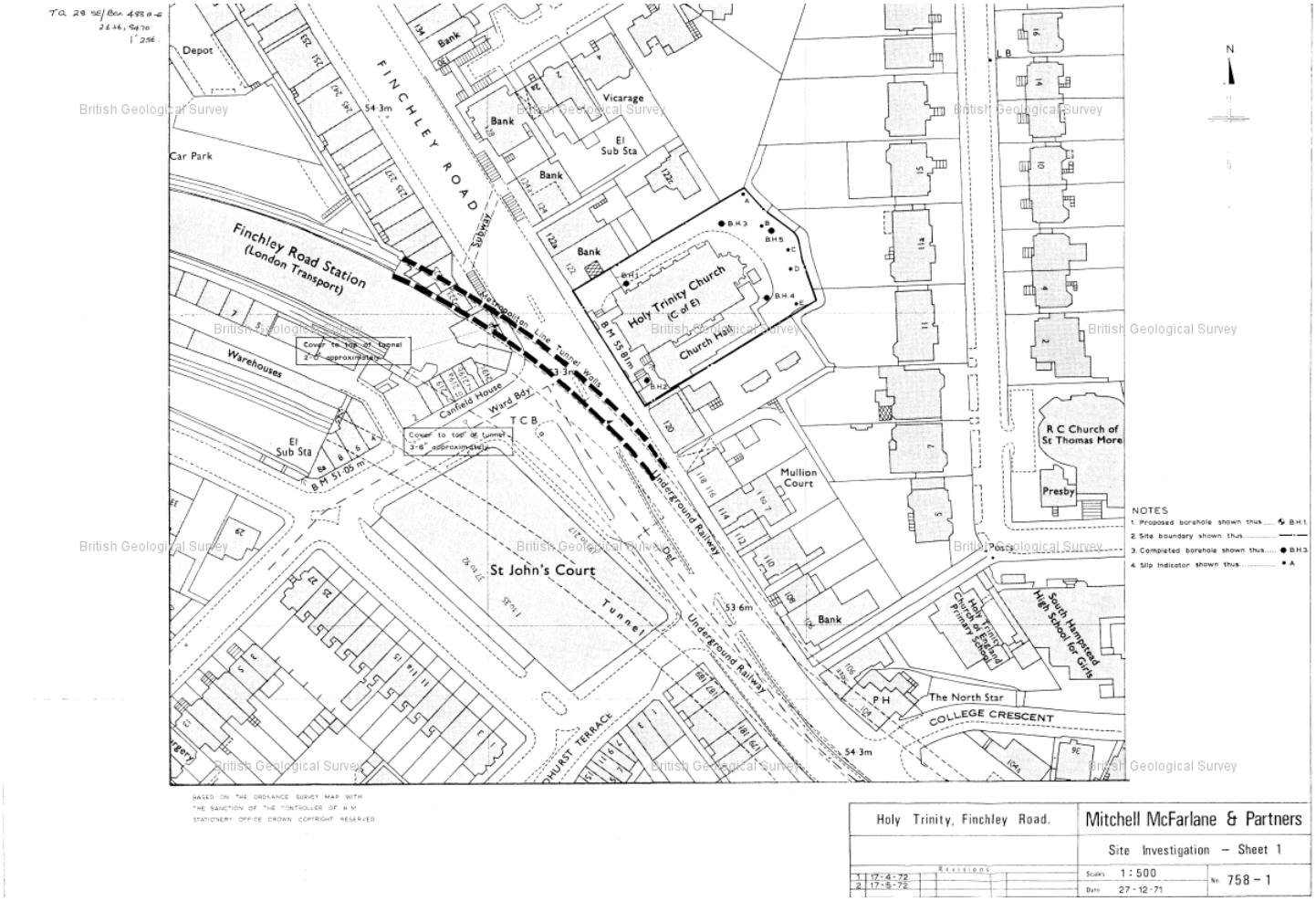






British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Report an issue with this borehole



GROUND EXPLORATIONS LTD.

TQ 28 SE/Box 488A
2636.8470
1"256

BOREHOLE NO. 1

Contract Name: Holy Trinity, Finchley Rd. Report No.: 5583/BW/IAB

Client: Mitchell, McFarlane & Partners, Site Address

Address: 136 Buckingham Palace Road, Westminster, London SW1W 9SA.

Holy Trinity Church, Finchley Road, London, N.W.3.

Standing Water Level: - Method of Boring: Shell and auger

Water Struck: - Diameter: 150mm.

Ground Level: O.D. 55·43m. Start: 29.2.72. Finish: 1.3.72.

Perforated Casing: -

Remarks

m. JARS			m. CORES		m. BULK	
9576 0·3	9595 11·6		9578 0·9	9598 13·1		
9577 0·6	9597 12·8		9580 2·1	9600 14·3		
9579 1·8	9599 14·0		9582 3·4			
9581 3·0	9601 15·2		9584 4·6			
9583 4·3			9586 5·8			
9585 5·5			9588 7·0			
9587 6·7			9590 8·2			
9589 7·9			9592 9·4			
9591 9·1			9594 10·7			
9593 10·0			9596 11·9			

Description	Thickness	Depth
	m.	m.
Made ground : grey-blue sandy clay with bricks, stones, etc.	0·5	0·5
Brown fissured clay with crystals.	9·8	10·3
Dark brown fissured clay	4·9	15·2
TOTALS	15·2	15·2

Notes 1. Descriptions are in accordance with B.S. Code of Practice C.P. 2001
Clients are requested to compare with samples submitted.

