TOYNBEE ASSOCIATES

2024/2854

14 Southwood Avenue

Planning Report

Construction Method Statement

2854 - 14 Southwood Avenue - CMS Report.docx

Issue:

Date: 10 December 2024

Project:	*14 Southwood Avenue*							
Reference	*2024/2854*							
Descriptions:	*Construction Method Statement*							
Architectural Design								
Local Authority	*London Borough of Haringey*							
Design Assumptions								
1) Based on Architectural Drawings								
2) Strength of Existing Brickwork	*Allowable stress 0.42 N/mm² for existing brickwork.*							
3) Safe Ground Bearing Pressure	*150 kN/m²*							
4) Imposed Loading Used	*BS 6399 Pt1 and Pt2*							
5) Design Codes	*Loading:* *Foundations:* *Reinforced Concrete:* *Steelwork:* *Masonry:* *Timber:*		*BS 6399* *BS 8004* *BS 8110* *BS 5950* *BS 5628* *BS 5268*					
6) Refer to any associated drawings, accompanying notes and standard specifications.								
Design Engineer	*Raveen Rasheed/Tristan Toynbee*							
Checked by	*Tristan Toynbee*							
Approved By	*Tristan Toynbee*							
Dated	*10 December 2024*							
Number of Sheets	*A4*		*A3*		*A1*		*A0*	

Executive Summary

This report has been prepared in line with the guidance given in the London Borough of Haringey Planning Guidance.

Appraisal of the Existing and Adjacent Structures

A visual survey of application property and visual assessment of the externals of the neighbouring properties has been carried out as part of this report.

Site Investigation

A desktop study of the existing ground conditions has been carried out by GeoSmart and is in Appendix E of this report.

Flood Risk

A flood risk assessment has been carried out by GeoSmart and is included in Appendix E of this report.

Structural Design and Temporary Works

The report contains the structural design for the proposed retaining walls and internal structure to enable the project to be built safely. While safe guarding the neighbouring properties.

Basement Impact Assessment and Screening

A basement Impact Assessment has been carried out by GeoSmart and is included in Appendix E of this report.

TOYNBEE ASSOCIATES	Project: 14 Southwood Avenue		Job Ref: 2854	
	Drawing Ref	Calculations by: RR	Checked by: TT	Drawing Ref

End of Report

1 *INTRODUCTION*

The following documents sets the basic design principles required for the Construction Method Statement pertaining to the proposed works at 14 Southwood Avenue.

2 *EXISTING STRUCTURE*

14 Southwood Avenue is a typical late Victorian terraced property comprising a three storey building including an existing basement, built in brickwork with timber floors and roof. The adjoining properties are of similar construction type and all appear to look in sound condition from an external non-invasive/intrusive visual examination.

The floors are assumed to span front to back of the property with the Party Walls taking no imposed loads.

Neither this property or adjoining properties are listed on the Statutory List of Buildings of Special Architectural or Historic Interest.

The existing foundations to the main house appear to be capable of supporting the existing building.

3 *PARTY WALL*

The proposed works fall under the Party Wall Etc Act 1996 and as such procedures under the Act should be followed. We would suggest that you consult the services of an experience party wall surveyor before proceeding with the works on site.

Certain parts of the works will require a Party Wall Agreement where which will include the allowable construction details, methods and the impacts on the neighbour properties. All the proposed works from basement to roof level are covered by the Act.

4 *GENERAL DESCRIPTION OF WORKS*

The site is situated on Southwood Avenue in the London Borough of Haringey.

The proposed works will include deepening and extension of the existing basement.

The property has one boundary on the street elevation that supports the pavement. It has two adjacent properties on each side that have shared party walls between them.

The basement will be formed in an underpinning sequence using new reinforced concrete retaining walls ideally placed under the Party Wall. A new basement concrete slab will prop the walls at basement level, new steel beams and floor structure at ground floor will restrain the retaining walls at ground floor level.

5 *GEOLOGY*

British Geological Survey (BGS) mapping indicates there is no underlying superficial geology at the Site.

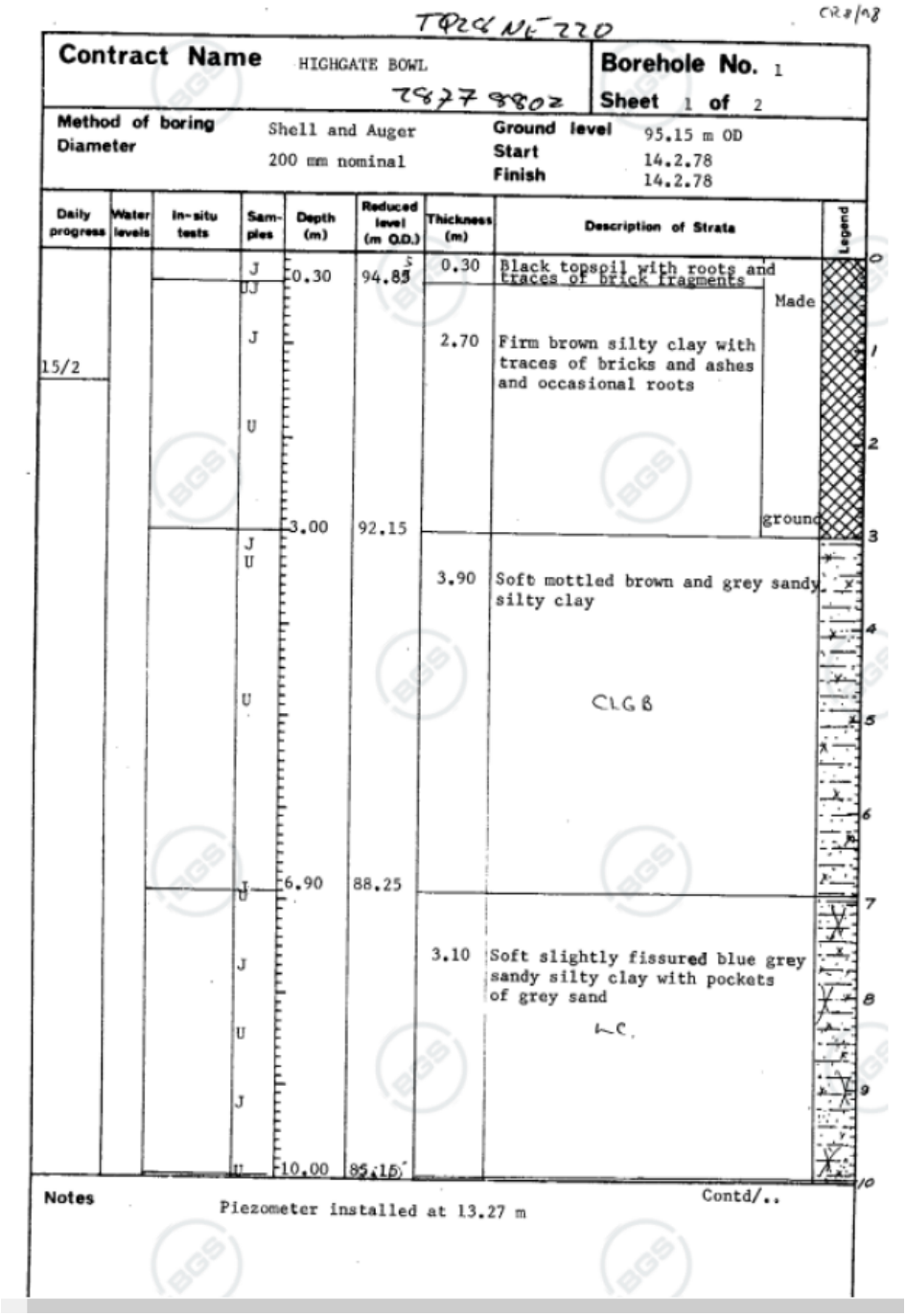
BGS mapping indicates the underlying bedrock geology consists of the Claygate Member (CLGB) (BGS, 2024) and is classified as a Secondary (A) Aquifer (EA, 2024).

The Claygate Member comprises dark grey clays with sand laminations, passing up into thin alternations of clays, silts and fine-grained sand, with beds of bioturbated silt. It could potentially contain groundwater, particularly within sandy horizons.

The surface contact between the Claygate Member and the Bagshot Formation (also classified as a Secondary (A) Aquifer) occurs c. 100 m west of the site, whilst the surface contact with the London Clay Formation occurs c. 160 m north-east.

Based on the known history of the Site, significant Made Ground is not anticipated to be *present at the Site.*

The GeoSmart report in Appendix E provides information on ground conditions.



TQ28NE220

CR8/08

Contract Name HIGHGATE BOWL 7877 8802 — **Borehole No.** 1 — **Sheet** 1 of 2

Method of boring Shell and Auger — **Ground level** 95.15 m OD
Diameter 200 mm nominal — **Start** 14.2.78
Finish 14.2.78

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata	Legend
			J	0.30	94.85	0.30	Black topsoil with roots and traces of brick fragments	Made ground
15/2			J			2.70	Firm brown silty clay with traces of bricks and ashes and occasional roots	
			U					
			J U	3.00	92.15	3.90	Soft mottled brown and grey sandy silty clay	
			U				CLG 8	
			J U	6.90	88.25	3.10	Soft slightly fissured blue grey sandy silty clay with pockets of grey sand	
			J				LC.	
			U					
			J					
			U	10.00	85.15			

Notes: Piezometer installed at 13.27 m

Contd/..

Figure 1 borehole log from GeoSmart report in Appendix E of this report.

6 *HYDROLOGY AND HYDROLOGY*

6.1 Ground Water

There have been no site-specific ground investigations to confirm the depth of the water table. Groundwater flooding within the existing basement has not been reported.

Borehole ref: TQ28NE220 recorded groundwater at a depth of c. 10.5 m bgl (84.65 mAOD) in February 1978, within silty clay strata. Borehole ref: TQ28NE82 struck groundwater at c. 7.6 m bgl (92.59 mAOD) within silty clay strata in December 1966.

A standing level of c. 5.9 m bgl (94.29 mAOD) was also recorded within silty clay strata. It should be noted that from the available records, it cannot be confirmed whether groundwater in either of the boreholes originated from a permeable horizon or from the wider unit.

No water wells have been identified within 100 m of the Site (BGS, 2024).

6.2 Surface Water

According to Ordnance Survey (OS) mapping included in the following figure, there are no mapped surface water features within 500 m of the Site. No subterranean rivers have been identified within the vicinity of the Site.

The local area is residential properties, and the surface water flow regimes can be summarised as follows:

- Rainwater falls on to hard standing surfaces, roofs and discharge directly into surface water drainage within the road.
- Garden and permeable surfaces with green areas will absorb the rainfall into the ground and discharge back into the local ground water.
- The proposals do not materially alter the current regimes with a marginal increase in the area of hard standing or roof area to the rear.
- The present water table will be unaffected by the proposed works. Any ground water will simply flow around the basement structure under the adjoining properties.
- Ground water entering the basement will be dealt with using a delta drained cavity system, either with a perimeter channel or area drain points cast into the basement slab. This will drain into a proprietary sealed sump pump located in the front lightwell which will discharge the water into the existing surface/foul drainage system.

6.3 Flood Risk

According to the Environment Agency's (EA) Flood Map for Planning Purposes, the site is located within Flood Zone 1 and is classified as being at Low probability of fluvial and tidal flooding. Refer to Appendix E of this report.

Groundwater Flood Risk screening data (Figure 12) indicates there is a Negligible risk of groundwater flooding at surface in the vicinity from regional scale mechanisms during a 1 in 100 year event.

7 EXISTING TREES

There are no trees of significance within the site boundary that will be affected by the proposed works.

8 DESIGN OF THE PROPOSED STRUCTURE

8.1 Existing Foundations/Structure

The new basement will be under the under the partial footprint of the property. The new basement will be constructed from reinforced concrete underpinning/retaining walls to the new lightwell to front.

8.2 New Basement Structure

The existing walls will be underpinned in a traditional '①-⑤' sequence. The underpins will comprise a vertical stem which will be immediately beneath the existing walls and will be at least the same thickness as the existing wall.

The vertical loads applied to the underpin stems from the existing structure will be calculated according to the thickness and height of the existing structure above including any beam reactions spanning onto the existing structure.

8.3 Retaining Wall Design

The underpins will be designed for the temporary and permanent cases, as follows: In the temporary case, the underpins will be designed for soil pressures and a surcharge. The factor of safety against overturning and sliding will be taken as 1.5.

In the permanent case, the underpins will be designed for soil pressures, a surcharge and water pressures calculated at 1 m below the retained height. The new basement slab will be structurally connected to the underpinning bases using UBars acting as dowels to maintain continuity of reinforcement throughout the basement structure, therefore it will be assumed that the new basement slab will restrain the under pins against sliding.

Surcharge (q kN/m2) on the MC/RC Underpins will be taken as follows:

Internal live load (e.g. floors)	=	1.5	kN/m^2
Space underneath existing timber joists (nominal)	=	1.5	kN/m^2
External: Gardens, Footpaths, etc.	=	5.0	kN/m^2
External: Highways or where Neighbouring internal walls etc.	=	10.0	kN/m^2

8.4 Basement Slab Design

The basement slab will be designed for uplift due to water pressure or heave whichever is the worst case scenario, spanning between the bases of opposite underpins. The net uplift pressure is taken as the head of water minus the dead load of the basement slab and any permanent finishes, e.g. screed.

A factor of safety of γ = 1.2 is applied to uplift and dead loads.

8.5 Retaining Wall Temporary Design Case

The RC underpins will be designed where possible to be self-supporting under surcharge and soil loading in the construction stage of the project. The underpins will need to be propped during construction to avoid any sliding failure at the base in the ballast layer (dry sands/gravels), alternatively a nib can be cast to stop the walls from kicking out at the base in the temporary case until the basement slab is cast.

8.6 Basement Drainage Design for Surface and Ground Water.

There will be potential for groundwater to collect behind the retaining walls, the basement should be waterproofed and designed to withstand hydrostatic pressures in accordance with BS8102:2009: Code of Practice for the Protection of Below Ground Structures against Water from the Ground.

Any ground water entering the basement will be dealt with via a drained cavity system by delta or another suitable supplier. This uses a drained cavity that feeds into a perimeter channel or central drain points cast into the basement slab. They intern feed into a sump pump located in the front lightwell where the water is then discharged into the drainage system. The sumps should be fitted with a one way return value to ensure that any surface water flooding of the external drainage system does not flow back into the lower ground floor.

9 CONSTRUCTION METHOD

The underpins have been designed to be self-supporting in the temporary case to reduce the need for complex propping requirement until the bulk excavation of the central berm.

Given the size of the front garden it is anticipated that the front reception room floor will be removed to allow access to the excavation and to allow the movement of materials, installation of a conveyor belt.

The basement construction sequence will be carried out using a typical “1 to 5” underpinning method, the sequence of the pins is detailed on the structural drawings. Reference should be made to Appendix D which shows the sequence of an underpin construction, and the bulk excavation of the basement to formation level.

Excavation will commence from the front of the property, progressing towards the rear.

A conveyor belt will be set up at the front of the property to convey the spoil from the excavation to the skip placed on the road for disposal. Given the size of the front garden and the proximity to the street the front reception room floor will be removed to allow space and height for the conveyor belt to be installed

The existing property will be underpinned in the usual 1 to 5 underpinning sequence. See drawing S-TW-01 for the construction sequence of a typical underpin and refer to the Underpinning Specification in the Appendices.

Should a perched ground water table be encountered this can be dealt with via localised sumps in the excavations. All sides to the excavations will be appropriate shored as with trench sheets walers and trench props to ensure any instability within the soil caused by the perched ground water can be appropriate dealt with.

IF required a perimeter drain points system can be installed to artificial lower the water table below the basement formation level until the basement works are complete and the basement slab has been cast.

The underpins to form the new basement may require horizontal propping until completion of the basement slab.

As excavation progresses, any existing foundations found will be broken out and removed from site to make way for the new basement construction.

The existing walls of the building over will be temporarily propped using steel beam needles at regular centres, as necessary. Temporary concrete pad foundations may be required beneath the props, or the props may be supported on the concrete bases of underpins already constructed, wherever the location allows.

New concrete pad foundations and strip foundations will be constructed, where specified on the structural drawings.

New steel beams and columns will be installed, as specified on the structural drawings. These will be supported on the underpins or on the new concrete foundations. Steel beams supported by existing masonry walls will bear on concrete pad stones, as specified on the structural drawings. The pad stones will spread the load on the existing masonry down to acceptable levels.

The top of the new steel beams will be dry – packed to the underside of the existing walls above, and the existing walls will be repaired and made good, as required.

When all the underpins to the existing property have been completed, bulk excavation to the whole site will be carried out.

Horizontal an propping across the site, if required by design, will be installed at high level. This will be via a proprietary propping system such as Mabey props or similar.

Once the bulk excavation is down to approximately 500mm above the proposed basement level, a second level of horizontal props will be installed, if required by design.

The below – slab drainage for foul & ground water, sumps and pumps will then be installed. The pumps will discharge the foul / ground water into the existing sewer system to the rear of the property.

The new basement RC slab (ground – bearing slab) will then be constructed.

Once the new basement slab has gained sufficient strength, the horizontal propping across the site will be removed.

After the new basement slab has cured, a drained – cavity layer will be laid to the slab and walls.

A layer of insulation will be placed on top of the drained – cavity layer on the slab, and in front of the drained – cavity layer on the walls.

Finally a layer of screed will be laid to form the finished basement floor slab.

Excavation and demolition works should not commence on site until a detailed temporary works method statement, temporary works design has been produced by the contractor.

10 *POTENTIAL GROUND MOVEMENTS TO ADJOINING PROPERTIES*

The proposed basement under the existing property will be formed using an underpinning method, constructed in sections each no wider than 1000mm, with no adjacent underpins constructed within a 48 hour period. This method of construction reduces the amount of potential ground movement and so minimises the effects of settlement of the adjacent structures.

Expected settlement will be limited provided an experienced contractor is appointed who undertakes the works using good practice in accordance with the structural design and follows all agreed method statements, installing all necessary temporary vertical and lateral supports required. In practice some settlement is possible but this should be no worse than 'aesthetic', category 0-1 of BRE digest 251. If these conditions are met, any settlement that occurs to 14 Southwood Avenue or the neighbouring buildings are likely to be minimal and accommodated in the elasticity of the superstructure. This has been borne out in the vast majority of past projects on similar properties.

The design and construction methodology, as described above, deals with the potential risks and ensures that the excavation and construction of the proposed basement will not affect the structural integrity of the property and adjoining properties.

11 *UNDERGROUND STRUCTURES & EXISTING SERVICES*

No railway cuttings were noted within a 250m radius of the site. No London Underground tunnels were noted within a 250m radius of the site. The site is not in close proximity to any National Rail lines. The site was considered to be not sufficiently close to underground transport services, in order for these to affect the property and there are no approved proposals for any TfL services in the vicinity that would affect the development.

The properties along Southwood Avenue were noted to contain lower ground floor levels.

No listed properties were noted along Southwood Avenue.

12 *WATERPROOFING AND DRAINAGE*

The concrete elements where possible will be designed to resist water ingress with crack widths kept to code minimums. The option of waterproof concrete additives can be used with in the concrete mix to further enhance its water resistance.

In addition a secondary form of waterproofing using a drained cavity system such as Delta and systems will be installed to deal with any water ingress that gets past the concrete walls.

Sump pumps and either drain points or a perimeter channel will gather any ground water ingress into the basement ready for pumping out.

13 *DUST CONTROL*

The BRE ' Control of Dust from Construction Demolition Activities' 2003, London Councils/GLA Practice Guide " Control of dust and emissions from construction and demolition" and Mayor of London's SPG on ' Control of Dust and Emissions' 2014 which gives best practice guidance on the control of dust and vehicle fumes will be implemented and followed where possible.

Stock piles will be minimised and covered/damped down. A water supply/stand pipe will be available on site for dust suppression purposes

13.1 Vehicle Movements

Any loads likely to produce dust shall be covered and a wheel wash facility where necessary will be provided. The contractor will monitor the site on a daily basis and the immediate areas surround the site to ensure that any problems from dust and dirt is minimised.

All personnel working in a dusty area shall where necessary wear a dust mask deemed suitable by the HSE.

General dust extraction and ventilation maybe required on the site and specific needs will be identified by the contractor on site.

14 *NOISE CONTROL*

Under the Control of Pollution Act 1974 Part 3 Environmental Protection Act of 1990 and the Noise Regulation act noise is a recognised form of pollution and as such can be classified as a nuisance.

The Control of Noise (Codes of Practice for Construction and Open Site) order 1984 gives legal approval for BS 5228, parts 1 & ", 1984. This provides information on noise control on construction sites. Every attempt shall be made to control noise at source.

On site where construction works are in progress everyone has a responsibility to see that activities are carried out in the quietest practicable manner. Where noisy activities are unavoidable the disturbance will be minimised by choice of technique, timing, shielding or protection as appropriate.

Where any person is to be exposed to noise levels greater than 80 dB(a) they will be informed and provided with suitable ear protection. The most likely protection, in ascending order of attenuation is ear plugs, earmuffs and noise attenuation helmets. Nosie will be always kept to a minimum and any further restrictions under the terms of the construction contract will be strictly adhered to.

15 *VIBRATION CONTROL*

All works involving vibration will be minimised, where possible operations will be eradicated by design and the use of controlled mechanical equipment on site.

16 *DEMOLITION, RECYCLING & SITE HOARDINGS*

Contractors are to adopt the practices within the ICE demolition Protocol in order to mitigate the impact of the demolition works.

Where practical demolition material should be taken off site to relevant recycling facilities. Demolition works are to be within the site boundaries, Material such as stock bricks, reusable timbers and steel beams are to be segregated for reuse or recycling.

The contractor will be expected to provide a Site Waste Management Plan describing how site waste is to be minimised and dealt with. To minimise dust and dirt from demolition it is recommended the following measures shall be implemented.

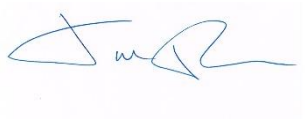
- Any debris or dust / dirt falling on the street and public highway will be cleared as it occurs.
- Demolished materials are to be removed to a skip placed in front of the site which will be emptied on a regular basis as required.

The building work should adhere to the local councils working hours relevant to the site and location.

17 CONCLUSIONS

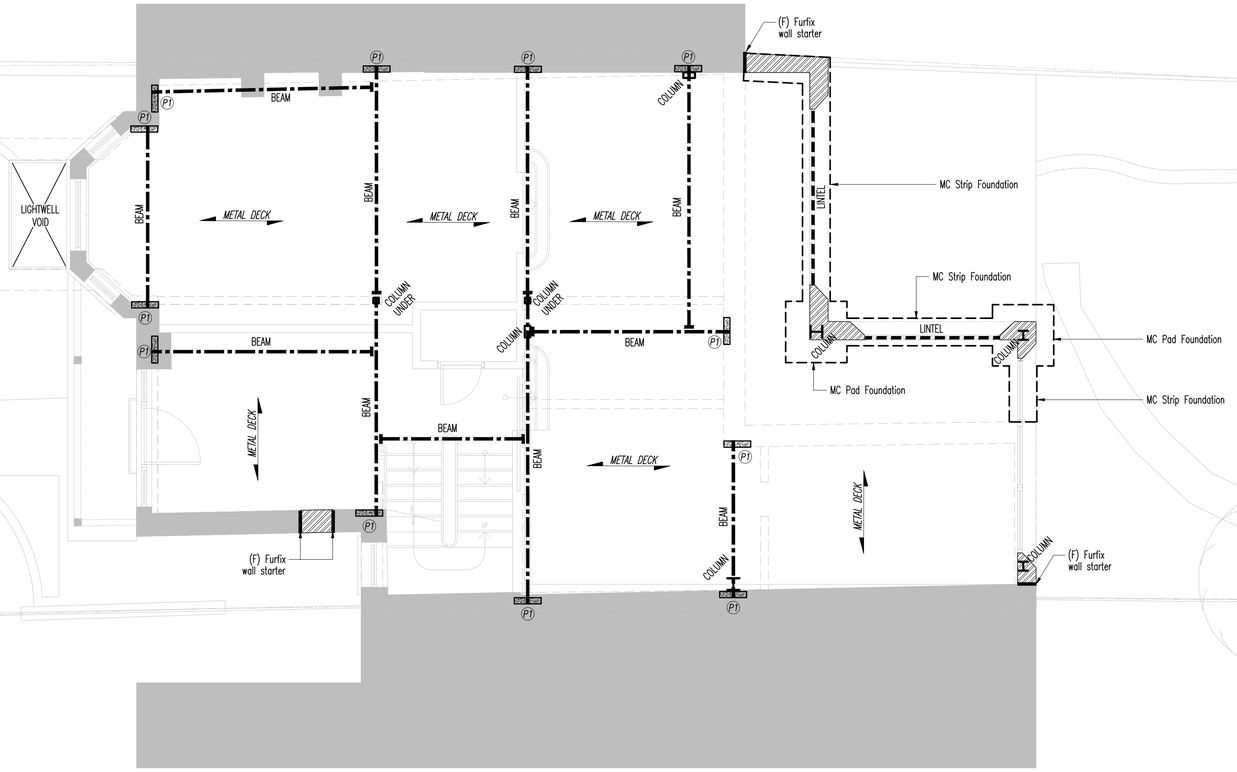
We do not anticipate the proposed works will have an adverse effect on the adjoining structures or infrastructure. The permanent works have been designed where possible to reduce the need for complex temporary works and support to the buildings and excavations.

If the proposed sequence and underpinning process is followed by a competent contractor with experience in excavating basements, then the risk to the adjoining properties will be minimised.



Tristan Toynbee MEng, CEng, MIStructE MFPWS
Toynbee Associates Ltd
10 December 2024

18 APPENDIX A : STRUCTURAL DRAWINGS



GROUND FLOOR PLAN

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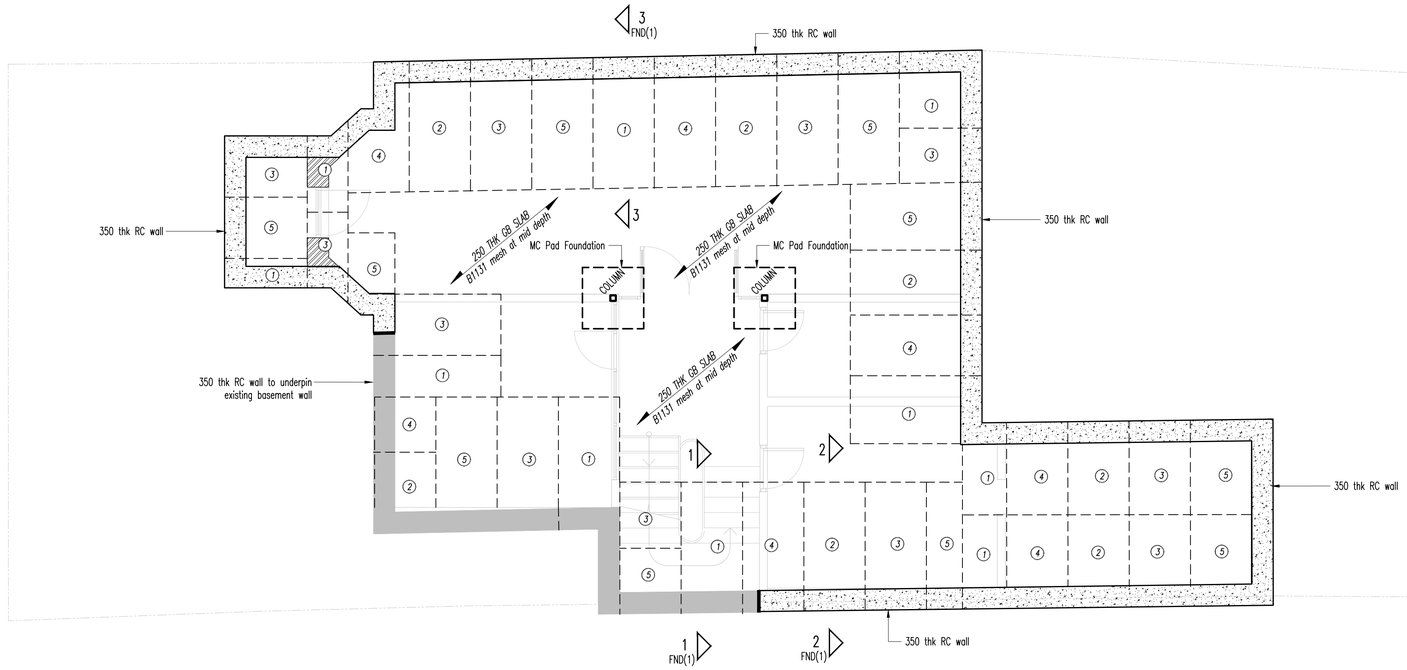

BASEMENT PLAN

Scale: 1:50 @ A1

DRAWING SHOWING STRUCTURE UNDER

FOR GENERAL NOTES REFER TO DWGS S-GEN(SERIES)
DO NOT SCALE FROM THESE DRAWINGS
ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO ORDERING MATERIALS OR STEELWORK

REV	DESCRIPTION	BY	APP.	DATE
A	PRELIMINARY ISSUE	RR	TT	04.12.24

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STRUCTURAL DRAWING

CLIENT

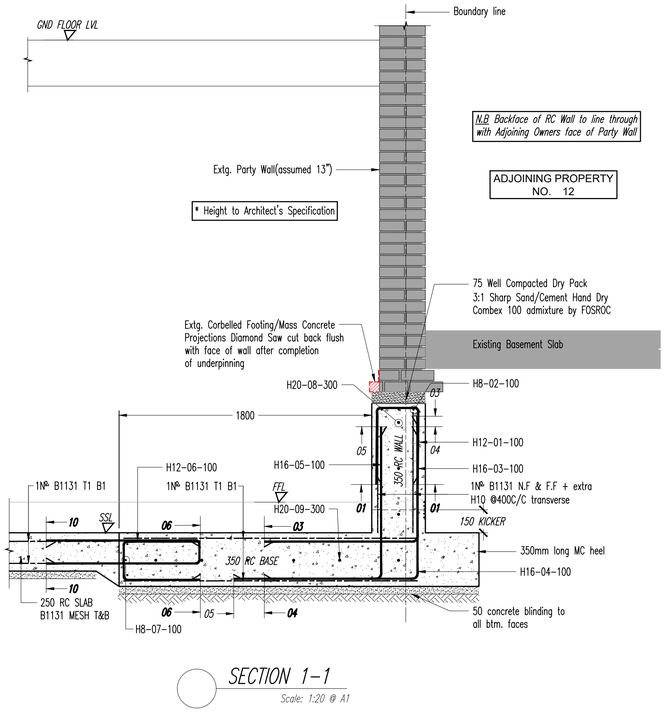
PROJECT
14 SOUTHWOOD AVENUE
LONDON N6 5RZ

DRAWING TITLE
GROUND FLOOR PLAN
BASEMENT PLAN

DATE	SCALE	DESIGN	DWN.	APP.	REV.
04.12.24	1:50@A1	RR	RR	TT	A

JOB No 2854

DRAWING No S- GA(1)



SECTION 1-1

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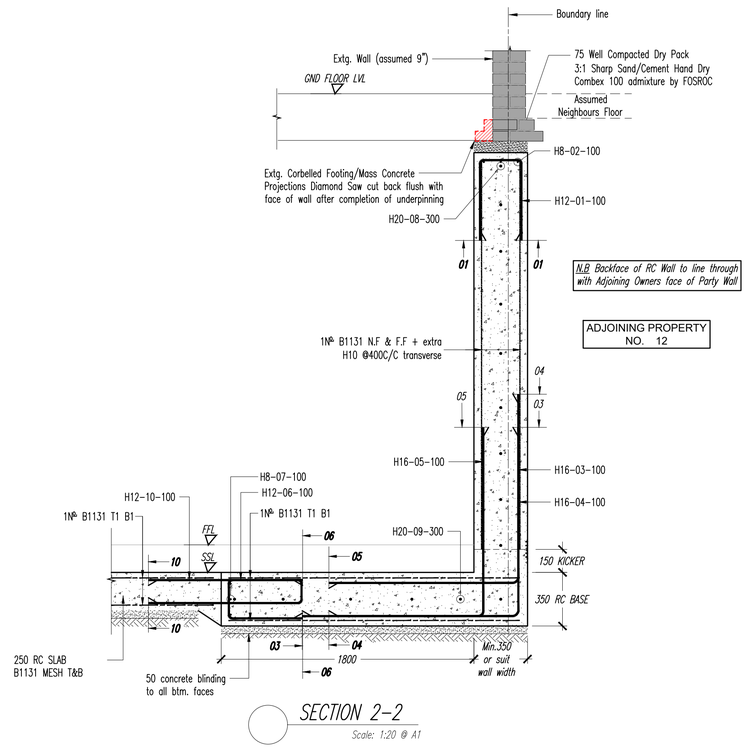

SECTION 2-2

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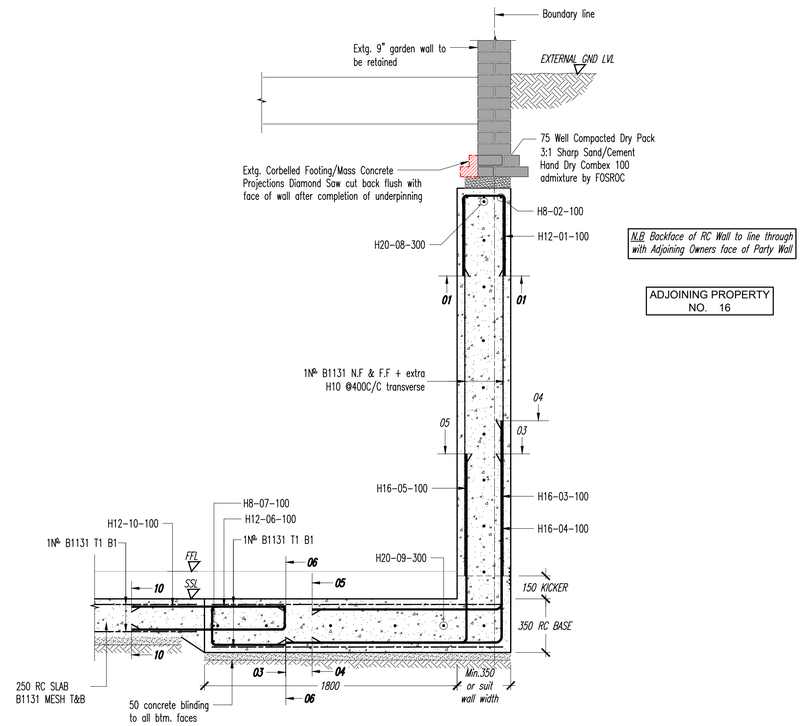

SECTION 3-3

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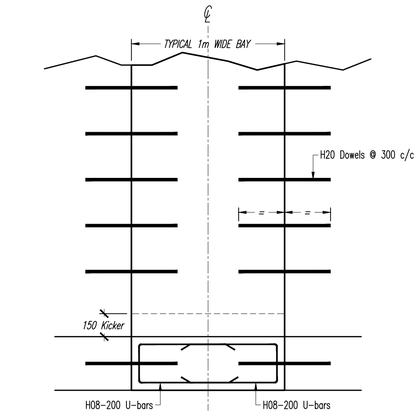


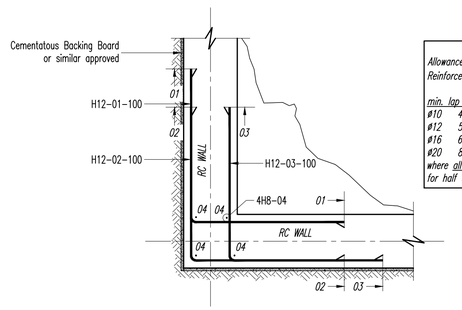
TYPICAL 1m WIDE BAY UNDERPINNING ELEVATION

Scale: 1:20 @ A1

BAR BENDING SCHEDULE
WALL CONTINUITY REINFORCEMENT IN 1m LIFTS

MEMBER	BAR MARK	TYPE & SIZE	Nº OF MBRS	Nº OF BARS IN EACH	TOTAL Nº	LENGTH OF EACH BAR † mm	SHAPE CODE	A * mm	B * mm	C * mm	D * mm	E/R * mm	REV LETTER
	01	H12	1	10	10	2000	11	1000	1000				A
	02	H12	1	10	10	2000	11	1000	1000				A
	03	H12	1	10	10	2000	11	1000	1000				A
	04	H8	1	4	4	1000	00	1000					A

THIS SCHEDULE CONFORMS TO BS 8666:2005
* SPECIFIED IN MULTIPLES OF 5mm † SPECIFIED IN MULTIPLES OF 25mm
STATUS: P PRELIMINARY T TENDER C CONSTRUCTION



CORNER DETAIL ON PLAN

Scale: 1:20 @ A1

TYPICAL RC CORNER DETAIL SHOWN IN 1M LIFTS

Allowance to be made for min. 10% site stock reinforcement steel
Reinforcement Steel for all bar diameters (ø) shall conform to BS 4449:2005

min. lap lengths & anchorage bond lengths
ø10 400mm
ø12 500mm
ø16 650mm
ø20 800mm
where all the bars are lapped in one location, increase the lap lengths for half the bars lapped in one given location by a factor of min. x 1.07

DRAWING SHOWING STRUCTURE UNDER

FOR GENERAL NOTES REFER TO DWGS S-GEN(SERIES)
DO NOT SCALE FROM THESE DRAWINGS
ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO ORDERING MATERIALS OR STEELWORK

REV	DESCRIPTION	BY	APP.	DATE
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STRUCTURAL DRAWING

CLIENT

PROJECT
14 SOUTHWOOD AVENUE
LONDON N6 5RZ

DRAWING TITLE
FOUNDATION SECTIONS
SHEET 1

DATE	SCALE	DESIGN	DWN.	APP.	REV.
04.12.24	1:50@A1	RR	RR	TT	A

JOB Nº 2854

DRAWING Nº S- FND(1)

19 *APPENDIX B : PRELIMINARY CALCULATIONS*

TOYNBEE ASSOCIATES	Project: *14 SOUTHWOOD AVENUE*		Job Ref: *2854*	
	Drawing Ref:	Calculations by: *RR*	Checked by: *TT*	Sheet:
	Part of Structure: *LOADING DATA*		Date: Dec-24	

The following loading allowances will be used in the design of the building:

Density of Materials **BS 648:1964** Schedule of weights of building materials

		γ_m **kN/m³**
Timber Softwood	=	6.00
Timber Hardwood	=	10.00
Plaster	=	9.00
Lath and Plaster	=	19.00
Lime Plaster	=	20.00
Existing Masonry	=	21.00
Light Block	=	18.00
Dense Block	=	21.00
Brick Sand lime/calcium silicate	=	21.00
Normal Weight Reinforced Concrete	=	24.00
Saturated Earth	=	20.00

Deflection Limits

Use Classification		**Live Load**	**Live & Dead Load**
Roof Beams			
Industrial		L/180	L/120
Commercial/Residential	No plaster ceiling	L/240	L/180
	plaster ceiling	L/360	L/240
Floor Beams			
Ordinary Usage		L/360	L/240
Increase Stiffness Req. for long span		L/500	L/360
Masonry Support Only		------	L/500
Cantilever Beams			
Ordinary Usage		L/180	L/120

TOYNBEE ASSOCIATES	Project: *14 SOUTHWOOD AVENUE*		Job Ref: *2854*	
	Drawing Ref:	Calculations by: *RR*	Checked by: *TT*	Sheet:
	Part of Structure: *LOADING DATA*		Date: Dec-24	

Dead Loads to BS 6399 Pt1

Walls				**kN/m²** on elevation
New Stud				
100 x 50 @ 400 c/c			=	0.08
18 thk plaster both sides			=	0.32
		total	**=**	**0.40**

Cavity Wall				
Single Skin Brickwork	100	mm	=	2.10
Single Skin Blockwork - Dense Concrete	100	mm	=	2.10
Plaster - Internal	15	mm	=	0.14
Cement Render - External	15	mm	=	0.35
Insulation (in cavity)	100	mm	=	0.02
		total	**=**	**4.70**

Solid Masonry (with plaster one side)				**kN/m²** on elevation
9 " wall				
Brick = 229	mm		=	4.80
18 thk plaster			=	0.36
		total	**=**	**5.16**

Stud + Brick Infill				**kN/m²** on elevation
4 " wall				
Brick = 102	mm		=	2.13
100 x 50 @ 400 c/c			=	0.08
18 thk plaster both sides			=	0.32
		total	**=**	**2.53**

TOYNBEE ASSOCIATES	Project: *14 SOUTHWOOD AVENUE*		Job Ref: *2854*	
	Drawing Ref:	Calculations by: *RR*	Checked by: *TT*	Sheet:
	Part of Structure: *LOADING DATA*		Date: Dec-24	

Floors

		kN/m² on plan
Existing - Timber		
200 x 50 @ 400 c/c	=	0.15
18 thk lath ceiling	=	0.68
Services (light)	=	0.15
18 thk boards	=	0.11
	total =	**1.09**
New - Timber		
200 x 50 @ 400 c/c	=	0.15
13 thk Board and skim	=	0.49
Services (light)	=	0.15
18 thk ply - 2 layers	=	0.22
Carpet	=	0.10
	total =	**1.01**
External RC Slab		
150 RC Slab	=	3.75
Reinforcement	=	0.20
50 Blinding	=	0.95
250 Hardcore	=	2.75
Service (light)	=	0.15
100 Insulation	=	0.03
50 Asphalt	=	1.05
	total =	**8.88**
New - Beam & Block		
Beam & Block 150(dp) - Blocks 20kN/m^3	=	2.50
75 thk Cement Screed	=	1.65
Services (light)	=	0.15
	total =	**4.30**
New - Timber Acoustic		
200 x 50 @ 400 c/c	=	0.15
13 thk Board and skim	=	0.49
Services (light)	=	0.15
18 thk ply - 1 layer	=	0.11
Acoustic Mat	=	0.20
	total =	**1.10**

TOYNBEE ASSOCIATES	Project: *14 SOUTHWOOD AVENUE*		Job Ref: *2854*	
	Drawing Ref:	Calculations by: *RR*	Checked by: *TT*	Sheet:
	Part of Structure: *LOADING DATA*		Date: Dec-24	

Roof

			kN/m² on plan	
Flat				
200 x 50 @ 400 c/c	=	0.15		
13 thk lath ceiling	=	0.49		
Services (light)	=	0.15		
18 thk plywood	=	0.13		
Insulation and felt	=	0.15		
total	=	**0.92**		
Pitched Roof @ 40 ° Pitch				
150 x 50 @ 400 c/c	=	0.11		Rafters
Battens / boards	=	0.03		
Services (light)	=	0.15		
0 x 0 @ 400 c/c	=	0.00		Ceiling joists
13 thk lath ceiling	=	0.49		
Clay - plain Tiles	=	0.77		
total	=	**2.03**		
Green Roof 100 mm (dp) growing medium				
150 x 50 @ 400 c/c	=	0.11		
13 thk lath ceiling	=	0.49		
Services (light)	=	0.15		
18 thk WBP Plywood Sheeting	=	0.12		
Insulation	=	0.15		
Root Barrier/Protection Mat ~ 50kg/m^2	=	0.50		
100 saturated soil	=	2.00		
total	=	**3.53**		

TOYNBEE ASSOCIATES	Project: *14 SOUTHWOOD AVENUE*		Job Ref: *2854*	
	Drawing Ref:	Calculations by: *RR*	Checked by: *TT*	Sheet:
	Part of Structure: *LOADING DATA*		Date: Dec-24	

Live Loads to BS 6399 Pt2

				kN/m² on plan		Point Load kN	
Roof	*Access*		=	0.75			
	No Access		=	0.60			
Snow	*Basic*		=	0.65			b = distance on plan to gutter
	Drift Force	$F_s = s_d b \sin\theta$	=	0.73 kN/m run	b = 1.50 m		
	Shape Coefficient	μ_1	=	0.53	$s_0 = \mu_1 s_b$ = 0.35 kN/m²		
Floors	*Residential*		=	1.50		1.80	
	Office (General Use)		=	2.50		2.70	
	Shops		=	3.00		1.80	
	Balconies (Domestic)		=	1.50		1.40	
	Congregating Areas		=	5.00		3.60	
	Movable Partitions		=	1.00			
	Bathrooms/toilets		=	2.00		1.80	
Stairs	*Residential Stairs*		=	3.00		4.00	
	Landings		=	3.00		4.00	
Handrails			=	0.60 kN/m		1.00	1.1m ABOVE FFL
Surcharge	*HA Loading for Roads*		=	10.00			
	Garden/Path		=	5.00			
	Internal live load (floors)		=	1.50			
	Space underneath extg. Timber joists		=	1.50			