2. Core samples are nominally 102mm (4 ins.) diameter and 460mm (18 ins.) long.
Depths shown are to top of sample.

PR2519

APPENDIX B

Site plans

Ordnance Survey®

PWX 0102049
F617/25

Siteplan™

1:1250 Scale

Produced 14 Dec 2000 from Ordnance Survey digital data and incorporating surveyed revision available at this date. © Crown copyright 2000.

The alignment of tunnels is approximate.

Due to the resolution of this image, the depiction of a solid line within dashed lines does not necessarily constitute an obstruction at ground level.

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20 0 20 40 60 80

Metres

1 FROGNAL
HAMPSTEAD
LONDON
NW3 6AL

Centre coordinates : 526201mE 185003mN

National Grid sheet reference at centre of this Siteplan: TQ2685SW.

Supplied by : National Map Centre Tel 020 7222 2466
Serial Number : 669787

Ordnance Survey

0 2M 4M

RAISED GROUND FLOOR PLAN

KEY TO ACCOMMODATION:
1. - PORCH
2. - BIKE STORE
3. - HALL
4. - W.C. CLOAKROOM
5. - KITCHEN
6. - LIVING AREA
7. - DINING AREA
8. - VOID
9. - BIN STORE
10. - SCREENING PLANTS
11. - LIFETIME HOMES KNOCK-OUT PANEL
12.- RECYCLING STORE