Design to avoid resonance in areas susceptible to overcrowding

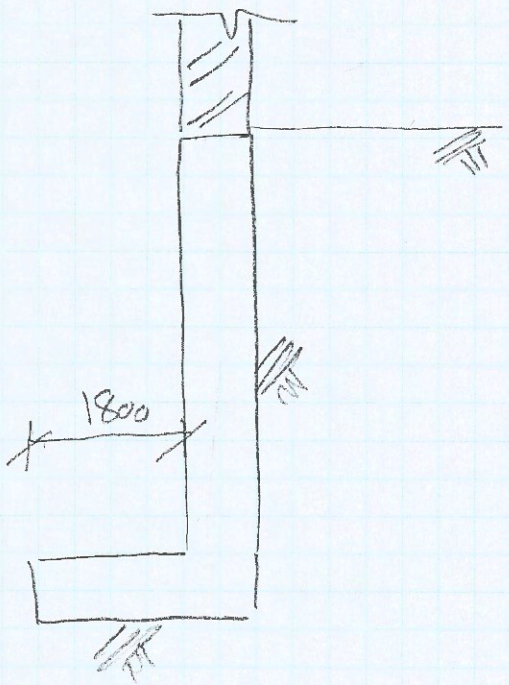
Limit Floors natural vertical frequency to ≥ 8.4 Hz, horizontal frequency to ≥ 4 Hz

where frequency determined by $f \approx \frac{18}{\sqrt{\delta}}$ *δ = Total Load Deflection*

TOYNBEE ASSOCIATES	Project: 14 SOUTHWOODS AVENUE	Job Ref: 2854	
	Drawing Ref:	Calculations by: RR	Checked by: TT / Sheet 1 of 1
	Part of Structure: UNDERPIN LOADING – PARTY WALL	Date: 04.12.24	

LOADS:

	DL (kN/m)	LL (kN/m)
* MASONRY WALL (13")	$(7.8 \times 3.2) = 30$	/
* MASONRY WALL (9")	$(5.2 \times 6.2) = 32.2$	/
* SOLID FLOOR (GF)	$(5 \times \frac{4.8}{2}) = 12$	$(1.5 \times \frac{4.8}{2}) = 3.7$
* TIMBER FLOOR (x2)	$2 \times (1.1 \times \frac{5}{2}) = 5.5$	$2 \times (1.5 \times \frac{5}{2}) = 7.5$
* ROOF	$(1.3 \times \frac{5}{2}) = 3.3$	$(0.75 \times \frac{5}{2}) = 1.9$
	83	13.1



RETAINING WALL ANALYSIS

In accordance with EN1997-1:2004 incorporating Corrigendum dated February 2009 and the UK National Annex incorporating Corrigendum No.1

Tedds calculation version 2.9.22

Retaining wall details

Stem type	Cantilever
Stem height	h_{stem} = **3700** mm
Stem thickness	t_{stem} = **350** mm
Angle to rear face of stem	α = **90** deg
Stem density	γ_{stem} = **25** kN/m^3
Toe length	l_{toe} = **1800** mm
Base thickness	t_{base} = **350** mm
Base density	γ_{base} = **25** kN/m^3
Height of retained soil	h_{ret} = **3700** mm
Angle of soil surface	β = **0** deg
Depth of cover	d_{cover} = **0** mm

Retained soil properties

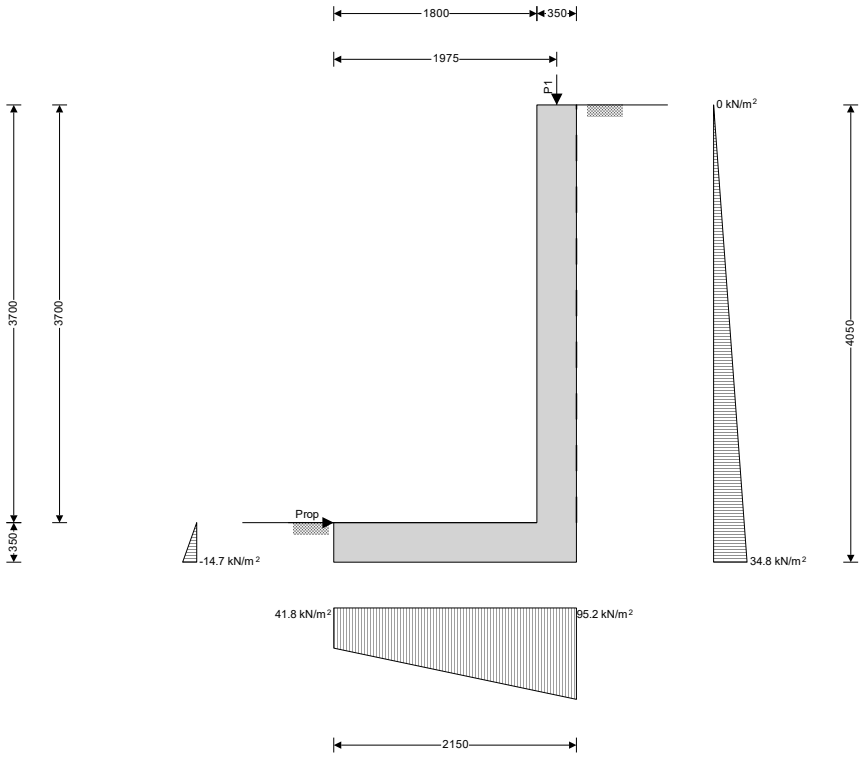
Soil type	Firm clay
Moist density	γ_{mr} = **18** kN/m^3
Saturated density	γ_{sr} = **18** kN/m^3
Characteristic effective shear resistance angle	$\phi'_{r.k}$ = **18** deg
Characteristic wall friction angle	$\delta_{r.k}$ = **9** deg

Base soil properties

Soil type	Firm clay
Soil density	γ_b = **18** kN/m^3
Characteristic effective shear resistance angle	$\phi'_{b.k}$ = **18** deg
Characteristic wall friction angle	$\delta_{b.k}$ = **9** deg
Characteristic base friction angle	$\delta_{bb.k}$ = **12** deg
Presumed bearing capacity	$P_{bearing}$ = **150** kN/m^2

Loading details

Vertical line load at 1975 mm	P_{G1} = **83** kN/m
	P_{Q1} = **13.1** kN/m



General arrangement - sketch pressures relate to bearing check

Calculate retaining wall geometry

Base length — $l_{base} = l_{toe} + t_{stem}$ = **2150** mm

Moist soil height — $h_{moist} = h_{soil}$ = **3700** mm

Retained surface length — $l_{sur} = l_{heel}$ = **0** mm

Effective height of wall — $h_{eff} = h_{base} + d_{cover} + h_{ret}$ = **4050** mm

Area of wall stem — $A_{stem} = h_{stem} \times t_{stem}$ = **1.295** m^2

- Distance to vertical component — $x_{stem} = l_{toe} + t_{stem} / 2$ = **1975** mm

Area of wall base — $A_{base} = l_{base} \times t_{base}$ = **0.753** m^2

- Distance to vertical component — $x_{base} = l_{base} / 2$ = **1075** mm

Using Coulomb theory

Active pressure coefficient — $K_A = \sin(\alpha + \phi'_{r.k})^2 / (\sin(\alpha)^2 \times \sin(\alpha - \delta_{r.k}) \times [1 + \sqrt{[\sin(\phi'_{r.k} + \delta_{r.k}) \times \sin(\phi'_{r.k} - \beta) / (\sin(\alpha - \delta_{r.k}) \times \sin(\alpha + \beta))]}]^2)$ = **0.483**

Passive pressure coefficient — $K_P = \sin(90 - \phi'_{b.k})^2 / (\sin(90 + \delta_{b.k}) \times [1 - \sqrt{[\sin(\phi'_{b.k} + \delta_{b.k}) \times \sin(\phi'_{b.k}) / (\sin(90 + \delta_{b.k}))]}]^2)$ = **2.359**

Bearing pressure check

Vertical forces on wall

Wall stem — $F_{stem} = A_{stem} \times \gamma_{stem}$ = **32.4** kN/m

Wall base — $F_{base} = A_{base} \times \gamma_{base}$ = **18.8** kN/m

Line loads — $F_{P\_v} = P_{G1} + P_{Q1}$ = **96.1** kN/m

Total — $F_{total\_v} = F_{stem} + F_{base} + F_{P\_v}$ = **147.3** kN/m

Horizontal forces on wall

Moist retained soil $F_{moist\_h} = K_A \times \cos(\delta_{r.k}) \times \gamma_{mr} \times h_{eff}^2 / 2 =$ **70.4** kN/m

Base soil $F_{pass\_h} = -K_P \times \cos(\delta_{b.k}) \times \gamma_b \times (d_{cover} + h_{base})^2 / 2 =$ **-2.6** kN/m

Total $F_{total\_h} = F_{moist\_h} + F_{pass\_h} =$ **67.9** kN/m

Moments on wall

Wall stem $M_{stem} = F_{stem} \times x_{stem} =$ **63.9** kNm/m

Wall base $M_{base} = F_{base} \times x_{base} =$ **20.2** kNm/m

Line loads $M_P = (P_{G1} + P_{Q1}) \times p_1 =$ **189.8** kNm/m

Moist retained soil $M_{moist} = -F_{moist\_h} \times x_{moist\_h} =$ **-95.1** kNm/m

Total $M_{total} = M_{stem} + M_{base} + M_P + M_{moist} =$ **178.9** kNm/m

Check bearing pressure

Propping force $F_{prop\_base} = F_{total\_h} =$ **67.9** kN/m

Distance to reaction $\bar{x} = M_{total} / F_{total\_v} =$ **1214** mm

Eccentricity of reaction $e = \bar{x} - l_{base} / 2 =$ **139** mm

Loaded length of base $l_{load} = l_{base} =$ **2150** mm

Bearing pressure at toe $q_{toe} = F_{total\_v} / l_{base} \times (1 - 6 \times e / l_{base}) =$ **41.8** kN/m^2

Bearing pressure at heel $q_{heel} = F_{total\_v} / l_{base} \times (1 + 6 \times e / l_{base}) =$ **95.2** kN/m^2

Factor of safety $FoS_{bp} = P_{bearing} / \max(q_{toe}, q_{heel}) =$ **1.576**

PASS - Allowable bearing pressure exceeds maximum applied bearing pressure

20 *APPENDIX C : UNDERPINNING SPECIFICATION*

TOYNBEE ASSOCIATES

2024/2854

14 SOUTHWOOD AVENUE

UNDERPINNING SPECIFICATION

TOYNBEE ASSOCIATES LTD
352 PENHURST HOUSE
356 BATTERSEA PARK ROAD
LONDON SW11 3BY

Date: 06 December 2024

TOYNBEE ASSOCIATES	Project		Job Ref	
	14 SOUTHWOOD ROAD		2854	
	Drawing Ref	Calculations by	Checked by	Drawing Ref
		RR	*TT*	
	Part of Structure		Date	
	UNDERPINNING SPECIFICATION			

UNDERPINNING SPECIFICATION

GENERAL UNDERPINNING SPECIFICATION

PROJECT	14 SOUTHWOOD AVENUE
DATE OF ISSUE	DECEMBER 2024
PREPARED BY	TRISTAN TOYNBEE/ RAVEEN RASHEED
REVISION	

1. Underpinning shall be excavated in short sections/bays not exceeding 1000mm in width.
2. The sequence of the underpinning shall be such that any given underpin will be completed, dry-packed and a minimum period of 48 hours elapsed before an adjacent excavation commenced to form another underpin. This will ensure the completed underpin has gained enough strength to maintain geometry after the shuttering has been struck.
3. In the event that the existing foundations to the wall are found to be unstable, sacrificial steel jacks shall be installed underneath the foundation to prop the bottom few courses of bricks to maintain the structural integrity of the wall over. These steel jacks shall be left in place and shall be incorporated into the concrete stem.
4. In the event that the ground is unstable, lateral propping shall be provided as required to the rear of the excavation and to the sides of the excavated working trench. The front and side faces of the excavation shall be propped using trench sheeting or 2 layers of plywood, timber boards and Acrow props as appropriate. Sacrificial back shutters shall be used to the rear face of the excavation (i.e. underneath the wall) if required. Cementitious grout will be poured behind the backshutters to fill up the voids behind the backshutters.
5. The rear of the underpin is to be flush with the back face of the party wall on the Adjoining Owners side. This is to allow the future excavation and construction of an adjoining basement as required.
6. Excavation for a single underpin section shall be dug in a day, and the concrete to the stem shall be poured by the end of the same day.
7. Remove or compact any loose material/soil to the sides/back and base of the excavation prior to placing of the mass concrete underpinning.

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LONDON SW11 3BY

8. Protect the excavated bay with 50mm thickness of concrete if there is to be a delay of more than four hours between the completion of the excavation and casting of the concrete underpinning.
9. The concrete shall be poured up to within 50 – 75mm of the underside of the existing wall foundations in one lift only.
10. The concrete shall be placed and fully compacted so as to avoid cold joints, honeycombing and minimising segregation or other defects in the hardened concrete.
11. The compaction shall be carried out without causing damage or displacement of the formwork etc.
12. On the following day, the gap between the concrete and the underside of the existing foundation shall be drypacked with a 3:1 Sharp Sand to C35 concrete dry mix using 5 – 10mm coarse aggregate and “Combex 100” expanding admixture by Fosroc UK Ltd (in accordance with their instructions) if required to improve the workability of the drypack
13. Once the drypack has gained sufficient strength, any protrusions of the footings into building owners site shall be carefully trimmed back using hand tools to avoid causing any damage to the foundation. The protrusions shall be trimmed back to be flush in-line with the face of the wall above.
14. A minimum of 48 hours shall be allowed before adjacent sections are excavated to form a new underpin.
15. Adjacent underpins shall be connected using T16 dowel bars 600mm long, 300mm embedment each side, at 300mm vertical centres.
16. Grade of concrete shall be C35 with minimum cement content 300kg/m^3, maximum free water to cement ratio 0.60, slump 100mm.
17. The concrete shall conform to BS 8500-2 and BS EN 206-1. Any chloride content of the proposed concrete including chlorides contained in any admixtures shall be limited with BS EN 206-1:2006 and BS 8500-2:2006.
18. Restrictions are placed on the amount of sulfate content of the proposed concrete in accordance with BS 8500-2:2006.
19. No additions or changes to the fresh concrete shall be made after batching.

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21 *APPENDIX D : SEQUENCE OF WORK*

TOYNBEE ASSOCIATES

BASEMENT TEMPORARY WORKS METHOD STATEMENT
14 SOUTHWOOD AVENUE

This Temporary Works Package is to be read in conjunction with Toynbee Associates Ltd Structural Engineering drawings Job No. 2854.

TW	*01*	*Typical Single Full Height Underpin*
TW	*02*	*Typical Single Partial Height Underpin*
TW	*03*	*Front Lightwell*

This Temporary Works Package details the sequences and procedures for the installation of temporary works in order to complete the installation of the permanent works to the structure.

Please note that dwgs. TW(1) to TW(3) are sequence drawings and not detail drawings, hence they show the indicative construction sequence only and do not show construction details (e.g. starter bars, timber struts, etc.) For construction details refer to the structural engineering drawings. These drawings are diagrammatic only and hence do not show exact arrangements. Exact arrangements to be determined on site.

Please note the preferred supplier for Temporary Works Propping/Needling is Peri Ltd using the **PERI Ltd. MULTI-PROP System** and associated peripherals as required by the Contractor for ease of man handling and placement on site.

DESIGN BRIEF

Horizontal and/or Raking propping will be required to the RC Underpins / RC Retaining Walls until such time as the RC Basement Slab has been constructed, cured and can provide permanent lateral restraint to the base of the retaining walls to prevent sliding.

Provide needling to Internal and Bay Windows for the removal of the existing foundations and any stepped corbel footings.

Provide needling to the internal structural walls to allow excavation and installation of the steel beams and frames.

Formation of the underpins under to the existing basement walls, and full height underpins to remaining walls.

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LONDON SW11 3BY

1. CASTING OF RC RING BEAM TO FRONT LIGHTWELL

Excavate externally to form perimeter trench in which to form RC Ring Beam. Note if RC ring beam in close proximity to neighbouring properties, to be to the depth of the existing foundations of the house allowing for load spread through the soil at 45 degrees.

Form cages for reinforcement in set lengths and drop these into the trenches and push continuity reinforcement into the earth below to a maximum depth of 500 mm.

Cast RC ring beam to underside external ground level as show on the architects drawings. Where required install needles and Acrow props as per TW(3) to support the bay window.

2. UNDERPINNING PARTY WALLS

Removal of existing Ground Floor joists and associated sleeper walls (if applicable) and preparation for digging the foundations.

The existing cellar floor will be removed to the top of the existing foundations.

Then RC Underpins will be constructed in the '① to ⑤' hit and miss sequence
(DWG. 2854-S-GA(1)), with each Underpin Section being max. 1 m wide. The construction sequence of each Underpin section will be as follows:

All the RC Underpin sections marked ① (dwg. 2854-S-GA(1)) will be excavated using a Mini Excavator or by hand (Stage 2 to 3 on dwg. TW(1)) in maximum 1m lifts. The exposed excavation side and back faces will be shored up with 18 mm thick WBP Plywood structural grade. The face behind the underpin and to the adjoining owners side will be shored using 15mm thick cementitious backing board or trench lap sheeting type KD4 with slip membrane or similar approved and supported by C24 timber struts, braces (as required) and walers.

Edge protection consisting of 4" x 2" SW timber posts, double handrails and toe boards will be erected around the top of the excavation as per HSE directive to prevent falls into Excavations.

Reinforcement to the RC Bases of the Underpin sections will be fixed in place Stage 4. Horizontal dowel bars will be pushed into the adjoining earth faces between Underpins sections. Further dowel bars (as specified on the permanent works dwgs.) will be driven into the soil to act as continuity reinforcement for the remainder of the RC Basement slab to be constructed at a later stage.

The concrete to the RC bases will be shuttered and poured (Stage 4 on dwg. TW(1)).

On the following day, the stems of the RC Underpin sections will be poured up to approximately 75 mm of the underside of the existing foundation of the Party Walls
(Stage 5 on dwg. TW(1)).

On curing and completion of the construction of each RC Underpin section, the face shutter shall be struck. Each RC Underpin section will be propped against the central bank/berm of earth using standard Acrow Trench Props (Prop Size 0/Size 1), typically 3 No. Trench Props per RC Underpin section (Stage 5 on dwg. TW-01). This is to prevent sliding of the RC Underpin until the adjacent RC Basement Slab has been cast and cured, reaching 7 day working strength.

Alternatively, the excavation will be backfilled with excavation spoil or granular material in 300 mm layers, each layer compacted with 3 passes of a whacker plate.

On the following day Stage 6, the gap between the top of the underpin and the bottom of the existing foundation will be dry packed with 3:1 sharp sand/cement hand dry mix with non-shrinkable additive.

Once the dry pack has gained sufficient strength, any protruding foundation/stepped corbel brick footing will be trimmed back to be flush with the front face of the Underpinning using diamond saw or drilling equipment.

The next sections of RC Underpins following the sequence of '① to ⑤' for the RC Underpinning sequence will then be constructed as per the Stages shown on dwg. TW(1).

H20 dowels @ 300 c/c to each construction joint are to be provided to allow full continuity between adjacent elements. This central RC Strip Foundation will allow for the split span of Cross Propping.

3. UNDERPINNING TO RC RING BEAMS FORMING THE FRONT LIGHTWELL.

Locally excavated and underpin the Ring Beams in max. 1.0m sections as per 2854-S-GA(1).

Reduce the soil level uniformly down to the New Basement Formation level in 150mm lifts. Provide Acrow/Trench Props @ max 1.2m c/c to the u/side of the RC Ring Beam to provide support.

The underpins will be constructed in the '1 to 5' Hit & Miss sequence with each underpin section being 1 m wide. The construction sequence of each underpin section will be as follows:

All the underpin sections marked '①' (dwg.TW(3)) will be excavated using a mini excavator.
The excavation faces will be shored with 18 mm thick plywood or Lap trench sheeting KD4/Mabey M8 Sheeting and C24 timber frames /walers, if required. Edge protection consisting of 4" x 2" timber posts, double handrails and toe boards will be erected around the top of the excavation.

Reinforcement to the bases of the underpin sections will be fixed. Horizontal dowel bars will be pushed into the adjoining Earth faces between underpins sections. Further dowel bars will be driven into the soil to act as continuity reinforcement for the remainder of the basement slab to be constructed at a later stage.

The concrete to the bases will be poured as per stages 8 & 9 on TW(3).

On the following day, the face shuttering will be installed and temporary lateral propping between shuttering installed. The stems of the underpin sections will be poured up to the u/side of the RC Ring Beam. All continuity reinforcement from the RC Ring Beams will be securely fixed with tie wires to the stem reinforcement.

On completion of the construction of each underpin section, the face shutter will be struck.

4. PADSTONE CUTTING

Cut the pad stones (as per structural engineer drawings/specifications) using angle grinder and hand chisel, small handheld percussive tools allowed on the walls as they are not party walls. No percussive hand tools on the party walls.

Pad stones to be a maximum of a half brick thickness/depth of the Wall.

Shutter and cast the Pad stones where required, install Spreader Beams as per Structural Engineers details, line and level, grout and dry pack to underside of existing masonry above.

After 48 hours of the pad stones spreaders being cast cut/remove brickwork (to be done by hand chisel and using angle grinder to minimise any vibration) to allow for the installation of the steel beams.

Install the beams and cast concrete/brick up around the steels and dry pack between the top of the steels and the brickwork approximately 50mm.

Repair and make good to leave it flush with the wall.

5. BASEMENT SLAB EXCAVATION

Walers, cross pops and diagonal props will be installed to prop the base of the underpins prior to bulk excavations works.

The central berm will be removed in 150mm lifts down to formation level. The slab will be cast and allowed to cure.

A period of 7 days will be allowed to elapse, when the basement slab has gained sufficient strength to act as permanent restraint to the retaining walls, the horizontal props will be removed and reused in the following sections to be built.

6. ABOVE GROUND ALTERATIONS/EXTENSION

The heavily loaded beams and frames will be installed by completing the underpins either side of the beams and frame locations. The underpins which support these beams and frames will be constructed first and backfilled. Followed by installation of needles to the existing load bearing ground floor walls. This will allow the main ground floor beams and frames to be installed, enabling the installation of upper floor beams and columns.

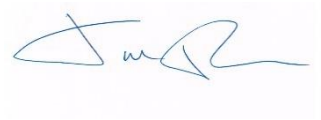
7. GROUND WATER

The ground investigation report does show a water table as perched above the London clay formation this will be locally delt with via sumps into the

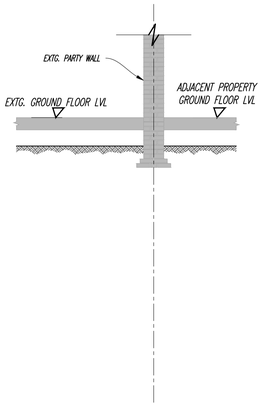
8. INSPECTION OF TEMPORARY WORKS

Once the temporary works have been installed, they will be inspected by the Temporary Works Engineer to verify that they have been correctly installed according to the drawings and they are providing support and stability to the works, as intended.

Signed for and On Behalf of Toynbee Associates Ltd

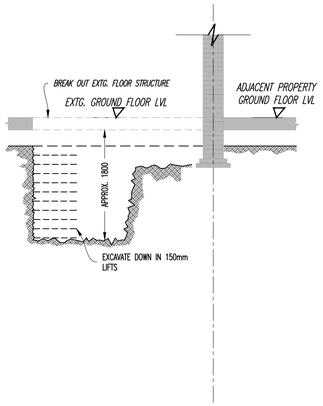


Tristan Toynbee Meng CEng MIStructE MFPWS
Director
Toynbee Associates Ltd
6 December 2024



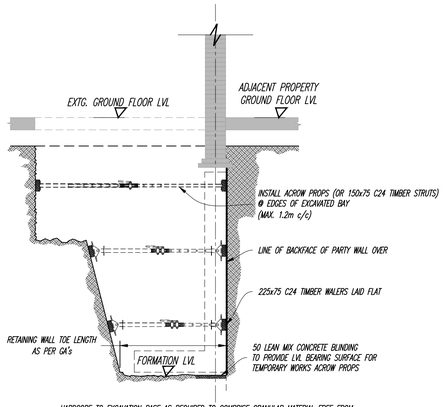
0 STAGE 0

EXTG. GROUND CONDITIONS



1 STAGE 1

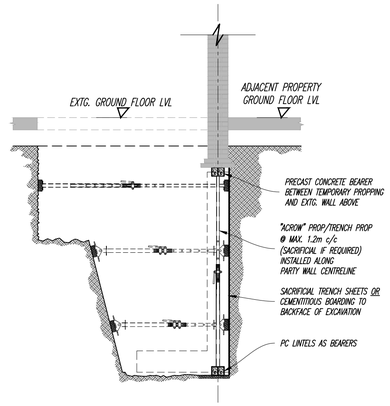
REDUCTION IN SOIL LVL DOWN TO FORMATION LVL



HARDCORE TO EXCAVATION BASE AS REQUIRED TO COMPRISE GRANULAR MATERIAL FREE FROM EXCESSIVE DUST WELL GRADED WITH ALL PIECES LESS THAN 75mm IN ANY DIRECTION
10% FINES VALUE OF 50kN WHEN TESTING TO BS EN 1097-2:2010
SPREAD AND LEVELLED IN 150mm LAYERS, WELL COMPACTED IN EACH LAYER

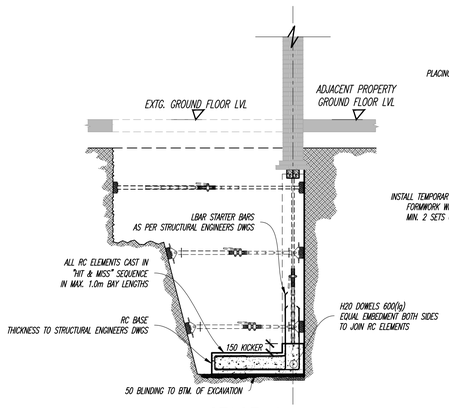
2 STAGE 2

EXCAVATION @ FORMATION LVL



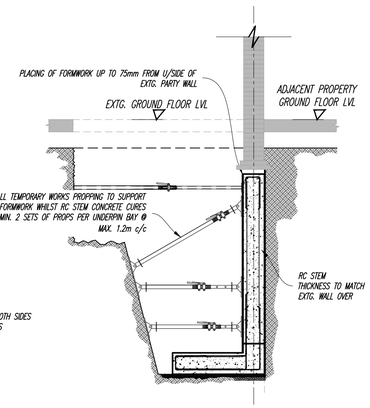
3 STAGE 3

EXCAVATION @ FORMATION LVL



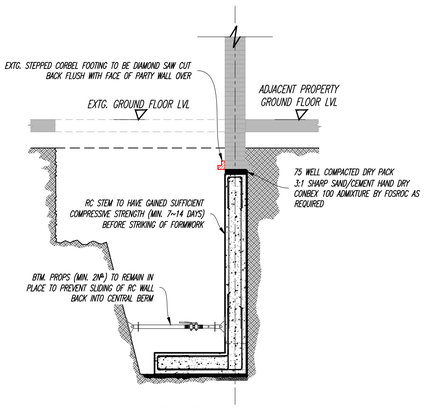
4 STAGE 4

INSITU RC BASE TO UNDERPIN



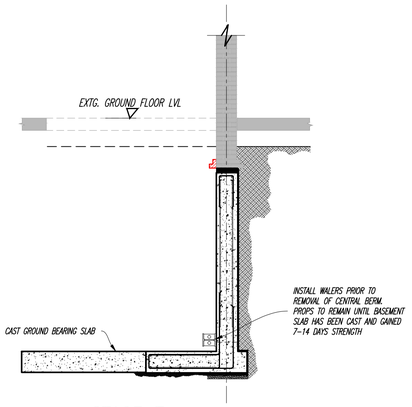
5 STAGE 5

INSITU RC STEM TO UNDERPIN



6 STAGE 6

STRIKING OF FORMWORK



7 STAGE 7

INSTALL WALERS AND CAST BASEMENT SLAB

SINGLE RC UNDERPINNING TEMPORARY WORKS SEQUENCE OF CONSTRUCTION

DRAWING SHOWING STRUCTURE UNDER

FOR GENERAL NOTES REFER TO DWGS S-GEN(SERIES)
DO NOT SCALE FROM THESE DRAWINGS
ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO ORDERING MATERIALS OR STEELWORK

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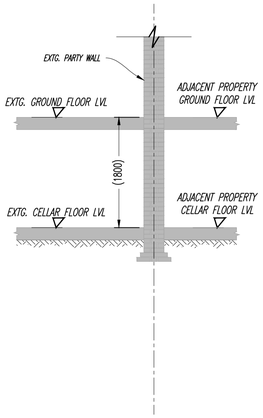
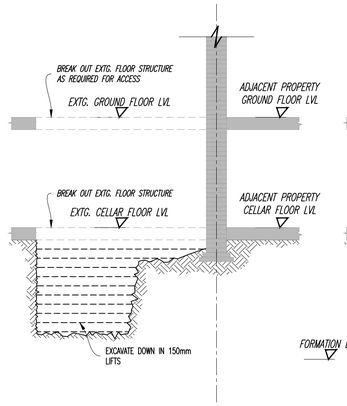
JOB No 2854

DRAWING No S- TW(1)



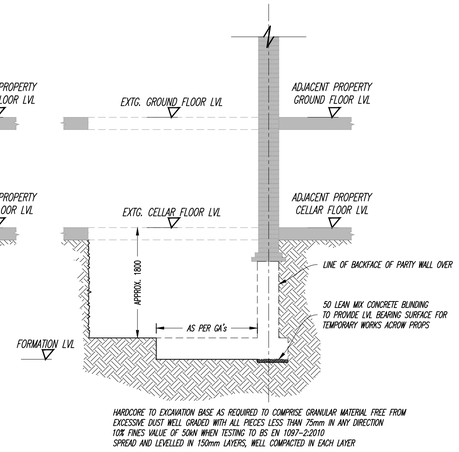
0 STAGE 0

EXTG. GROUND CONDITIONS



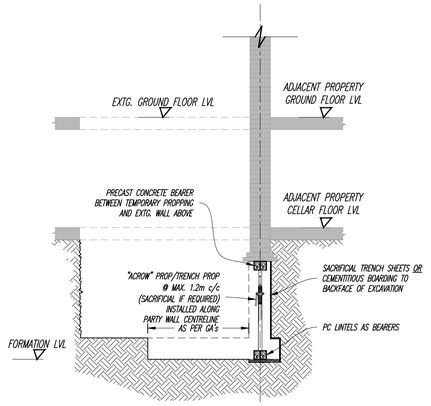
1 STAGE 1

REDUCTION IN SOIL LVL DOWN TO FORMATION LVL



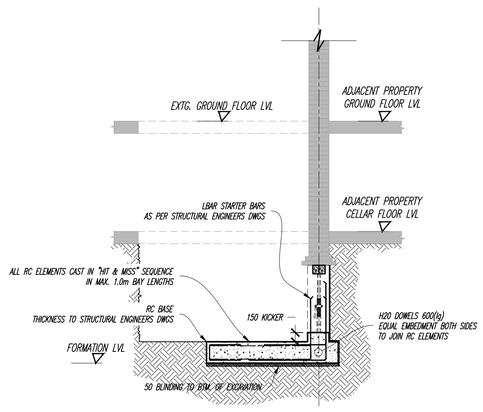
2 STAGE 2

EXCAVATION @ FORMATION LVL



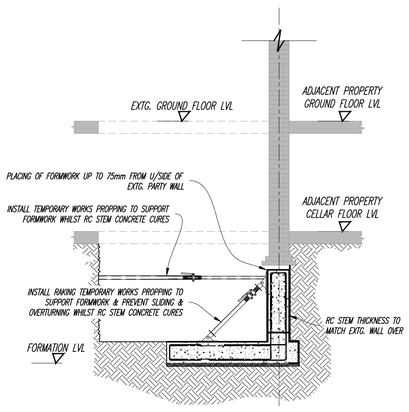
3 STAGE 3

EXCAVATION @ FORMATION LVL



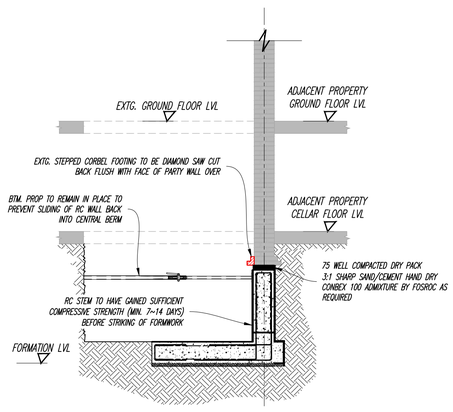
4 STAGE 4

INSITU RC BASE TO UNDERPIN



5 STAGE 5

INSITU RC STEM TO UNDERPIN



6 STAGE 6

STRIKING OF FORMWORK

DRAWING SHOWING STRUCTURE UNDER

FOR GENERAL NOTES REFER TO DWGS S-GEN(SERIES)
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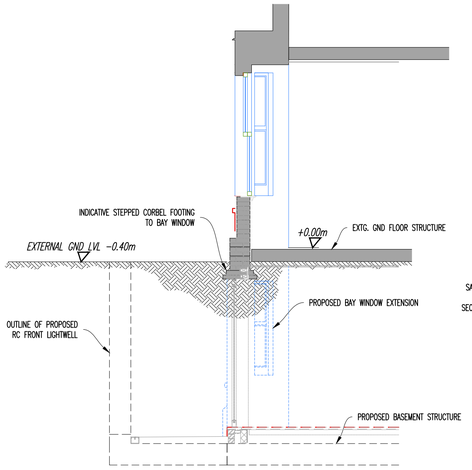
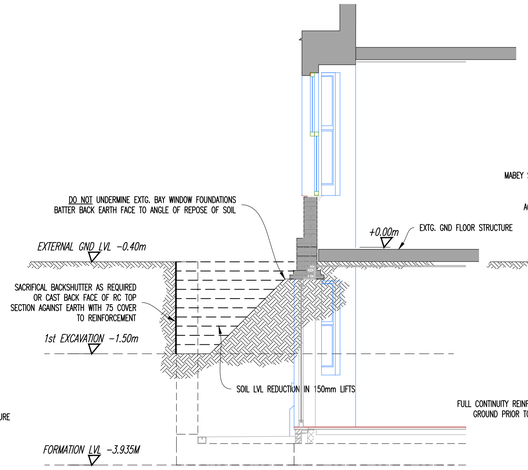
JOB No 2854

DRAWING No S- TW(2)



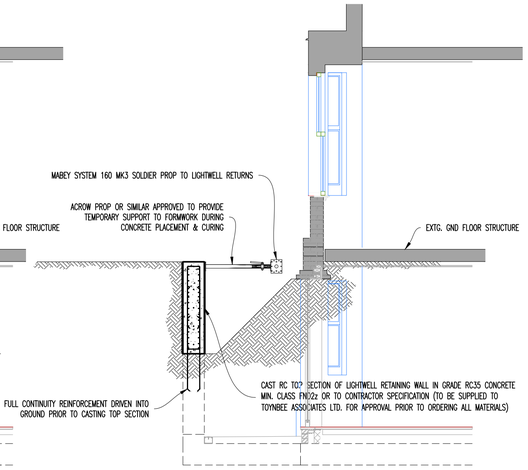
0 **STAGE 0**

EXTG. GROUND CONDITIONS



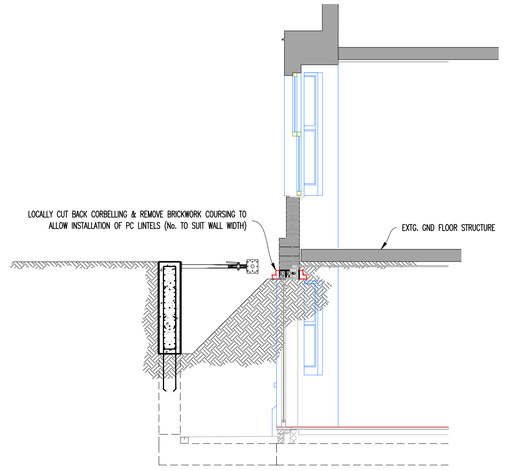
1 **STAGE 1**

REDUCTION IN SOIL LVL DOWN TO 1st EXCAVATION LVL



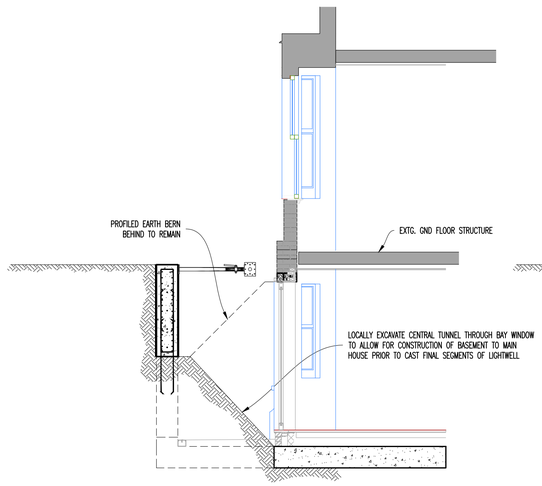
2 **STAGE 2**

TOP RC LIGHTWELL RING BEAM SECTION CASTING



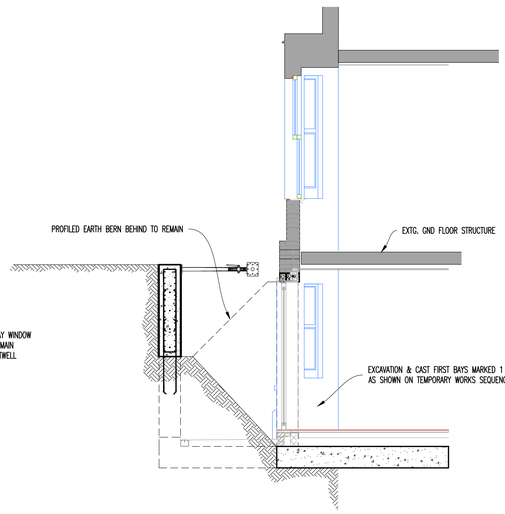
3 **STAGE 3**

INSTALLATION OF BAY WINDOW LINTELS



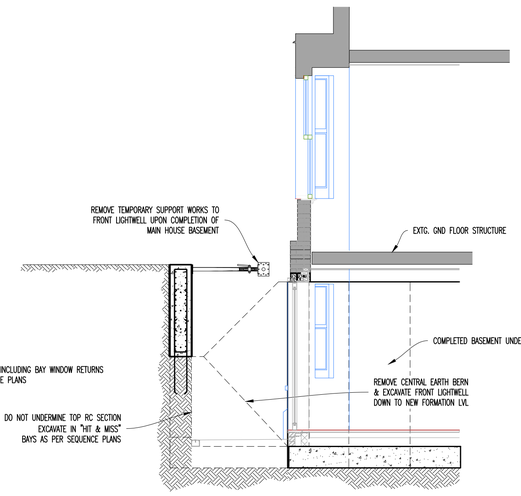
4 **STAGE 4**

EXCAVATION TO FORM CENTRAL ACCESS TUNNEL TO FACILITATE MAIN HOUSE BASEMENT EXCAVATION



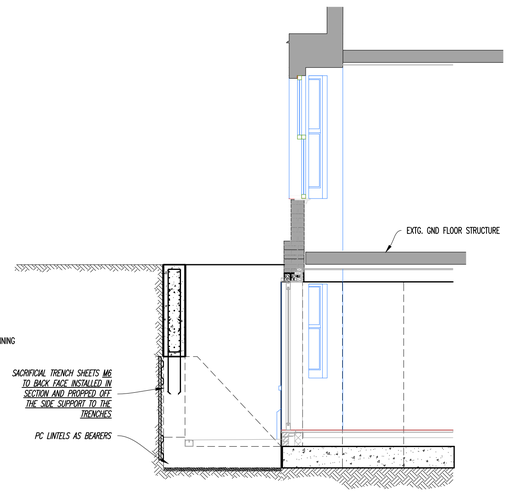
5 **STAGE 5**

CASTING OF ADJACENT MAIN BASEMENT WALLS



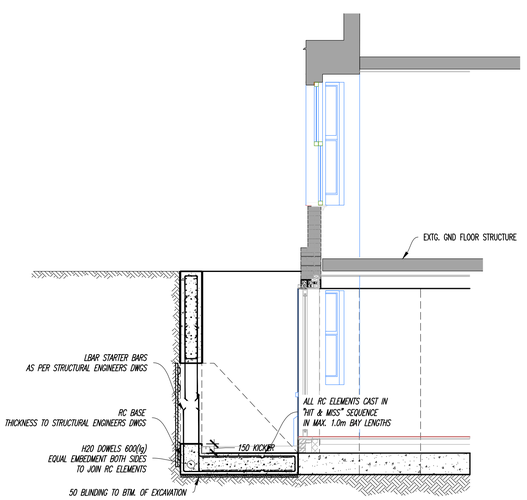
6 **STAGE 6**

EXCAVATION DOWN TO LIGHTWELL FORMATION LVL



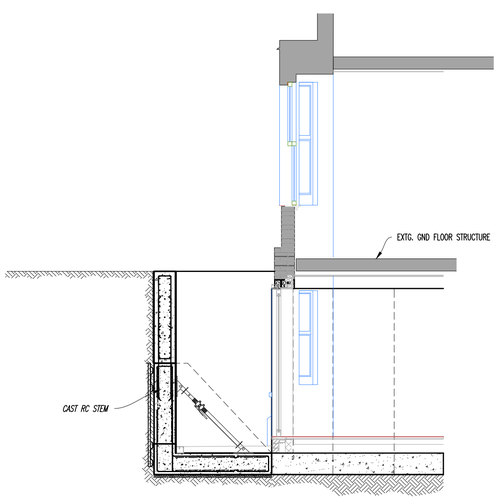
7 **STAGE 7**

FINAL EXCAVATION @ FORMATION LVL



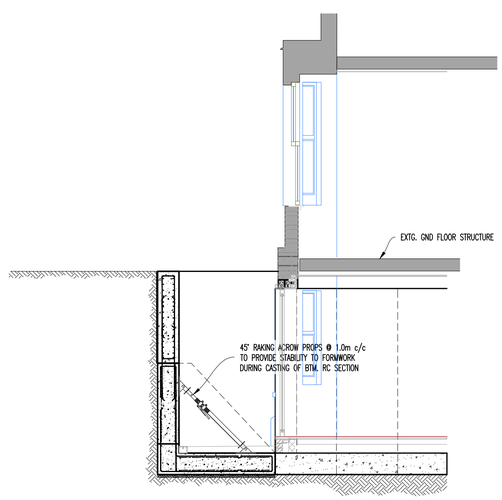
8 **STAGE 8**

INSITU RC BASE TO UNDERPIN



9 **STAGE 9**

INSITU RC STEM TO UNDERPIN



10 **STAGE 10**

STRIKING OF FORMWORK

DRAWING SHOWING STRUCTURE UNDER

FOR GENERAL NOTES REFER TO DWGS S-GEN(SERIES)
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JOB No	DRAWING No
2854	S- TW(3)

22 APPENDIX E : GeoSmart REPORT

GeoSmart Information

FloodSmart BIA

Basement Impact Assessment

Site Address

14 Southwood Avenue
London
N6 5RZ

Grid Reference

528650, 187910

Report Prepared for

Miss C A Peree Bonin

Date

2024-12-06

Report Status

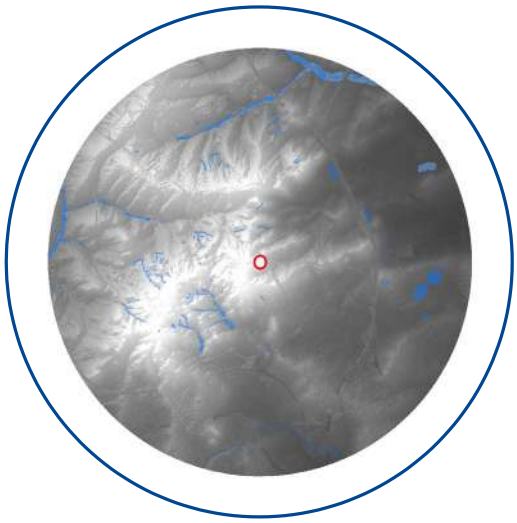
FINAL

Site Area

0.03 ha

Report Reference

84302R1



RISK – Low to Moderate

The proposed basement could be impacted by groundwater within permeable horizons within the Claygate Member, although significant groundwater flows are unlikely to be encountered.

The deepening of the basement could potentially cause an increase in the resistance of groundwater flows as only c. 1 m of aquifer will remain beneath the basement, although the impacts may be constrained the Claygate Member being unlikely to contain substantial groundwater flows.

Surface water ponding could potentially occur within the proposed open lightwell. Mitigation measures have been proposed to reduce the risk of surface water flooding.

Report Author

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Report Checker

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Consultant

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1. Executive summary

Site analysis

Source	Risks to the proposed development*	Impacts from the proposed development **	After Mitigation ***
Groundwater	Moderate	Moderate	Low to Moderate
Surface water	Low	Very Low	Very Low

*RISKS TO THE PROPOSED DEVELOPMENT considers the risk of flooding in the proposed basement, from each of the listed sources. They are based on a detailed analysis of the flooding risks to the proposed development, including national risk maps, EA model data and BGS borehole records. Note that the risks presented in the baseline mapping are applicable to surface development only, whereas the risks presented on the table are applicable to the proposed subterranean development and therefore may be higher than presented in the FRA.