SUNPIPES TO LOWER GROUND FLOOR

skylight

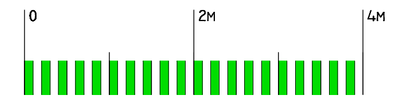
1950

RAISED SLEEPER KERBING

SUB STATION

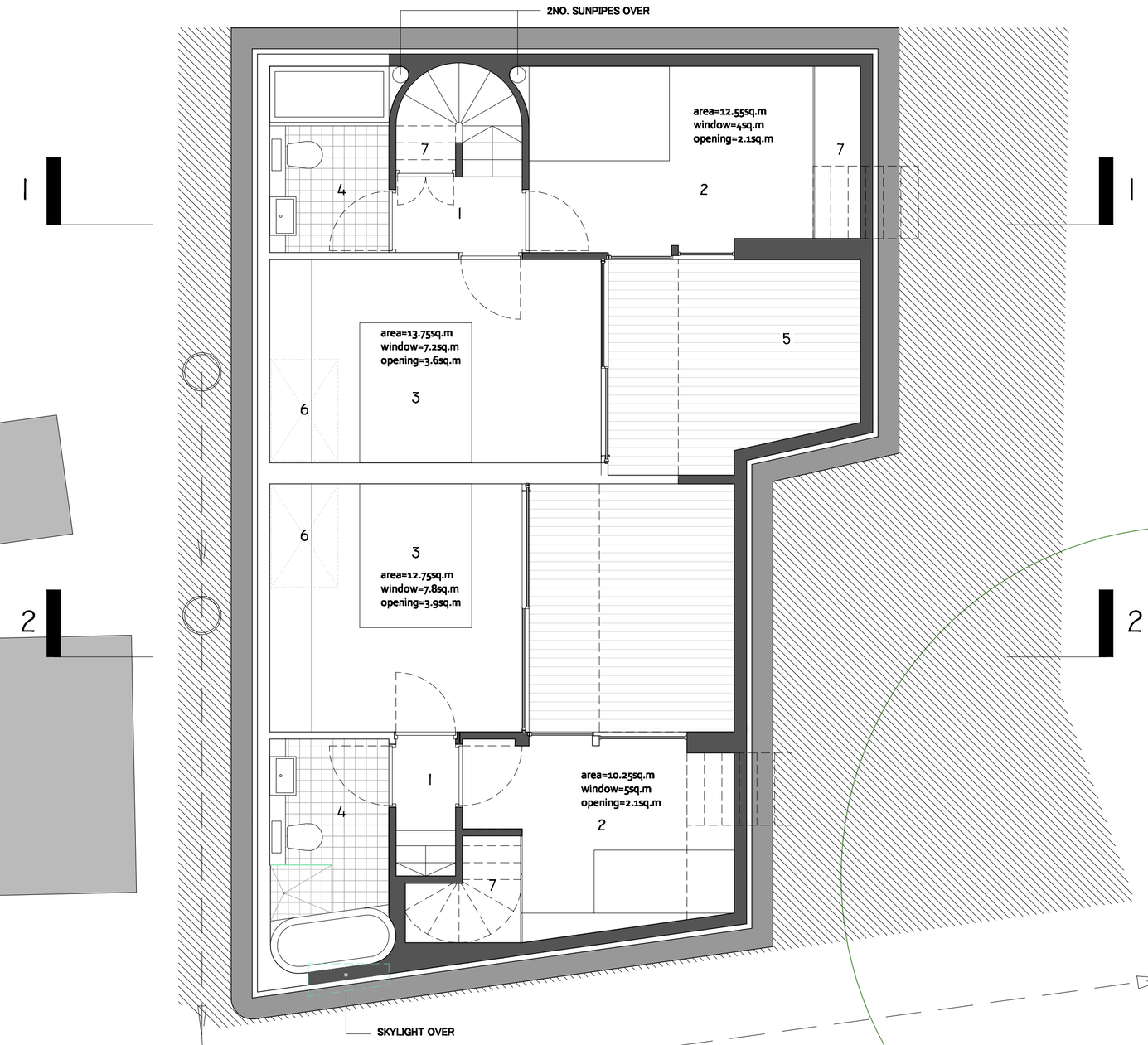
etchdesignlimited

REV.					
	A	Second bicycle store added			23-11-12
	B	Anotation and dimensions added and revised around entrance to site			26-11-12
ISSUE STATUS	PROJECT	PROPOSED NEW HOUSES, REAR OF 1 FROGNAL, LONDON,			62 Mount View Road London N4 4JR