**IMPACTS FROM THE PROPOSED DEVELOPMENT considers the potential impacts that the proposed basement may have on the underlying hydrogeological conditions, including to what extent the flood risks would be impacted at neighbouring and downstream properties.

*** AFTER MITIGATION reflects a final risk rating, which would be applicable to the development should all suggested mitigation be implemented.

Summary of existing and proposed development

The Site is currently used within a residential capacity as a three storey terraced, four-bedroom dwelling with a basement level, including associated access, driveway and landscaping. The existing basement has finished floor levels (FFLs) set at c. 2.06 m below ground level (bgl) (98.30 mAOD). It is used as a plant room and storage space and is accessible via a set of internal stairs.

Development proposals comprise the extension and deepening of the basement, as well as the construction of a single-storey rear extension. Proposals also include the internal reconfiguration of the dwelling.

The proposed basement will have FFLs set at c. 3.00 m bgl (97.36 mAOD) and will be used as living accommodation, including a games room, media room, utility room and wine cellar. Access will be provided via an internal staircase. An open lightwell (with walk-on grate) is proposed to the front of the basement. The depth of the foundations is assumed to be c. 0.5 m for the purposes of this assessment.

Summary of groundwater flood risks

The Site setting is summarised as follows:

- No site investigation has been undertaken. Flooding of the existing basement has not been reported.
- BGS 1:50,000 mapping indicates the Site is not underlain by superficial deposits. The underlying bedrock comprises the Claygate Member, which comprises clay, silt and sand and is classified as a Secondary (A) Aquifer (i.e. potentially containing some groundwater).
- The London and Thames Valley Model indicates the geology underlying the Site comprises the Claygate Member to a depth of 4.3 m bgl, with the London Clay Formation beneath to a depth of c. 117 m bgl. The London Clay Formation comprises clay and silt and is classified as Unproductive Strata (i.e. unlikely to contain appreciable groundwater).
- BGS borehole ref: TQ28NE220, c. 150 m north-east, recorded groundwater at a depth of c. 10.5 m bgl (84.65 mAOD) in February 1978, within silty clay strata.
- Borehole ref: TQ28NE82, c. 160 m north, struck groundwater at c. 7.6 m bgl (92.59 mAOD) within silty clay strata in December 1966. A standing level of c. 5.9 m bgl (94.29 mAOD) was also recorded within silty clay strata.
    - It should be noted that from the available records, it cannot be confirmed whether groundwater in either of the boreholes originated from a permeable horizon or from the wider unit.
- The surface contact between the Claygate Member and the Bagshot Formation occurs c. 100 m west of the Site, which could result in a spring line. Likewise, shallow groundwater may be present at or close to the surface contact with the London Clay Formation, c. 160 m north-east, which could result in a spring line. However, given the distance between these contacts and the Site, any groundwater seepage from them is unlikely to impact the basement.
- The Site is located within Flood Zone 1 and the Risk of Flooding from Rivers and Sea (RoFRS) mapping indicates a Very Low risk of fluvial flooding. No surface watercourses or lost rivers have been identified within the vicinity of the Site.
- The Risk of Flooding from Surface Water (RoFSW) mapping shows the Site to be at Very Low risk of pluvial flooding.
- It is noted that the surface water flood risk mapping indicates the risk to the development at the surface. The proposed basement reflects an excavation and an open lightwell is proposed to the front of the basement, within which surface water may accumulate. However, as the lightwell is not located in an area at risk of surface water flooding, the risks of ponding within the basement are considered to be reduced, with an overall Low risk identified.

The sources reviewed, including BGS mapping, the London Thames Valley Model and BGS borehole data, indicate that the Site is underlain by the Claygate Member, which comprises sandy silty clay to a depth of c. 4.3 m bgl. The strata lie on a bedrock geology comprising low permeability London Clay. Shallow groundwater bodies are potentially present within permeable horizons and lenses in the Claygate Member.

The proposed basement will be set at approximately 3.0 m bgl (3.5 m bgl including an allowance for foundations), which is located within horizons in the Claygate Member and could extend within c. 0.8 to 1.3 m of the contact with the underlying London Clay bedrock. Therefore, it is possible that the basement would encounter groundwater.

However, given that nearby boreholes suggest the Claygate Member comprises silty sandy clay, significant groundwater flows are not anticipated, which would limit the potential impacts to the basement.

Approximately 0.8 m of aquifer will remain beneath the proposed basement, compared to c. 1.94 m at present. This reduction in aquifer thickness could cause a modest increase in the 'blockage' of groundwater flows, which may have an impact on the wider groundwater system. However, given that groundwater will remain able to flow beneath the adjacent highway and gardens, and substantial groundwater flows are not anticipated within the Claygate Member, the associated impacts may be reduced.

The proposed development is considered compliant with Policy SP5 of the Haringey Local Plan (2017) and Policies DM18, DM24 and DM27 of the Development Management DPD (London Borough of Haringey, 2017), acknowledging that there may be a modest impact on the groundwater system.

Recommendations / Next steps

Recommendations for mitigation are provided below, based upon the proposed basement and wider development design:

- Consideration should be given to carrying out site-specific ground investigation at the Site to confirm the underlying geology and depth to groundwater. This would allow the risks associated with groundwater to be refined and the most appropriate mitigation measures to be identified.
- Tanking of the basement should be considered to prevent the ingress of groundwater into the basement. Additionally, flood resilient measures should be incorporated into the basement to reduce flood damage should flooding occur.
- Non return flap valves on sewer lines should be implemented, and a sump and pump could also be considered.
- To reduce any interaction with the groundwater table (if encountered), appropriate construction methods should be used such as dewatering, secant piles or sheet piling.
- Consideration should be given to developing a Sustainable Drainage Strategy for the Site to ensure that the additional surface water run-off created by the proposed development is managed safely on-Site.

- Mitigation measures should be included to reduce the potential for surface water to enter the basement via the open lightwell. This should include, where possible, re-grading of ground levels as necessary to divert overland flows away from the lightwell and building foundations, and ensuring that the lightwell is positively drained.

2. Introduction

Background and purpose

GeoSmart Information Ltd was commissioned by Miss C A Peree Bonin in November 2024 to undertake the groundwater and surface water aspects of a Basement Impact Assessment (BIA) for the proposed development at 14 Southwood Avenue, London, N6 5RZ (the Site). The Site is located at national grid reference TQ 28650 87910 within the London Borough of Haringey. Existing and proposed Site plans and drawings are provided in Appendix A.

Objective

This document comprises a desk-based assessment of the potential impact of the proposed basement development on surface water and groundwater flow and flooding and has been designed to support a planning submission for the proposed development.

Report scope

The scope of works undertaken includes:

- An outline of the hydrological and hydrogeological conditions with relevance to construction of the basement at the Site.
- An assessment of the impacts of the proposed development on surface water and groundwater flows and levels.
- Assessment will be presented using the clearly-defined reporting framework as outlined in the widely referenced Camden Planning Guidance for Basements. This report will consider the following sections:

    1) Screening – first stage in assessing the impact of a proposed basement development is to recognise what issues are relevant to the proposed site.
    2) Scoping – identify the potential impacts for each of the matters of concern identified in the screening stage.
    3) Recommendations – recommendations are made based on the outcome of the assessment.

Report limitations

It is noted that the findings presented in this report are based on a desk study of information supplied by third parties. Whilst we assume that all information is representative of past and present conditions, we can offer no guarantee as to its validity and a proportionate programme of site investigations would be required to fully verify these findings.

The basemap used is the OS Street View 1:10,000 scale, however the Site boundary has been drawn using BlueSky aerial imagery to ensure the correct extent and proportion of the Site is analysed.

This report excludes consideration of potential hazards arising from any activities at the Site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities.

Datasets

The following table shows the sources of information that have been consulted as part of this report:

Table 1. Datasets consulted to obtain confirmation of sources of flooding and risk

Source of flooding	Datasets consulted				
	Commercial Flood Maps	Local Policy & Guidance Documents*	Environment Agency	Thames Water (Appendix C)	OS Data
Historical	X	X	X		
River (fluvial) / Sea (tidal/coastal)	X	X	X		
Surface water (pluvial)	X	X	X		
Groundwater	X	X			
Sewer		X		X	

Source of flooding	Datasets consulted				
	Commercial Flood Maps	Local Policy & Guidance Documents*	Environment Agency	Thames Water (Appendix C)	OS Data
Culvert/bridges		X			X
Reservoir		X	X		

*Local guidance and policy, referenced below, has been consulted to determine local flood conditions and requirements for flood mitigation measures.

Relevant local guidance

For this report, several documents have been consulted for local policy and guidance and relevant information is outlined below:

Haringey Local Plan: Strategic Policies (London Borough of Haringey, 2017):

SP5: Water Management and Flooding

The Council will require all development in Haringey to be water efficient during construction and operation and to reduce all forms of food risk. All development shall:

- Improve the water environment, water quality and drainage systems;
- Minimise water use and illustrate how development would contribute to general and flash fooding;
- Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;
- Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding;
- Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;
- Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce food risk (in line with London River Action Plan); and
- Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power.

In order to facilitate this, the Council:

- Has carried out a joint SFRA (Strategic Flood Risk Assessment) Stage 1 for the whole borough;
- Has carried out a Sequential Test for the Areas of Development (Growth Areas and Areas of Change);
- Is carrying out, in association with other north London boroughs in the Drain London sub-region, a Surface Water Management Plan to identify issues with drainage networks and the effects of new development.

Development Management DPD (London Borough of Haringey, 2017):

Policy DM18: Residential Basement Development and Light Wells

- Householder extensions to existing basements, and the construction of new basements, including in existing dwellings will only be permitted where it can be demonstrated that the proposal:
    - Will not adversely affect the structural stability of the application building, neighbouring buildings and other infrastructure, including the adjoining highway, having regard to local geological conditions;
    - Does not increase flood risk to the property and nearby properties from any source (see Policy DM24);
    - Avoids harm to the appearance or setting of the property or the established character of the surrounding area;
    - Will not adversely impact the amenity of adjoining properties by reason of noise or increased levels of internal or external activity;
    - Will not adversely impact the local natural and historic environment;
- And, where the proposed basement extends beneath the garden area:
    - Will not cause loss, damage or long-term threat to trees of townscape or amenity value;
    - Maintains adequate soil depth satisfactory for preservation of landscaping consistent with neighbouring properties;
- And during the construction phase:
    - Will not cause harm to pedestrian, cycle, vehicular and road safety, adversely affect bus or other transport operations, significantly increase traffic congestion, nor place unreasonable inconvenience on the day to day life of those living, working or visiting nearby; and
    - Will minimise construction impacts such as noise, vibration and dust for the duration of the works.
- Proposals for basements must not include habitable rooms or other sensitive uses in areas prone to flooding where there is no reasonable means of escape.
- In determining applications for light wells, the Council will consider whether:

- The architectural character of the building is protected;
- The character and appearance of the surrounding area is harmed; and
- The development results in the loss of more than 50% of the front garden or amenity area.

Policy DM24: Managing and Reducing Flood Risk

- The Council will ensure that all proposals for new development avoid and reduce the risk of flooding to future occupants and do not increase the risk of flooding.
- All proposals for new development within Flood Zone 2 and 3a will be required to provide sufficient evidence for the Council to assess whether the requirements of the Sequential Test and Exception Test, where required, have been satisfied. Proposals must be informed by a site specific Flood Risk Assessment (FRA) taking account of all potential sources of flooding and should:
  - Demonstrate the application of a sequential approach for the development of individual sites to ensure that the most vulnerable land uses are located in areas of the site that are at lowest risk of flooding;
  - Preserve overland flood and flow routes and ensure there is no net loss of flood storage. Adequate flood storage and compensation should be provided on site, or if this is not possible, provided off site where circumstances allow;
  - Where appropriate, set out the mitigation measures that will be incorporated on site to manage residual flood risk including:
    - Finished floor levels set no lower than 300mm above the 1 in 100 chance in any given year, including an allowance for climate change, flood level; and
    - Ensure safe access and egress for future users of the development or an appropriate emergency evacuation plan.
  - Contribute to naturalising watercourses where opportunities arise.
- All proposals for new development will be required to:
  - Manage and reduce surface water run-off; and
  - Manage water and waste water discharges.
- With the exception of water compatible uses and essential infrastructure, development in areas designated in Haringey's Strategic Flood Risk Assessment as being within Flood Zone 3b will not be permitted.

Policy DM27: Protecting and Improving Groundwater Quality and Quantity

- The Council will seek to protect and improve the quality and quantity of groundwater resources within the Borough.
- All proposals for new development will be required to identify existing and potential new sources of groundwater pollution and where appropriate, submit a relevant

desktop study to demonstrate this has been fully considered, including on sites with an historic legacy of contamination.

- All proposals for new development must ensure that:
    - There is no adverse impact on groundwater quality, either by design, construction or operation of the development; and
    - Appropriate construction techniques are used in order to limit disturbance to natural groundwater flows.
- Proposals for new development in Source Protection Zones must not result in an unacceptable risk to groundwater quality.

Camden Planning Guidance: Basements (Camden Council, 2021):

- The Camden Planning Guidance: Basements policy was adopted in January 2021. The guidance is viewed as an exemplar of policy in regard to development of basements[1] by GeoSmart.
- The Screening questions from this guidance have been used in Section 4 of this report. As the Site is not within the London Borough of Camden, the Screening questions relating to the pond chains on Hampstead Heath have been excluded.

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/668958/Basements_Review_Summary_of_Responses.pdf

3. Site Setting

Location Description

The Site is located at 14 Southwood Avenue in a setting of primarily residential land use. It is bound to the south by Southwood Avenue, to the west and east by the adjacent terraced dwellings, and to the north by a residential garden.

The nearest buildings are adjacent to the proposed basement. A basement of an unknown depth is present at the adjacent property (16 Southwood Avenue), upgradient of the Site.

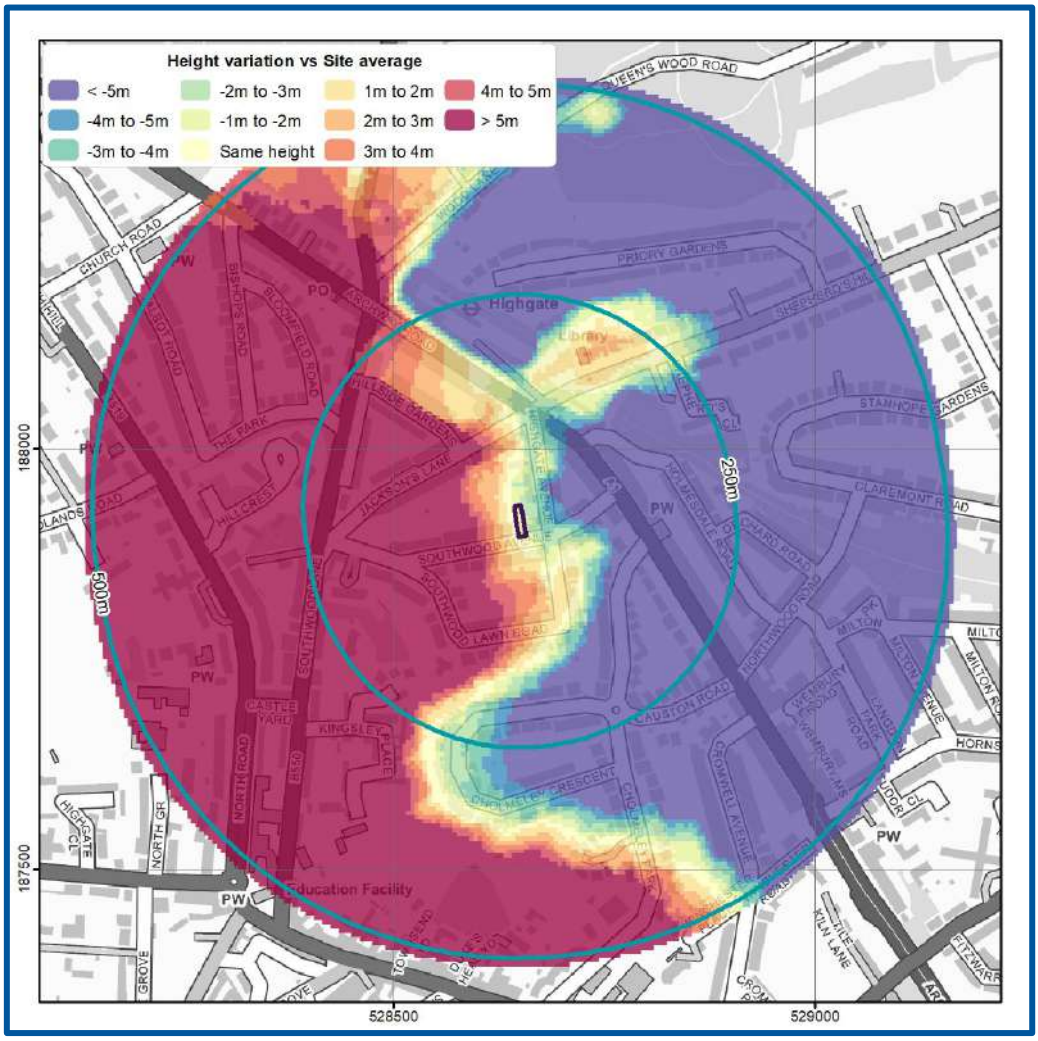
There has been some basement development within the vicinity of the Site, with several lightwells and semi-basements visible in the surrounding area using Google Streetview, and several applications for basement development present within the Haringey planning portal.

Figure 1. Aerial image of the Site (Bluesky, 2024).

Figure 2 indicates ground levels within 500m of the Site steeply fall in an easterly direction.

According to OS data, the level of the Site is between 99.40 and 100.48 mAOD with the Site falling in a north easterly direction. This is based on a site-specific topographic survey undertaken at the Site (Laser Surveys, 2024), in conjunction with EA elevation data to a 1 m resolution with a vertical accuracy of ±0.15 m (Appendix B).

Figure 2. Site Location and Relative Elevations (GeoSmart, 2024).



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Proposed Development

The Site is currently used within a residential capacity as a three storey terraced, four-bedroom dwelling with a basement level, including associated access, driveway and landscaping. Site plans are included within Appendix A.

The existing basement has finished floor levels (FFLs) set at c. 2.06 m below ground level (bgl), which was measured as 98.30 mAOD within the site-specific topographical survey (Laser Surveys, 2024). It is used as a plant room and storage space and is accessible via a set of internal stairs.

Development proposals comprise the extension and deepening of the basement, as well as the construction of a single-storey rear extension. Proposals also include the internal reconfiguration of the dwelling.

The proposed basement will have FFLs set at c. 3.00 m bgl (97.36 mAOD) and will be used as living accommodation, including a games room, media room, utility room and wine cellar. Access will be provided via an internal staircase. An open lightwell (with walk-on grate) is proposed to the front of the basement. The depth of the foundations is assumed to be c. 0.5 m for the purposes of this assessment.

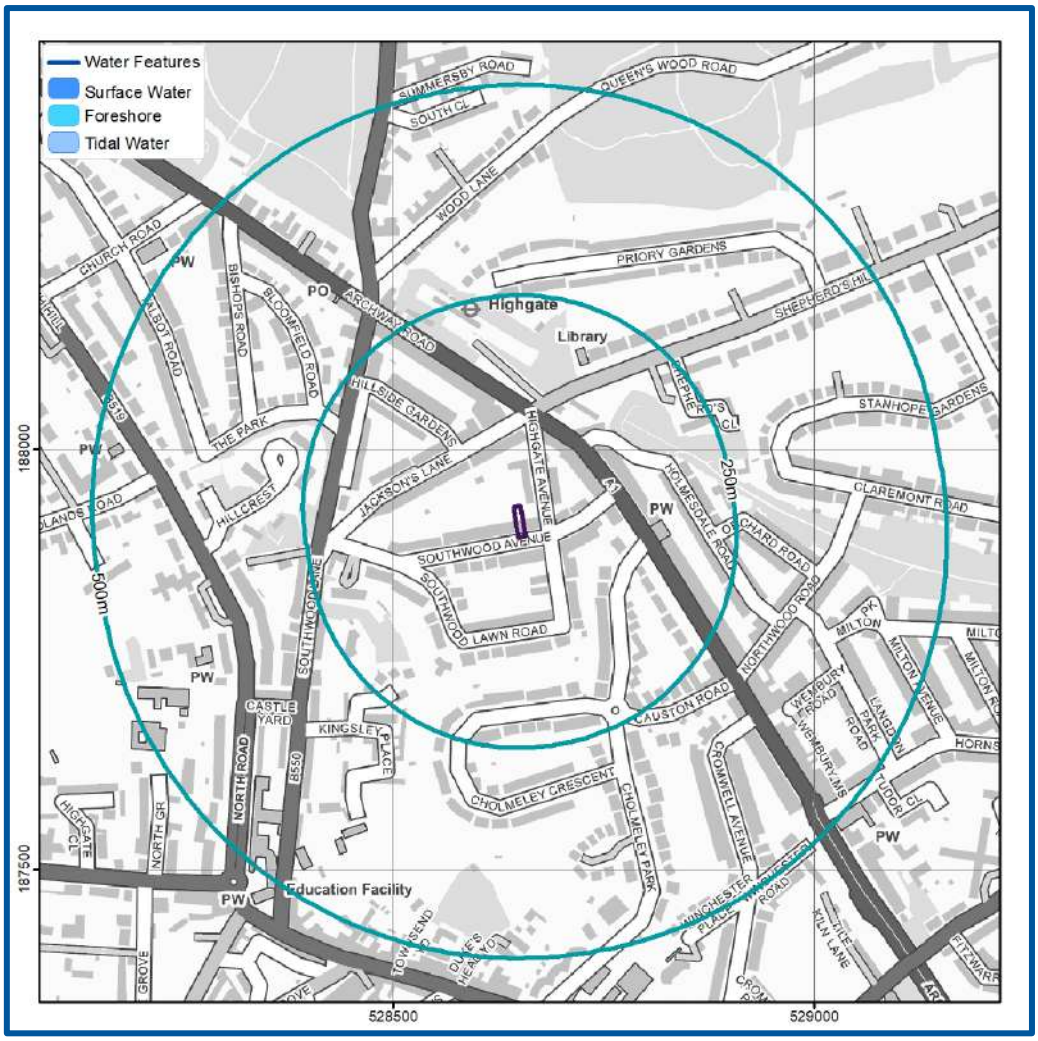
The effect of the overall development will not result in an increase in number of occupants and/or users of the building and will not result in the change of use, nature or times of occupation. The estimated lifespan of the development is 100 years.

Surface Water Features

According to Ordnance Survey (OS) mapping included in the following figure, there are no mapped surface water features within 500 m of the Site.

No subterranean rivers have been identified within the vicinity of the Site (Talling, 2024; Barton & Myers, 2016).

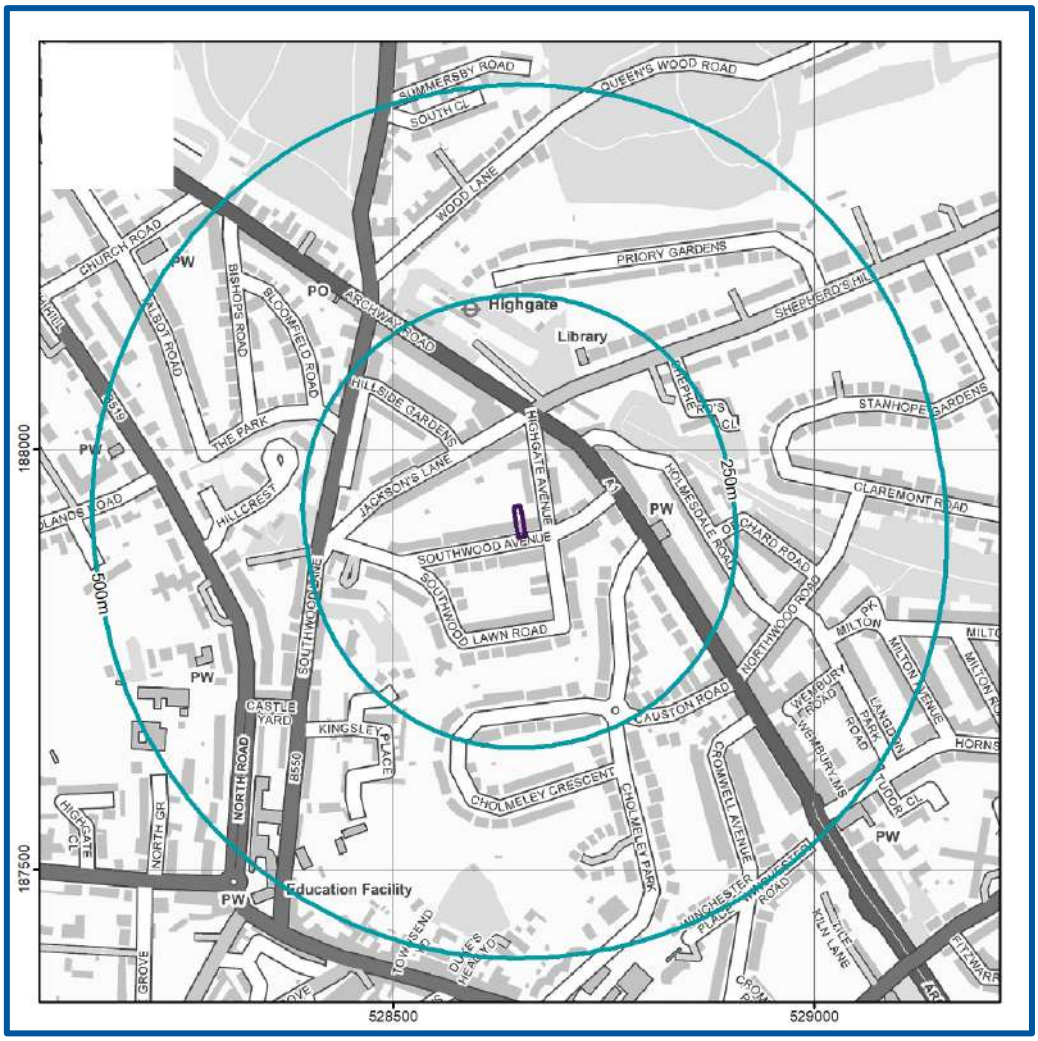
Figure 3. EA Surface Water Features (OS, 2024)



Ground Conditions

British Geological Survey (BGS) mapping indicates there is no underlying superficial geology at the Site (BGS, 2024) (Figure 4).

Figure 4. Superficial Geology (BGS, 2024)



Contains Ordnance Survey data © Crown copyright and database right 2024
Contains British Geological Survey materials © NERC 2024

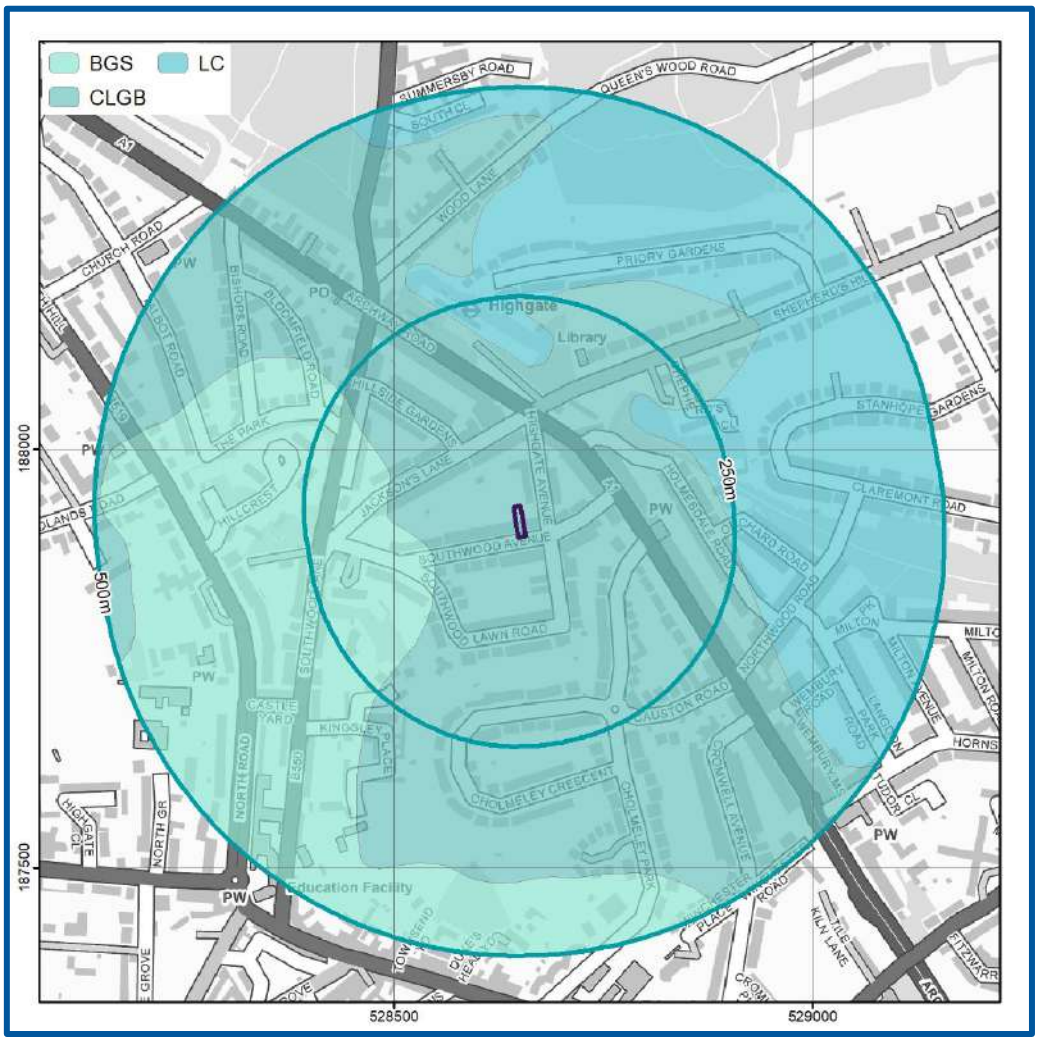
BGS mapping indicates the underlying bedrock geology (Figure 5, overleaf) consists of the Claygate Member (CLGB) (BGS, 2024) and is classified as a Secondary (A) Aquifer (EA, 2024).

The Claygate Member comprises dark grey clays with sand laminations, passing up into thin alternations of clays, silts and fine-grained sand, with beds of bioturbated silt. It could potentially contain groundwater, particularly within sandy horizons.

The surface contact between the Claygate Member and the Bagshot Formation (also classified as a Secondary (A) Aquifer) occurs c. 100 m west of the Site, whilst the surface contact with the London Clay Formation occurs c. 160 m north-east.

Based on the known history of the Site, significant Made Ground is not anticipated to be present at the Site.

Figure 5. Bedrock Geology (BGS, 2024)



BGS Borehole Database

The BGS website was used to extract ground information from the nearest borehole records to the Site (Figure 6). The full logs are presented in Appendix D.

The nearest BGS borehole record within the same geological strata as the Site on the BGS Borehole Data Archive at the GeoIndex (Onshore) website is located c. 150 m to the north-east of the Site at an elevation of c. 95.15 mAOD (ref: TQ28NE220). This borehole indicates the surrounding area to be underlain by:

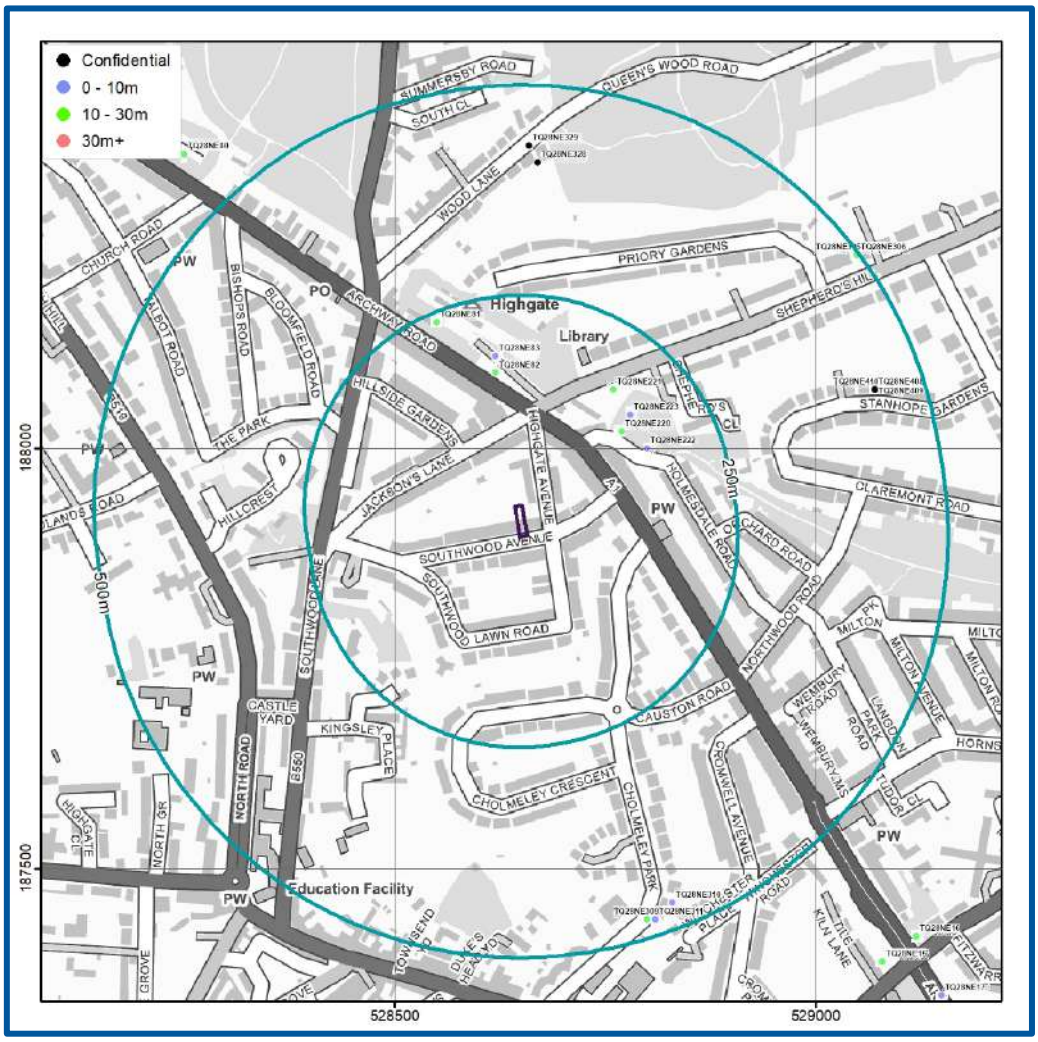
- Topsoil to a depth of c. 0.3 m below ground level (bgl);
- Silty clay with traces of bricks and ash (Made Ground) to c. 3.0 m bgl;
- Brown and grey sandy silty clay to c. 6.9 m bgl;
- Fissured blue grey sandy silty clay with pockets of grey sand to c. 10.0 m bgl;

- Fissured blue grey silty clay to c. 15.0 m bgl, at which depth the borehole was terminated.

A further borehole (ref: TQ28NE82) is recorded c. 160 m north at an elevation of c. 100.19 mAOD. This borehole indicates the surrounding area to be underlain by:

- Made Ground to a depth of c. 1.5 m bgl;
- Brown / grey silty clay to c. 6.1 m bgl;
- Blue silty clay with shell fragments to c. 16.5 m bgl;
- Blue fissured clay to c. 19.0 m bgl, at which depth the borehole was terminated.

Figure 6. Borehole records (BGS, 2024)



London and Thames Valley Model

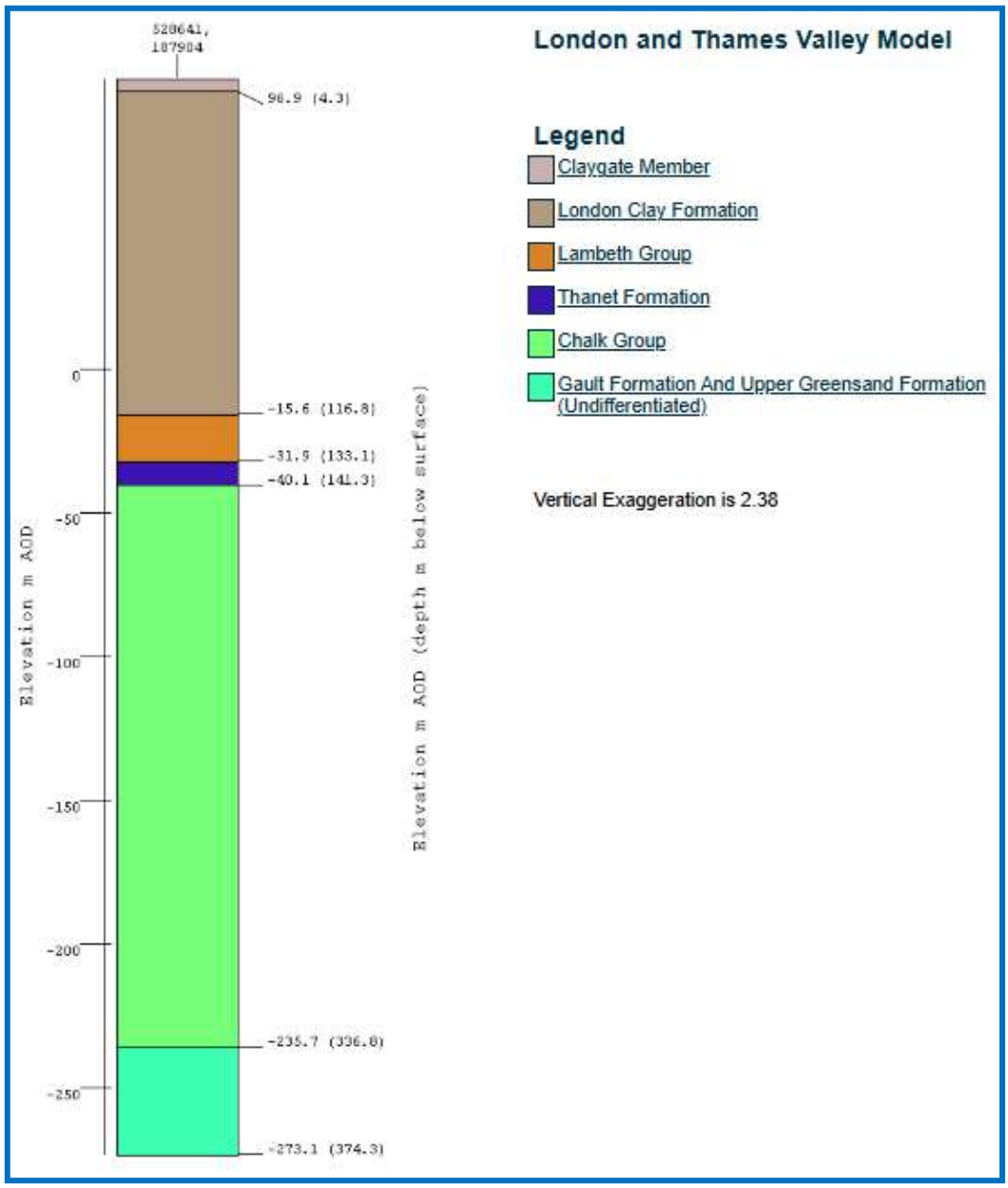
The London and Thames Valley Model has also been considered to further infer the local geology at the Site (BGS, 2024) (Figure 7, overleaf). This model is a visualisation of the geology across the London and Thames Valley Model, which is constructed from publicly available data, and as such should not be used as a replacement for site investigation. However, it is a useful tool at inferring the stratigraphy that could be at the Site.

The London and Thames Valley Model indicates the geology underlying the Site comprises:

- Claygate Member to c. 4.3 m bgl (96.9 mAOD);
- London Clay Formation to c. 117 m bgl (-16 mAOD);
- Lambeth Group to c. 133 m bgl (-32 mAOD);
- Thanet Formation to c. 141 m bgl (-40 mAOD);
- The Chalk Group to c. 337 m bgl (-236 mAOD);
    - The Chalk Group is a Principal Aquifer which is likely to contain significant groundwater; however, this groundwater is at such a significant depth that the risk to the Site from the chalk aquifer is negligible.
- Gault Formation And Upper Greensand Formation (Undifferentiated) to c. 374 m bgl (-273 mAOD).

The boreholes and London and Thames Valley Model are consistent with the published geological mapping (BGS, 2024) and indicate the underlying geology to comprise the Claygate Member (clay, silt and sand) to a depth of c. 4.3 m bgl (96.9 mAOD), underlain by London Clay (clay and silt) to a depth of c. 117 m bgl (-16 mAOD).

Figure 7. BGS London and Thames Valley Model (BGS, 2024)



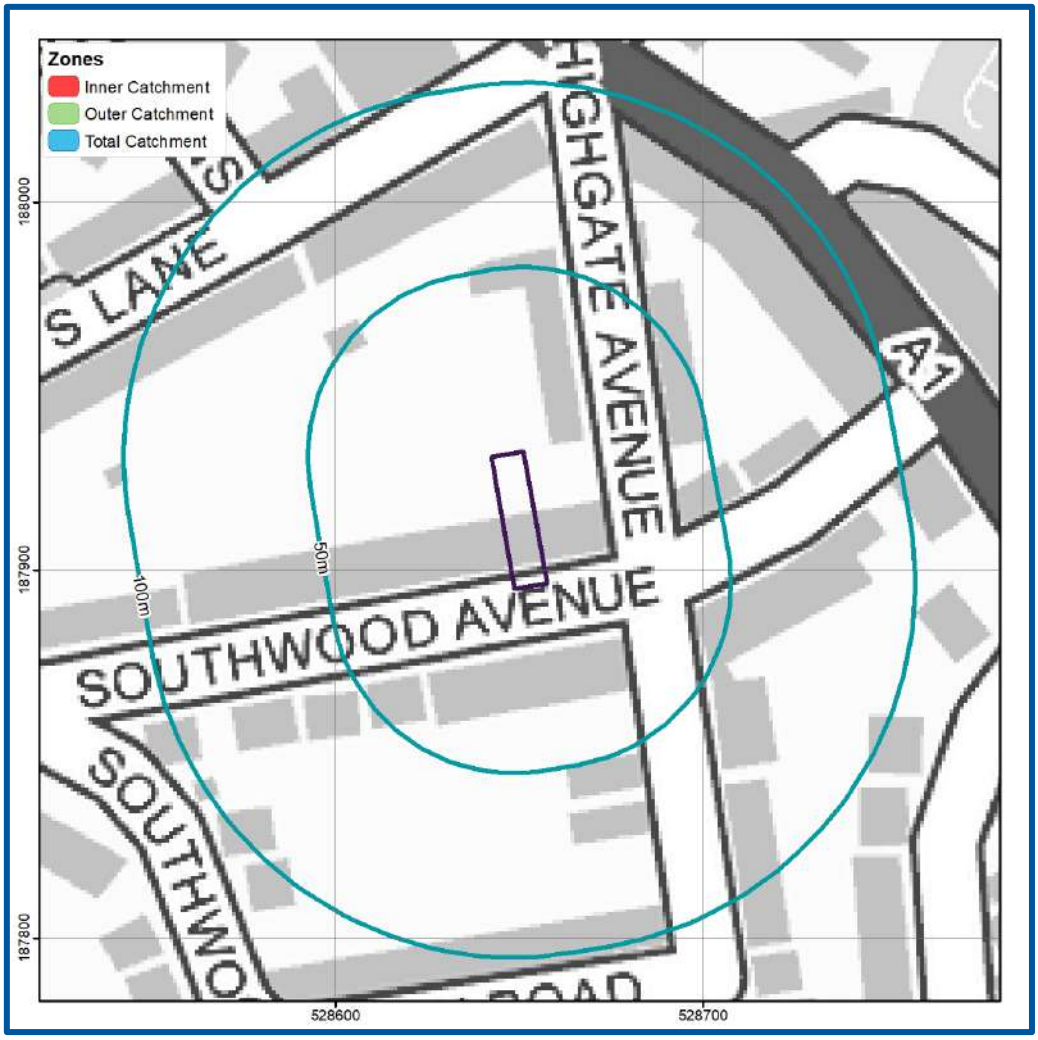
Site investigation

Site-specific ground investigation has not been undertaken at or within the vicinity of the Site.

Source protection zones

An assessment of the EA's groundwater Source Protection Zones (SPZs) has been undertaken (Figure 8) within the vicinity of the Site and confirms the Site is not located within an SPZ.

Figure 8. Source protection zone map (EA, 2024)



Groundwater

There have been no site-specific ground investigations to confirm the depth of the water table. Groundwater flooding within the existing basement has not been reported.

Borehole ref: TQ28NE220 recorded groundwater at a depth of c. 10.5 m bgl (84.65 mAOD) in February 1978, within silty clay strata.

Borehole ref: TQ28NE82 struck groundwater at c. 7.6 m bgl (92.59 mAOD) within silty clay strata in December 1966. A standing level of c. 5.9 m bgl (94.29 mAOD) was also recorded within silty clay strata.

It should be noted that from the available records, it cannot be confirmed whether groundwater in either of the boreholes originated from a permeable horizon or from the wider unit.