	DRAWING	PROPOSED RAISED GROUND FLOOR PLAN			
	DRAWING No.	ED/1FR/301 - B	DRAWN BY	MC	Tel: 0208 340 2003
	DATE	SEP 12	SCALE	1:50	info@etchdesign.com



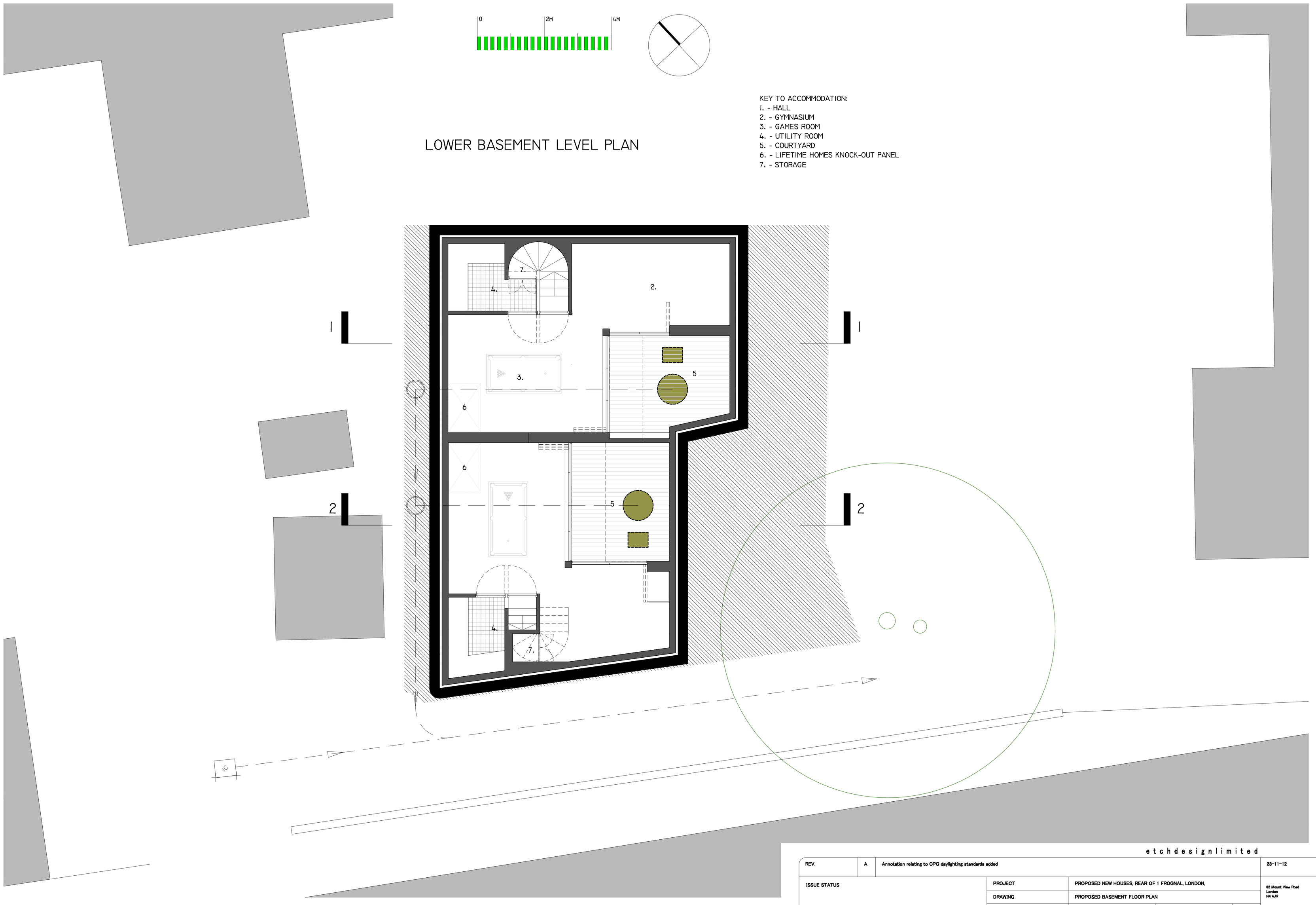
LOWER GROUND FLOOR PLAN

KEY TO ACCOMMODATION:
1. - HALL
2. - SINGLE BEDROOM
3. - DOUBLE BEDROOM
4. - BATHROOM
5. - COURTYARD
6. - LIFETIME HOMES KNOCK-OUT PANEL
7. - STORAGE