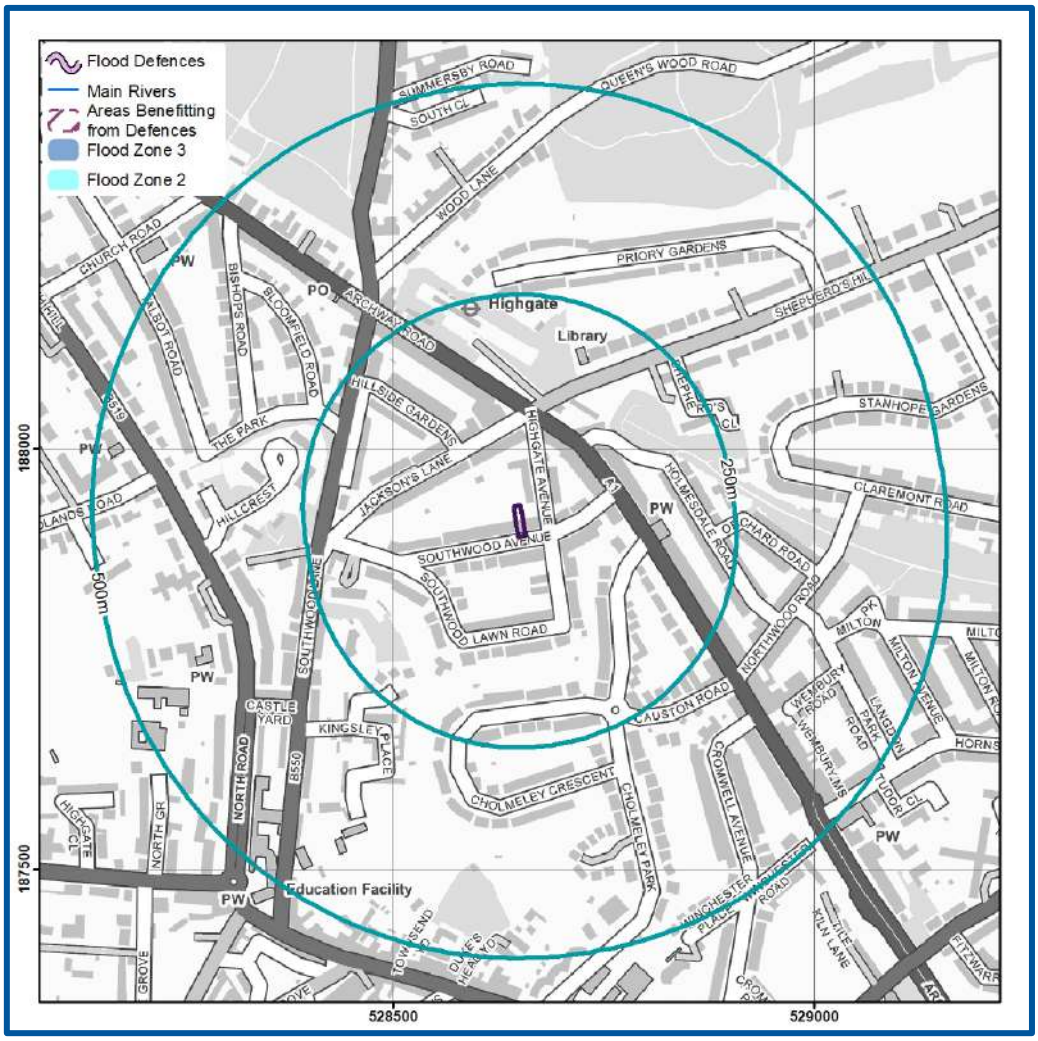
No water wells have been identified within 100 m of the Site (BGS, 2024).

4. Flood risk

Fluvial and tidal flood risk

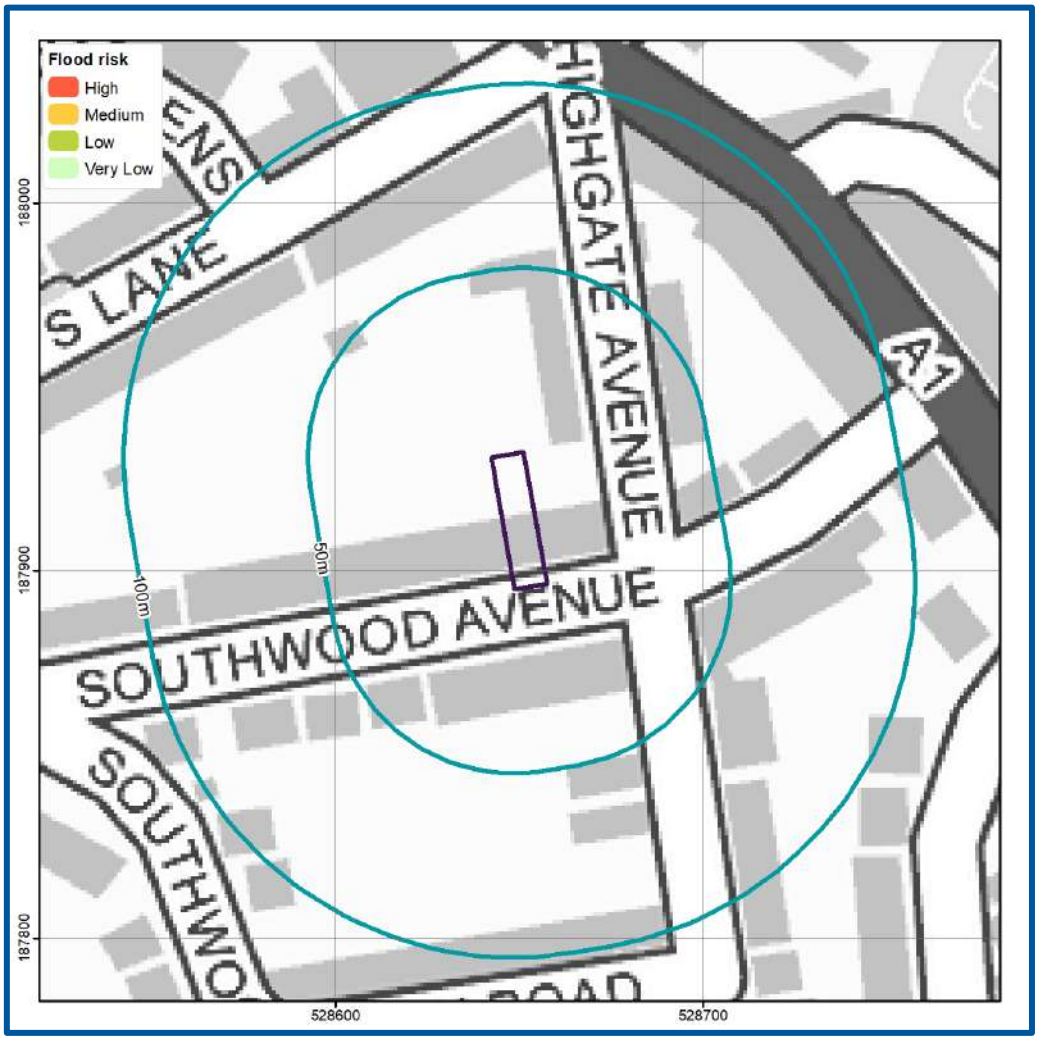
According to the Environment Agency's (EA) Flood Map for Planning Purposes (Figure 9), the Site is located within Flood Zone 1 and is classified as being at Low probability of fluvial and tidal flooding (EA, 2024).

Figure 9. EA Flood Map for Planning Purposes (EA, 2024)



According to the EA's Risk of Flooding from Rivers and the Sea (RoFRS) mapping (Figure 10), which considers the crest height, standard of protection and condition of defences, the flood risk from Rivers and the Sea is Very Low.

Figure 10. Risk of Flooding from Rivers and Sea map (EA, 2024)



Surface water (pluvial) flood risk

Surface water flooding occurs when intense rainfall exceeds the infiltration capacity of the ground and overwhelms the drainage systems. It can occur in most locations even at higher elevations and at significant distances from river and coastal floodplains.

According to the EA's Risk of Flooding from Surface Water (pluvial) flood mapping, the Site has a Very Low risk of pluvial flooding.

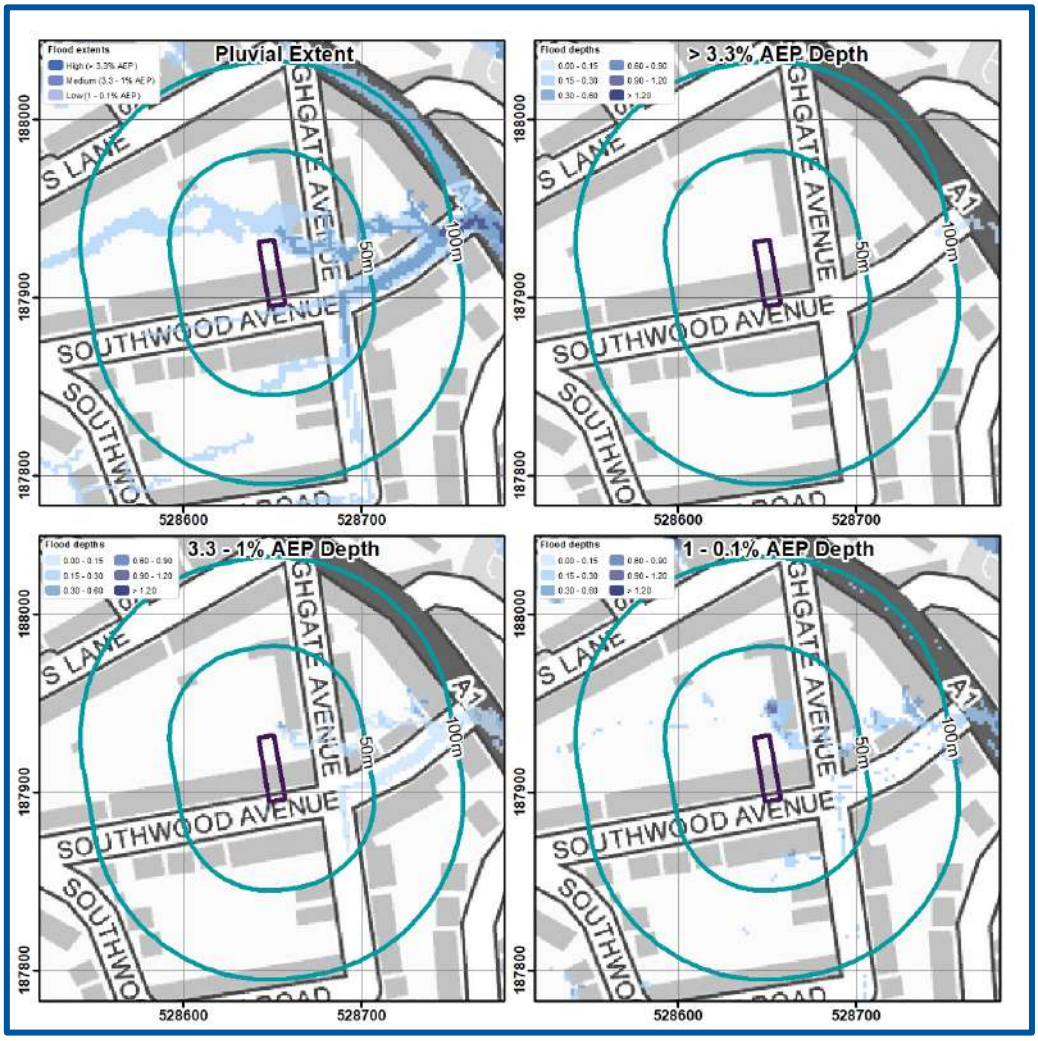
Figure 11, overleaf, confirms the extent and depth of flooding during a 3.3% AEP (1 in 30 year - high risk) event; 1% AEP (1 in 100 year - medium risk) event and a 0.1% AEP (1 in 1000 year - low risk) event. This indicates the proposed development is located in an area at Very Low risk of surface water flooding.

It should be noted that an overland flow is proposed to form to the rear of the Site during the 1 in 1000 year event, which could extend into the highway to the front of the Site. However, given that the Site has elevated ground levels compared to the at-risk areas, this flooding is unlikely to impact the Site itself (albeit, access routes along Southwood Avenue may be impacted).

Figure I of the SWMP confirms the Site is located within a Critical Drainage Area (ref: Group4_055). Meanwhile, Table 3-2 indicates that no incidents of surface water flooding have been reported within the vicinity of the Site (London Borough of Haringey, 2011).

It is noted that the surface water flood risk mapping indicates the risk to the development at the surface. The proposed basement reflects an excavation and therefore is at increased risk ponding of surface water or collection of interflows. An open lightwell is proposed to the front of the basement, within which surface water may accumulate. However, as the lightwell is not located in an area at risk of surface water flooding, the risks of ponding within the basement are considered to be reduced.

Figure 11. Risk of Flooding from Surface Water (pluvial) depth map (EA, 2024)

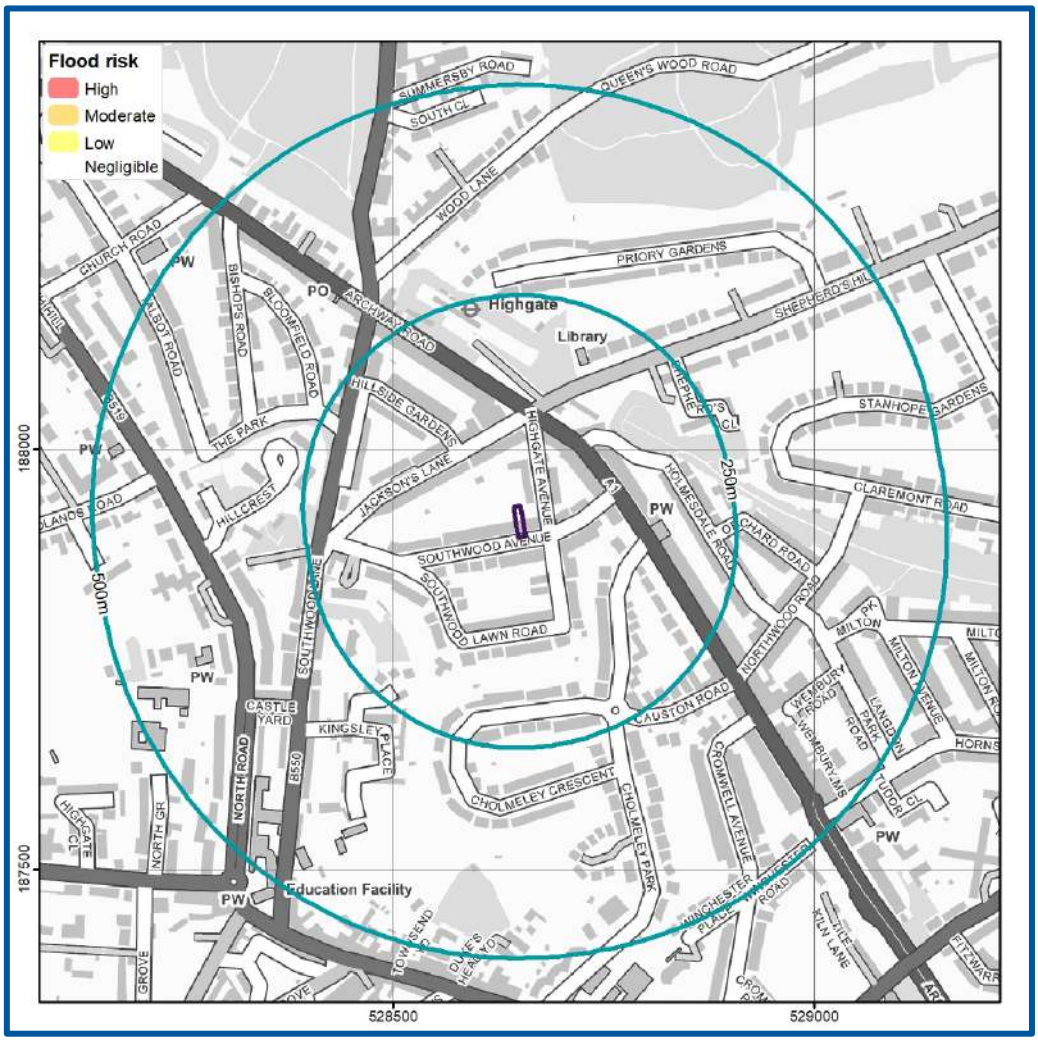


Groundwater flood risk

Groundwater flooding occurs when sub-surface water emerges from the ground at the surface or into Made Ground and structures. This may be as a result of persistent rainfall that recharges aquifers until they are full; or may be as a result of high river levels, or tides, driving water through near-surface deposits. Flooding may last a long time compared to surface water flooding, from weeks to months. Hence the amount of damage that is caused to property may be substantially higher.

Groundwater Flood Risk screening data (Figure 12) indicates there is a Negligible risk of groundwater flooding at surface in the vicinity from regional scale mechanisms during a 1 in 100 year event.

Figure 12. GeoSmart GW5 Groundwater Flood Risk Map (GeoSmart, 2024)



However, the risks will be higher for the proposed basement. The risks to the basement are summarised below:

- The Site is not underlain by superficial deposits and the underlying Claygate Member bedrock is classified as a Secondary (A) Aquifer (i.e. potentially containing some groundwater). The Claygate Member extends to a depth of c. 4.3 m bgl (96.9 mAOD), with London Clay, classified as Unproductive Strata (i.e. a non-aquifer), beneath.
- There have been no site-specific ground investigations to confirm the depth of the water table. Flooding of the existing basement has not been reported.
- BGS borehole ref: TQ28NE220, c. 150 m north-east, recorded groundwater at a depth of c. 10.5 m bgl (84.65 mAOD) in February 1978, within silty clay strata.
- Borehole ref: TQ28NE82, c. 160 m north, struck groundwater at c. 7.6 m bgl (92.59 mAOD) within silty clay strata in December 1966. A standing level of c. 5.9 m bgl (94.29 mAOD) was also recorded within silty clay strata.
    - It should be noted that from the available records, it cannot be confirmed whether groundwater in either of the boreholes originated from a permeable horizon or from the wider unit.
- The surface contact between the Claygate Member and the Bagshot Formation (also classified as a Secondary (A) Aquifer) occurs c. 100 m west of the Site, which could result in a spring line. Likewise, shallow groundwater may be present at or close to the surface contact with the London Clay Formation, c. 160 m north-east, which could result in a spring line. However, given the distance between these contacts and the Site, any groundwater seepage from them is unlikely to impact the basement.
- Table 3-4 of the SWMP indicates that no incidents of groundwater flooding have been reported within the vicinity of the Site (London Borough of Haringey, 2011).

The proposed basement foundations will be located within the Claygate Member, which is likely to contain some shallow groundwater within permeable horizons. Therefore, the basement could potentially be impacted by groundwater.

The potential impacts of the proposed development on the local groundwater system and nearby development are summarised below:

- There has been some basement development within the vicinity of the Site, including at the adjacent property (16 Southwood Avenue).
- The proposed basement extends to 3.0 m bgl (3.5 m bgl including an allowance for foundations), whereas the underlying aquifer is expected to extend to a depth of c. 4.3 m bgl. This suggests that c. 0.8 m of aquifer will remain beneath the proposed basement; this reduction in aquifer thickness could potentially increase 'blockages' of groundwater flows.
- In particular, the basement at 16 Southwood Avenue is located upgradient of the Site; it is possible that any 'blockages' would impact this basement.
- However, the area surrounding the Site falls relatively steeply in an easterly direction, broadly following Southwood Avenue. As such, groundwater remains able to flow

across the full thickness of aquifer to the south of the Site, as well as beneath the garden to the north of the basement. Additionally, borehole records suggest the Claygate Member comprises sandy silty clay, which could limit the amount of water flowing beneath the existing basement and constrain the associated impacts.

- It should be noted that only a modest deepening of basement FFLs is proposed (c. 0.94 m) which would further constrain any impacts resulting from the proposed development.

Given the above, the proposed basement could cause a modest increase in the 'blockage' of groundwater flows, which may have an impact on the wider groundwater system.

Flooding from artificial sources

Artificial sources of flood risk include waterbodies or watercourses that have been amended by means of human intervention rather than natural processes. Examples include reservoirs (and associated water supply infrastructure), docks, sewers and canals. The flooding mechanism associated with flood risk from artificial sources is primarily related to breach or failure of structures (reservoir, lake, sewer, canal, flood storage areas, etc.)

Sewer flood risk

Table 3-5 of the SWMP has identified 8 incidences of flooding as a result of surcharging sewers within the N6 5 postcode. However, it is recognised that this three digit postcode covers a large area and instances of flooding are not specific to the Site (London Borough of Haringey, 2011).

Records held by Thames Water indicate that there have been no incidences of flooding related to the surcharging of public sewers at the Site (Thames Water, 2024; Appendix C).

Note that in the event of a leak in the sewer or water main service trenches could provide a potential pathway for water to enter the basement. It is therefore recommended that waterproof construction methods are used within the basement.

Canal failure

According to Ordnance Survey (OS) mapping, there are no canals within 500 m of the Site.

Culverts and bridges

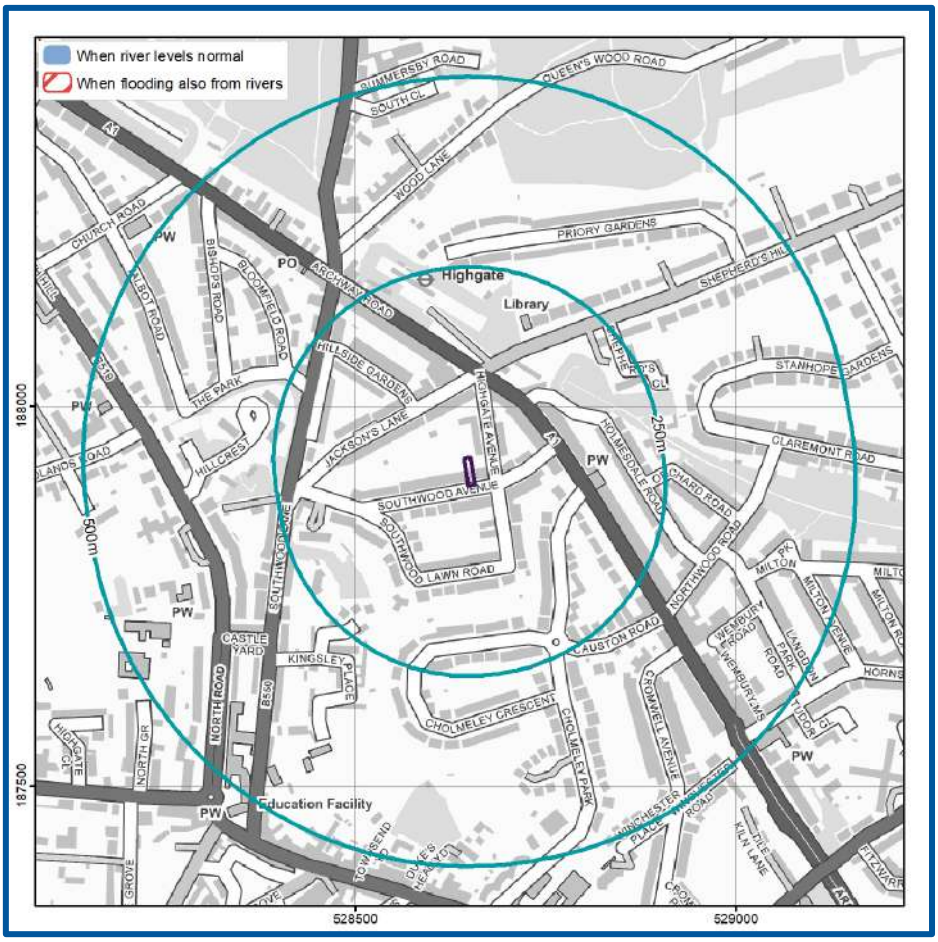
The blockage of watercourses or structures by debris (that is, any material moved by a flowing stream including vegetation, sediment and man-made materials or refuse) reduces flow capacity and raises water levels, potentially increasing the risk of flooding. High water levels can cause saturation, seepage and percolation leading to failure of earth embankments or other structures. Debris accumulations can change flow patterns, leading to scour, sedimentation or structural failure.