etchdesignlimited

REV.	A B	Annotation relating to CPG daylighting standards added ammendments relating to re-submission drawings			23-11-12 25-10-13
ISSUE STATUS		PROJECT	PROPOSED NEW HOUSES, REAR OF 1 FROGNAL, LONDON,		62 Mount View Road London N4 4JR Tel: 0208 340 2003 info@etchdesign.com
		DRAWING	PROPOSED LOWER GROUND FLOOR PLAN		
		DRAWING No.	ED/1FR/302 - B	DRAWN BY MC	
		DATE	SEP 12	SCALE 1:50	

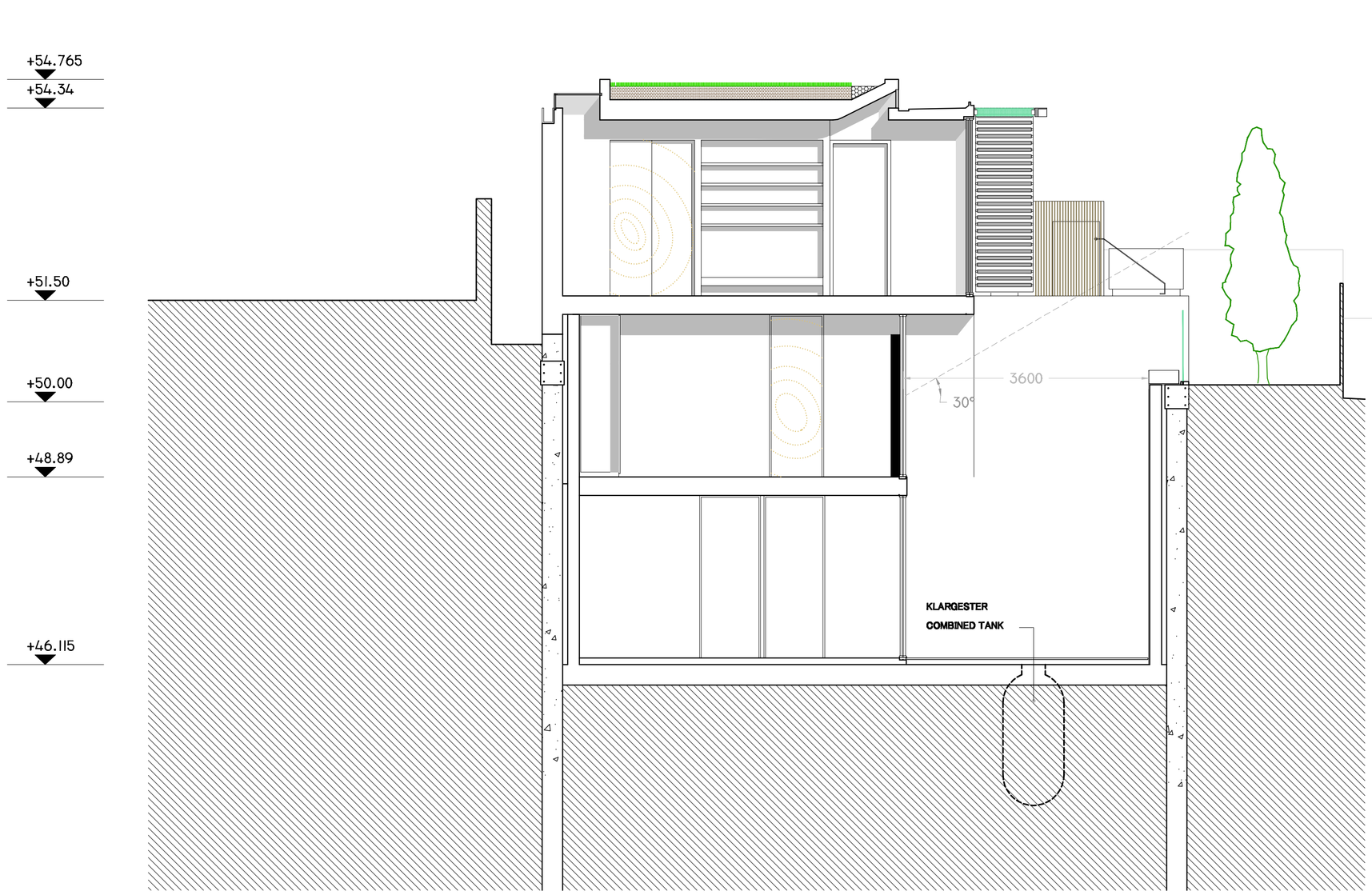


LOWER BASEMENT LEVEL PLAN

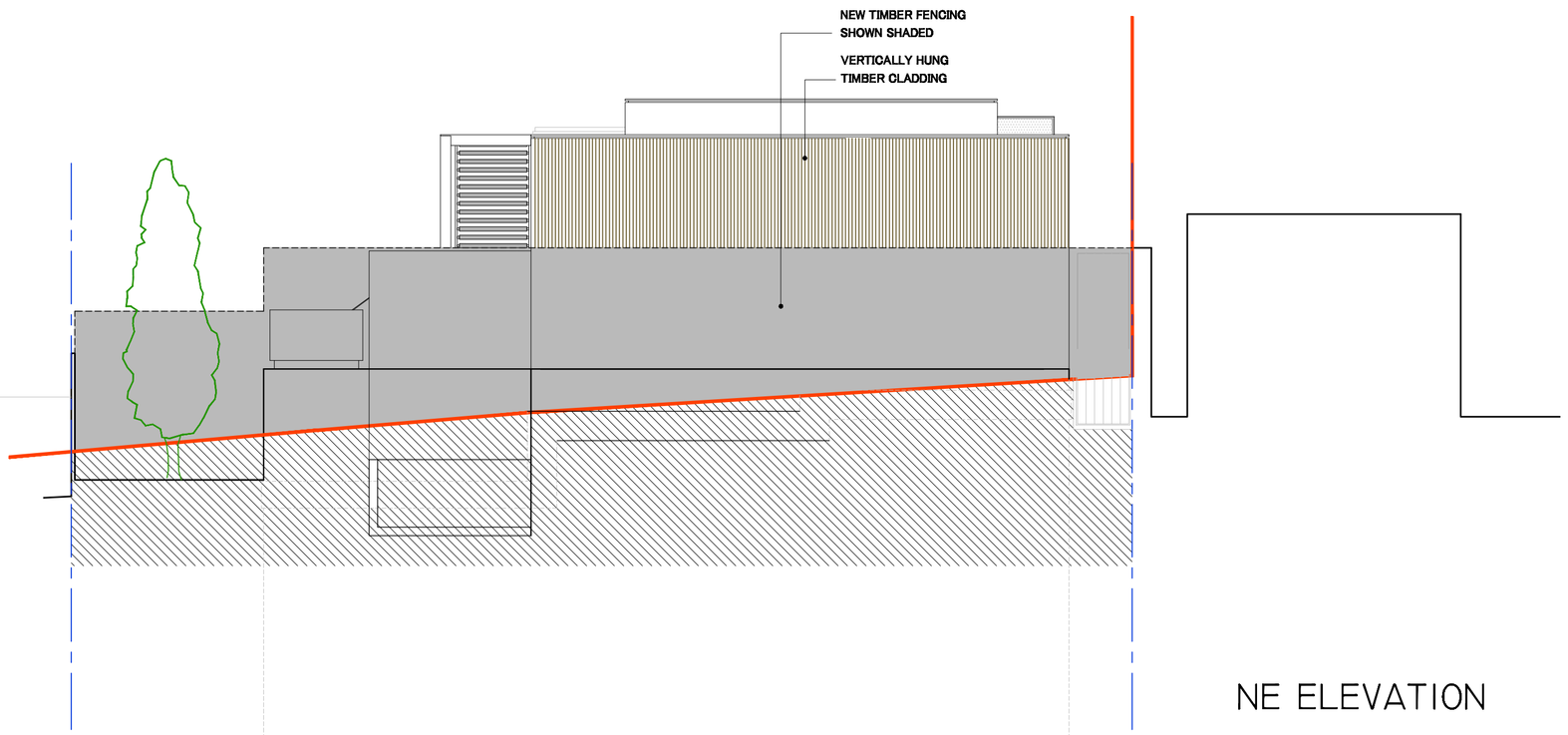
KEY TO ACCOMMODATION:
1. - HALL
2. - GYMNASIUM
3. - GAMES ROOM
4. - UTILITY ROOM
5. - COURTYARD
6. - LIFETIME HOMES KNOCK-OUT PANEL
7. - STORAGE

etchdesignlimited

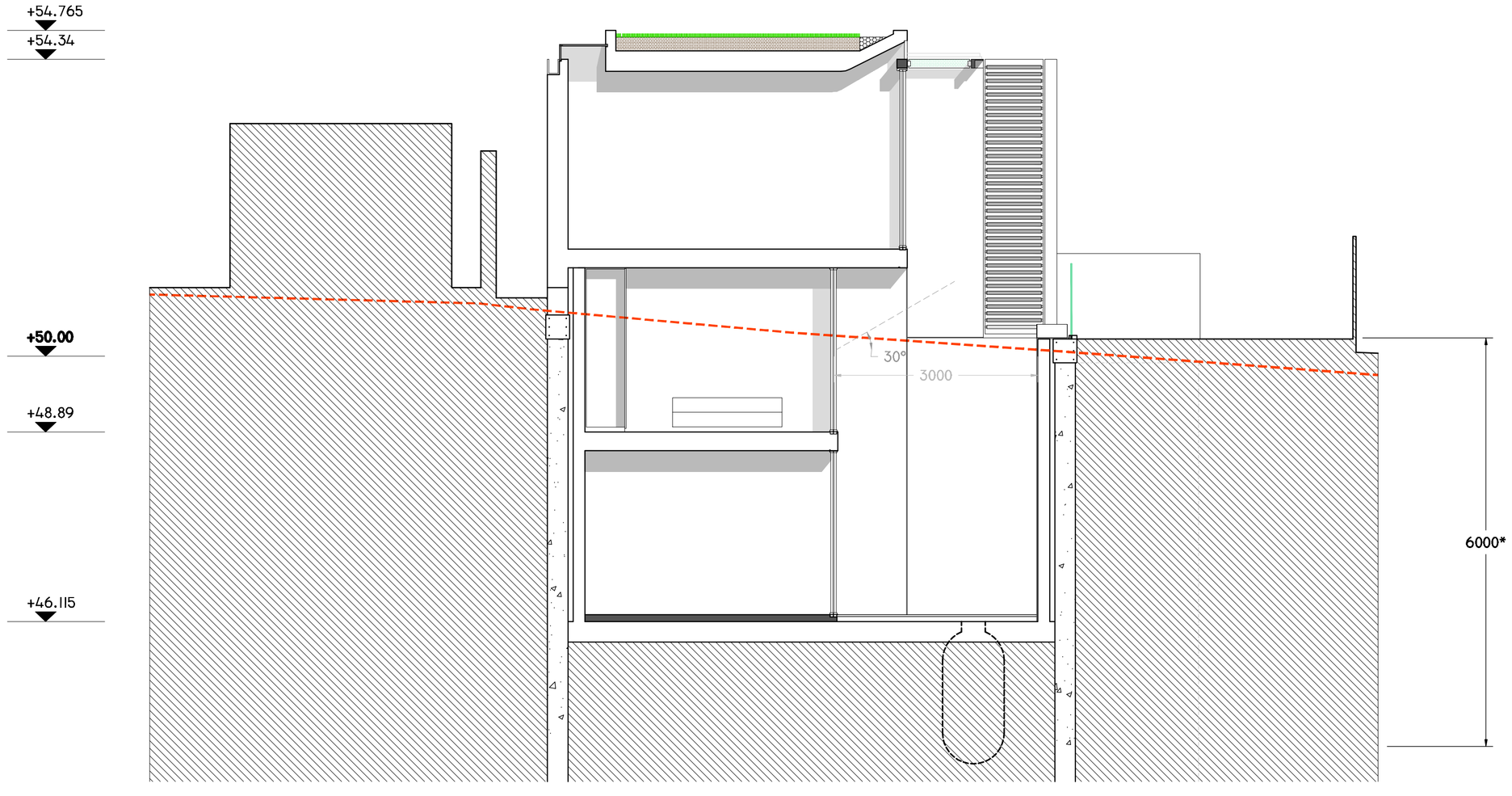
REV.	A	Annotation relating to CPG daylighting standards added			23-11-12
ISSUE STATUS		PROJECT	PROPOSED NEW HOUSES, REAR OF 1 FROGNAL, LONDON,		62 Mount View Road London N4 4JR Tel: 0208 340 2003 info@etchdesign.com
		DRAWING	PROPOSED BASEMENT FLOOR PLAN		
		DRAWING No.	ED/1FR/303	DRAWN BY MC	
		DATE	october 13	SCALE 1:50	