Culverts and bridges have not been identified within 50 m of the Site.

Reservoir Flooding

According to the EA's Risk of Flooding from Reservoir mapping, the Site is not at risk of flooding from reservoirs (Figure 13) (EA, 2024).

Figure 13. Risk of reservoir flooding map (GeoSmart, 2024)



5. Basement Impact Assessment

The following sections follow guidance discussed in the relevant sections of the Camden Planning Guidance for Basements. This provides a clearly defined reporting framework against which to consider potential matters of concern and to scope out further work required.

Screening

Table 2. Groundwater Screening

Groundwater			
Impact Question	Answer	Justification	Reference
1a. Is the site located directly above an aquifer?	Yes	The Site is not underlain by superficial deposits. The underlying bedrock comprises the Claygate Member, which is classified as a Secondary (A) Aquifer (i.e. potentially containing some groundwater).	BGS (2024) EA (2024)

1b. Will the proposed basement extend beneath the water table surface?	Potentially	Site investigation has not been undertaken at the Site to confirm the depth to the local water table. The proposed basement will be set at approximately 3.0 m bgl, which is located within horizons in the Claygate Member and could potentially contain some groundwater, particularly within permeable horizons and lenses. It is possible that the basement extends through the groundwater within these horizons. However, it is acknowledged that the borehole records suggest the Claygate Member comprises sandy silty clay, which could limit the amount of water flowing beneath the basement and constrain the associated impacts.	BGS (2024) Site plans
2. Is the site within 100m of a watercourse, well (used / disused) or potential spring line?	Yes	There are no watercourses within 100 m of the Site. No wells have been identified within 100 m of the Site. The surface contact between the Claygate Member and the Bagshot Formation occurs c. 100 m west of the Site, which could result in a spring line. Likewise, shallow groundwater may be present at or close to the surface contact with the London Clay Formation, c. 160 m north-east, which could result in a spring line.	OS (2024) EA (2024) BGS (2024)
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	Yes	The proposed development involves a modest increase in impermeable surfaces at the Site.	Site plans

4. As part of 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 proposed development involves a modest increase in impermeable surfaces at the Site and therefore less surface water will infiltrate to ground.	Site plans
5. 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 or spring line?	No	There are no ponds or watercourses within 500 m of the Site.	OS (2024) EA (2024)

Table 3. Surface Water and Flooding Screening

Surface Water and Flooding			
1. 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	Surface water runoff from the proposed development should continue to drain into the nearby sewer (unless infiltration methods are deemed appropriate).	Site plans
2. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	Yes	The proposed development involves a modest increase in impermeable surfaces at the Site.	Site plans

3. 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	Surface water runoff from the proposed development should continue to drain into the nearby sewer.	Site plans
4. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	The existing and proposed developments are both residential, and therefore a change in the quality of surface water runoff is not anticipated.	Site plans
5. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk from flooding, for example because the proposed basement is below the static water level of nearby surface water feature.	No	The Site is not identified as having surface water flood risk in the Strategic Flood Risk Assessment. The risk of pluvial flooding across the Site is Very Low according to EA mapping.	SFRA (JBA Consulting, 2015) EA (2024)

Screening summary

The screening process identifies the following issues to be carried forward to scoping for further assessment:

- The proposed basement will extend into a bedrock aquifer;
- The proposed basement foundations could potentially be located close to the groundwater level;
- The proportion of impermeable areas at the Site will increase modestly as a result of the proposed development.

The other potential concerns considered within the screening process have been demonstrated to be not applicable or not significant when applied to the proposed development.

Scoping

Where a potential impact has been identified at the screening stage above, the potential further need for assessment is considered and scoped. The scoping stage should aim to build on the information provided in the screening stage. During this phase, a desk study should be undertaken to determine the preliminary impacts of the proposed basement development. This initial assessment should be used to identify any site investigation works required.

Table 4. Groundwater Scoping

Groundwater		
Impact Question	Answer	Potential Impact & Assessment
1a. Is the site located directly above an aquifer?	Yes	The Site is not underlain by superficial deposits. The underlying bedrock comprises the Claygate Member, which is classified as a Secondary (A) Aquifer (i.e. potentially containing some groundwater). The Claygate Member could potentially contain groundwater. Nearby boreholes indicate the underlying bedrock to be characterized by silty sandy clay, and as such the groundwater within this unit is anticipated to be primarily contained within isolated permeable strata, with significant flows not anticipated. Consideration should be given to carrying out site-specific ground investigation at the Site to confirm the underlying geology and depth to groundwater. In any case, it is recommended that mitigation measures are implemented within the design of the proposed basement. This should include waterproof design and a sump and pump, with flood resilience measures incorporated where possible. Water exclusion measures may also be required during construction.

1b. Will the proposed basement extend beneath the water table surface?	Potentially	Site investigation has not been undertaken at the Site to confirm the depth to the local water table. The proposed basement will be set at approximately 3.0 m bgl, which is located within horizons in the Claygate Member and could potentially contain some groundwater, particularly within permeable horizons and lenses. It is possible that the basement extends through the groundwater within these horizons. However, it is acknowledged that the borehole records suggest the Claygate Member comprises sandy silty clay, which could limit the amount of water flowing beneath the basement and constrain the associated impacts. Consideration should be given to carrying out site-specific ground investigation at the Site to confirm the depth to groundwater. Mitigation measures such as tanking are required to prevent groundwater ingress.
2. Is the site within 100m of a watercourse, well (used / disused) or potential spring line?	Yes	There are no watercourses within 100 m of the Site. No wells have been identified within 100 m of the Site. The surface contact between the Claygate Member and the Bagshot Formation occurs c. 100 m west of the Site, which could result in a spring line. Likewise, shallow groundwater may be present at or close to the surface contact with the London Clay Formation, c. 160 m north-east, which could result in a spring line. However, given the distance between these contacts and the Site, any groundwater seepage from them is unlikely to impact the basement. As such, further consideration of the nearby potential spring lines is not considered necessary.

3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	Yes	The proposed development involves a modest increase in impermeable surfaces at the Site. Any increase in impermeable areas could result in increased surface water runoff in heavy rainfall events, which could increase the risk of pluvial flooding at the Site. Consideration should be given to developing a Sustainable Drainage Strategy for the Site to ensure that the extra surface water flows created by the proposed development are managed safely on-Site. Should this be provided, no further assessment of the possible impacts would be considered necessary.

Table 5. Surface Water and Flooding Scoping

Surface Water and Flooding		
2. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	Yes	The proposed development involves a modest increase in impermeable surfaces at the Site. Any increase in impermeable areas could result in increased surface water runoff in heavy rainfall events, which could increase the risk of pluvial flooding at the Site. Consideration should be given to developing a Sustainable Drainage Strategy for the Site to ensure that the extra surface water flows created by the proposed development are managed safely on-Site. Should this be provided, no further assessment of the possible impacts would be considered necessary.

6. Conclusions and Recommendations

Site setting constraints

Source	Risks to the proposed development*	Impacts from the proposed development **	After Mitigation ***
Groundwater	Moderate	Moderate	Low to Moderate
Surface water	Low	Very Low	Very Low

*RISKS TO THE PROPOSED DEVELOPMENT considers the risk of flooding in the proposed basement, from each of the listed sources. They are based on a detailed analysis of the flooding risks to the proposed development, including national risk maps, EA model data and BGS borehole records. Note that the risks presented in the baseline mapping are applicable to surface development only, whereas the risks presented on the table are applicable to the proposed subterranean development and therefore may be higher than presented in the FRA.

**IMPACTS FROM THE PROPOSED DEVELOPMENT considers the potential impacts that the proposed basement may have on the underlying hydrogeological conditions, including to what extent the flood risks would be impacted at neighbouring and downstream properties.

*** AFTER MITIGATION reflects a final risk rating, which would be applicable to the development should all suggested mitigation be implemented.

Recommendations / Next steps

Recommendations for mitigation are provided below, based upon the proposed basement and wider development design:

- Consideration should be given to carrying out site-specific ground investigation at the Site to confirm the underlying geology and depth to groundwater. This would allow the risks associated with groundwater to be refined and the most appropriate mitigation measures to be identified.
- Tanking of the basement should be considered to prevent the ingress of groundwater into the basement. Additionally, flood resilient measures should be incorporated into the basement to reduce flood damage should flooding occur.
- Non return flap valves on sewer lines should be implemented, and a sump and pump could also be considered.
- To reduce any interaction with the groundwater table (if encountered), appropriate construction methods should be used such as dewatering, secant piles or sheet piling.
- Consideration should be given to developing a Sustainable Drainage Strategy for the Site to ensure that the additional surface water run-off created by the proposed development is managed safely on-Site.

- Mitigation measures should be included to reduce the potential for surface water to enter the basement via the open lightwell. This should include, where possible, re-grading of ground levels as necessary to divert overland flows away from the lightwell and building foundations, and ensuring that the lightwell is positively drained.

7. Further information

The following table includes a list of additional products by GeoSmart:

Additional GeoSmart Products			
✓	Additional assessment: SuDSmart Report		The SuDSmart Report range assesses which drainage options are available for a Site. They build on technical detail starting from simple infiltration screening and work up to more complex SuDS Assessments detailing alternative options and designs. Please contact info@geosmartinfo.co.uk for further information.
	Additional assessment: EnviroSmart Report		Provides a robust desk-based assessment of potential contaminated land issues, taking into account the regulatory perspective. Our EnviroSmart reports are designed to be the most cost effective solution for planning conditions. Each report is individually prepared by a highly experienced consultant conversant with Local Authority requirements. Ideal for pre-planning or for addressing planning conditions for small developments. Can also be used for land transactions. Please contact info@geosmartinfo.co.uk for further information.

8. References and glossary

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Glossary

General terms

BGS	British Geological Survey
EA	Environment Agency
GeoSmart groundwater flood risk model	GeoSmart's national groundwater flood risk model takes advantage of all the available data and provides a preliminary indication of groundwater flood risk on a 50m grid covering England and Wales. The model indicates the risk of the water table coming within 1 m of the ground surface for an indicative 1 in 100 year return period scenario.
Dry-Island	An area considered at low risk of flooding (e.g. In a Flood Zone 1) that is entirely surrounded by areas at higher risk of flooding (e.g. Flood Zone 2 and 3)
Flood resilience	Flood resilience or wet-proofing accepts that water will enter the building, but through careful design will minimise damage and allow the re-occupancy of the building quickly. Mitigation measures that reduce the damage to a property caused by flooding can include water entry strategies, raising electrical sockets off the floor, hard flooring.
Flood resistance	Flood resistance, or dry-proofing, stops water entering a building. Mitigation measures that prevent or reduce the likelihood of water entering a property can include raising flood levels or installation of sandbags.
Flood Zone 1	This zone has less than a 0.1% annual probability of river flooding
Flood Zone 2	This zone has between 0.1 and 1% annual probability of river flooding and between 0.1% and 0.5 % annual probability sea flooding
Flood Zone 3	This zone has more than a 1% annual probability of river flooding and 0.5% annual probability of sea flooding
Functional Flood Plain	An area of land where water has to flow or be stored in times of flood.
Hydrologic model	A computer model that simulates surface run-off or fluvial flow. The typical accuracy of hydrologic models such as this is ±0.25m for estimating flood levels at particular locations.
OS	Ordnance Survey
Residual Flood Risk	The flood risk remaining after taking mitigating actions.
SFRA	Strategic Flood Risk Assessment. This is a brief flood risk assessment provided by the local council

SuDS	A Sustainable drainage system (SuDS) is designed to replicate, as closely as possible, the natural drainage from the Site (before development) to ensure that the flood risk downstream of the Site does not increase as a result of the land being developed. SuDS also significantly improve the quality of water leaving the Site and can also improve the amenity and biodiversity that a Site has to offer. There are a range of SuDS options available to provide effective surface water management that intercept and store excess run-off. Sites over 1 Ha will usually require a sustainable drainage assessment if planning permission is required. The current proposal is that from April 2014 for more than a single dwelling the drainage system will require approval from the SuDS Approval Board (SABs).

Aquifer Types

Principal aquifer	These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
Secondary A aquifer	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
Secondary B aquifer	Predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.
Secondary undifferentiated	Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type due to the variable characteristics of the rock type.
Unproductive Strata	These are rock layers or drift deposits with low permeability that has negligible significance for water supply or river base flow.

NPPF (2023) terms

Exception test	Applied once the sequential test has been passed. For the exception test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk and a site-specific FRA must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
Sequential test	Aims to steer new development to areas with the lowest probability of flooding.
Essential infrastructure	Essential infrastructure includes essential transport infrastructure, essential utility infrastructure and wind turbines.

Water compatible	Water compatible land uses include flood control infrastructure, water-based recreation and lifeguard/coastal stations.
Less vulnerable	Less vulnerable land uses include police/ambulance/fire stations which are not required to be operational during flooding and buildings used for shops/financial/professional/other services.
More vulnerable	More vulnerable land uses include hospitals, residential institutions, buildings used for dwelling houses/student halls/drinking establishments/hotels and sites used for holiday or short-let caravans and camping.
Highly vulnerable	Highly vulnerable land uses include police/ambulance/fire stations which are required to be operational during flooding, basement dwellings and caravans/mobile homes/park homes intended for permanent residential use.

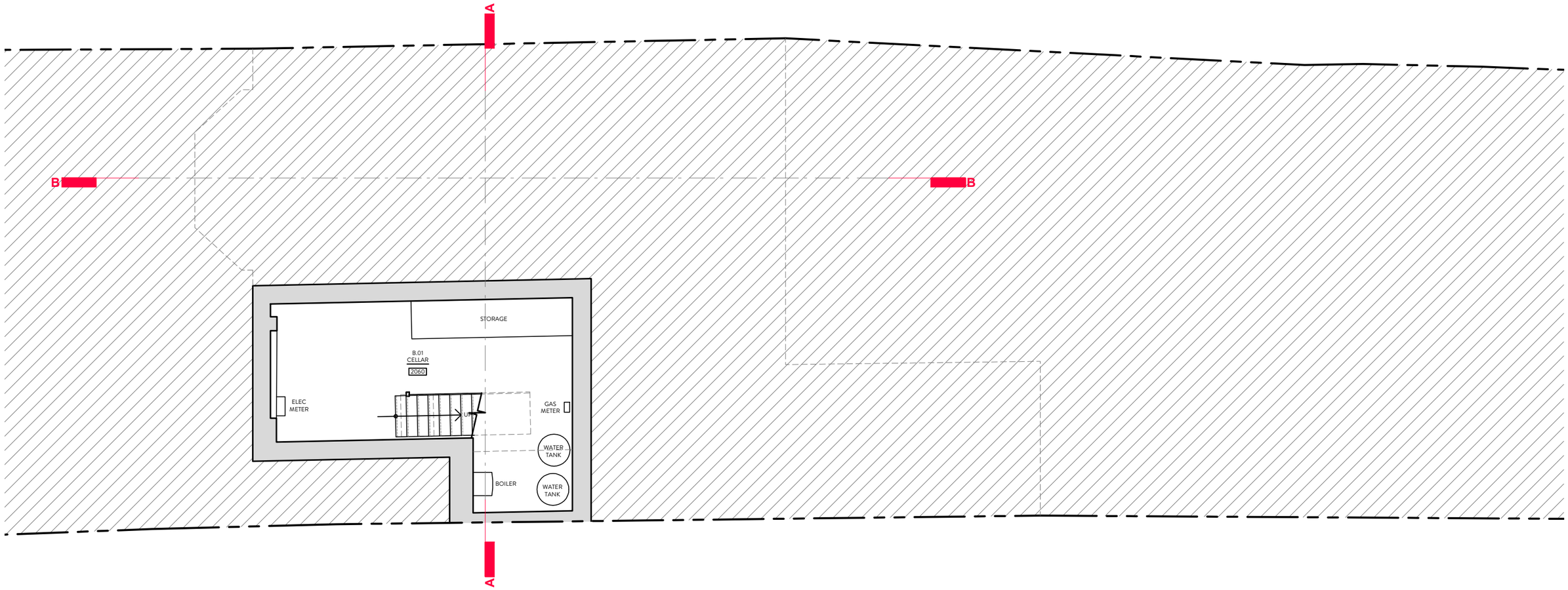
Data Sources

Aerial Photography	Contains Ordnance Survey data © Crown copyright and database right 2024 BlueSky copyright and database rights 2024
Geology (Bedrock/Superficial/Borehole locations)	Contains British Geological Survey materials © NERC 2024 Ordnance Survey data © Crown copyright and database right 2024
Flood Risk (Flood Zone/RoFRS/Pluvial/Surface Water Features/Reservoir/SPZ)	Environment Agency copyright and database rights 2024 Ordnance Survey data © Crown copyright and database right 2024
Flood Risk (Groundwater)	GeoSmart, BGS & OS GW5 (v2.4) Map (GeoSmart, 2024) Contains British Geological Survey materials © NERC 2024 Ordnance Survey data © Crown copyright and database right 202
Topographic Data	OS LiDAR/EA Contains Ordnance Survey data © Crown copyright and database right 2024 Environment Agency copyright and database rights 2024

9. Appendices

Appendix A

Site plans



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0 500 2500mm

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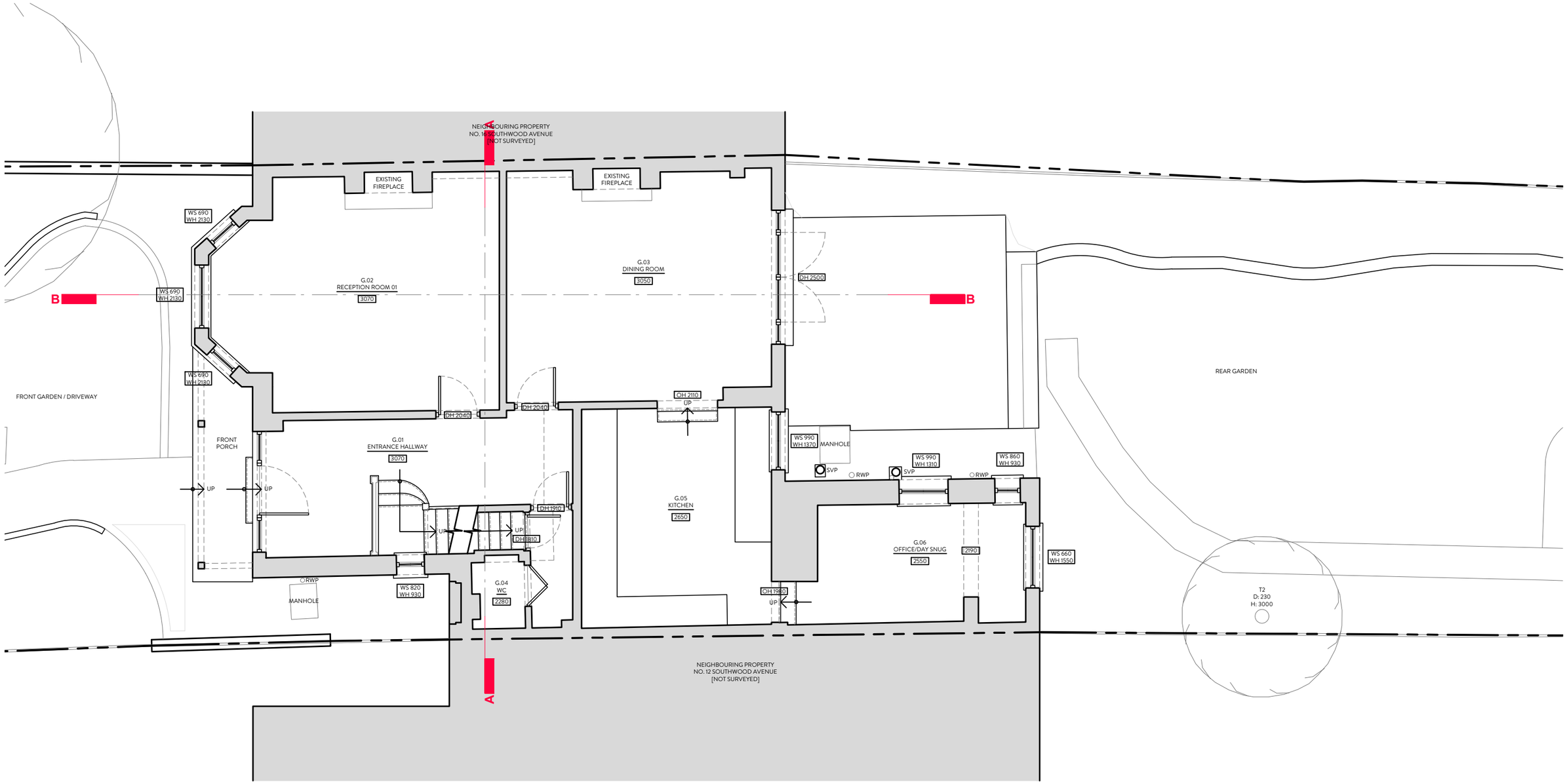
PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: EXISTING BASEMENT FLOOR PLAN

DATE: AUG 2024 STATUS: PLANNING SCALE: 1:75 @ A3 DWG NO/REV:

MALIN+LYNN
+44 (0)7980 504 546
+44 (0)7931 659006
hello@malinandlynn.com

121/100



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