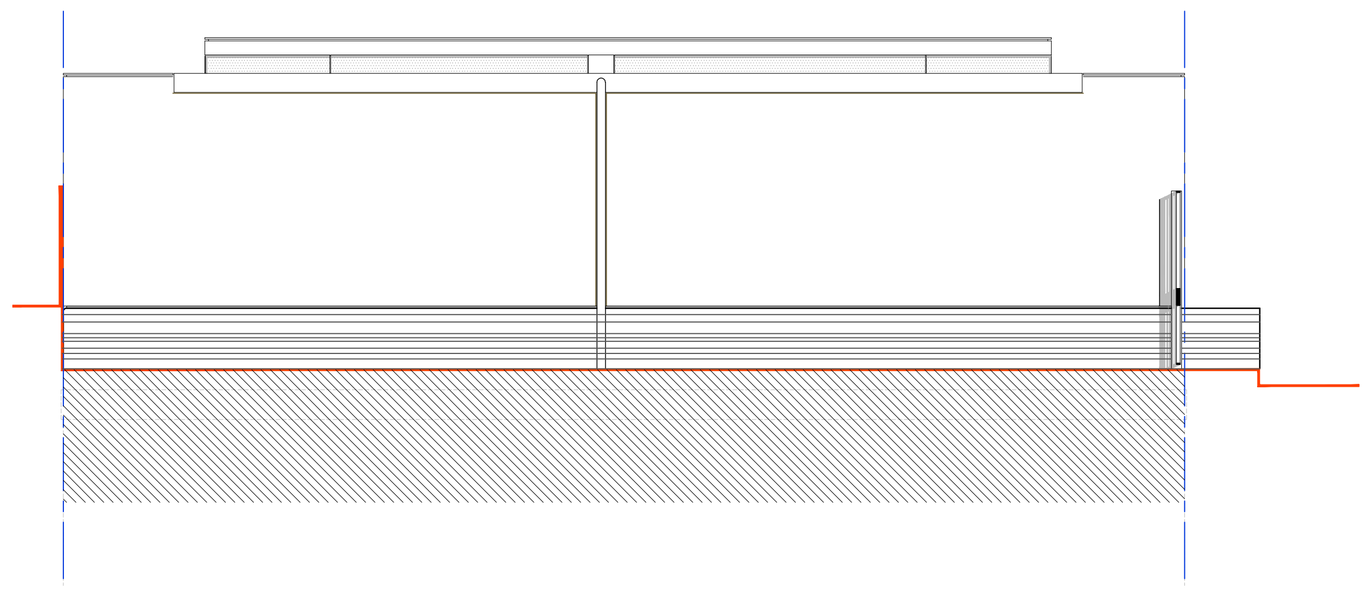
SECTION 1-1



NE ELEVATION



SECTION 2-2

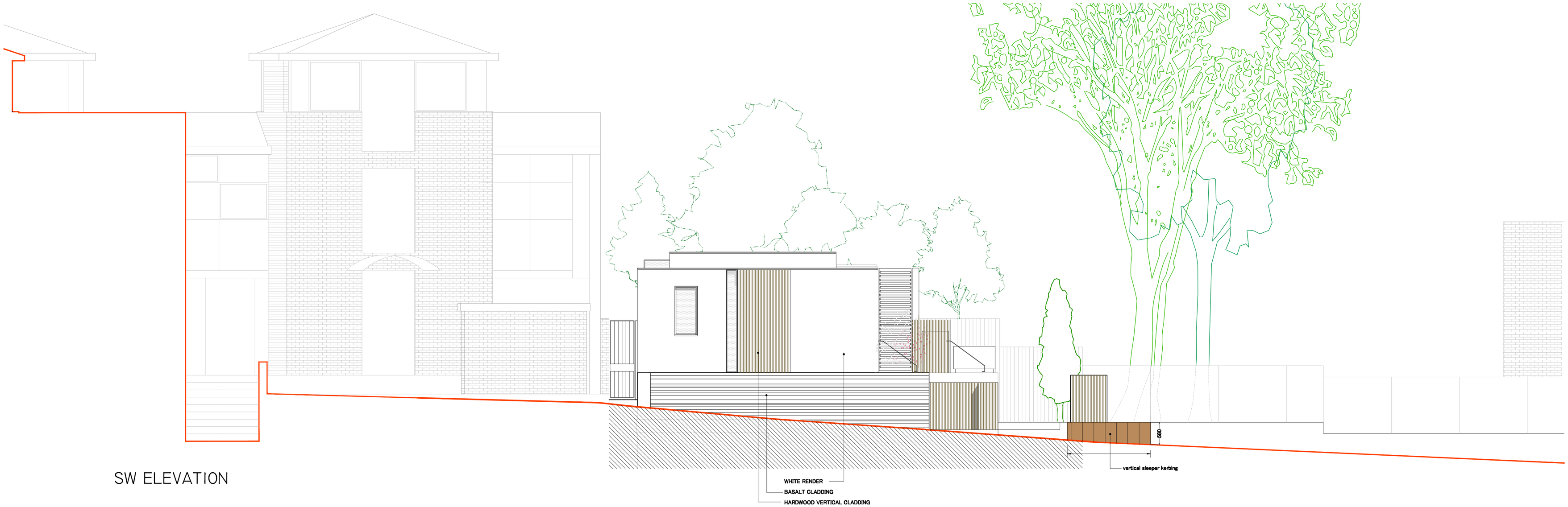


NW ELEVATION

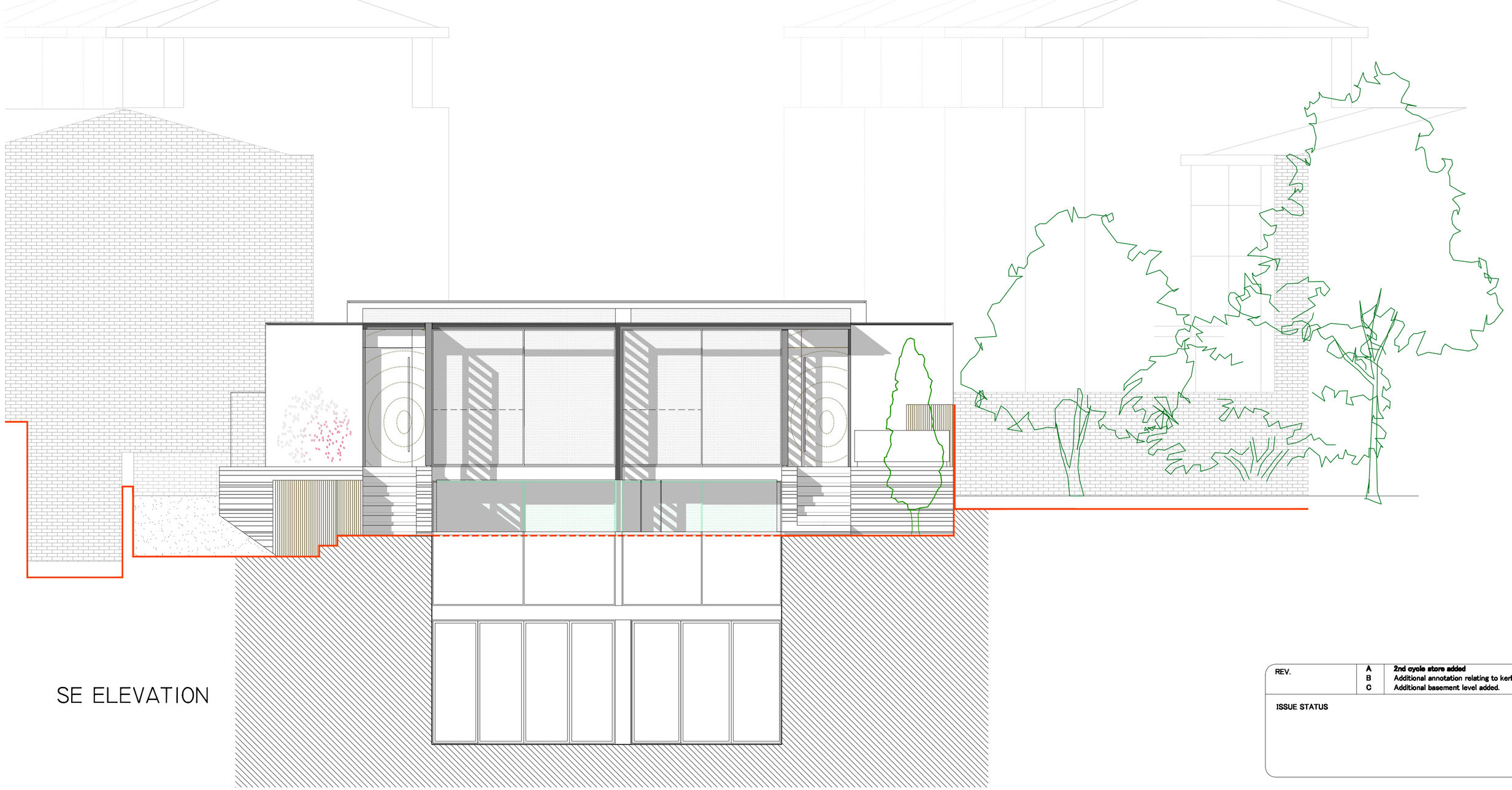
etchdesignlimited

REV.			
	A	Annotation relating to OPG daylighting standards added	23-11-12
	b	addition of basement level	23-10-13

ISSUE STATUS	PROJECT	PROPOSED NEW HOUSES, REAR OF 1 FROGNAL, LONDON,		62 Mount View Road London N4 4JR
	DRAWING	CROSS SECTIONS 1-1 & 2-2 & ELEVATIONS (NE & NW)		
	DRAWING No.	ED/1FR/401 - b	DRAWN BY MC	Tel: 0208 340 2003
	DATE	SEP 12	SCALE 1:50	info@etchdesign.com



SW ELEVATION



SE ELEVATION

etchdesignlimited

REV.				
	A	2nd cycle store added		23-11-12
	B	Additional annotation relating to kerbing along south east boundary		26-11-12
	C	Additional basement level added.		25-10-13
ISSUE STATUS	PROJECT	PROPOSED NEW HOUSES, REAR OF 1 FROGNAL, LONDON,		
	DRAWING	PROPOSED ELEVATIONS (SE & SW)		
	DRAWING No.	ED/1FR/402 - b	DRAWN BY	MC
	DATE	MAY 12	SCALE	1:50

82 Mount View Road
London
N4 4JR
Tel: 0208 340 2003
info@etchdesign.com

APPENDIX C

Flooding Risk & Sewer Flooding History Enquiry

Sewer Flooding

History Enquiry

Thames Water Property Searches
12
Vastern Road
Reading
RG1 8DB

Search address supplied	Land to the rear of 1 Frognal London NW3 6AL
Your reference	60652
Our reference	SFH_SFH_Standard_2012_2253848
Search date	**15 June 2012**

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

Search address supplied: Land to the rear of 1, Frognal, London NW3 6AL

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched;

(ii) any negligent or incorrect interpretation of the records searched;

(iii) and any negligent or incorrect recording of that interpretation in the search report

(iv) compensation payments

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

Although Thames Water does not have records of public sewer flooding within the vicinity, please be aware that property owners are not legally obliged to report this flooding to Thames Water. In addition flooding from private sewers, watercourses and highways drains are not the responsibility of Thames Water, and such incidents may not be noted in our records. We therefore strongly advise you to contact the current owners and occupiers of the premises and inquire about sewer flooding.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0845 9200 800 or website www.thameswater.co.uk

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

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No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB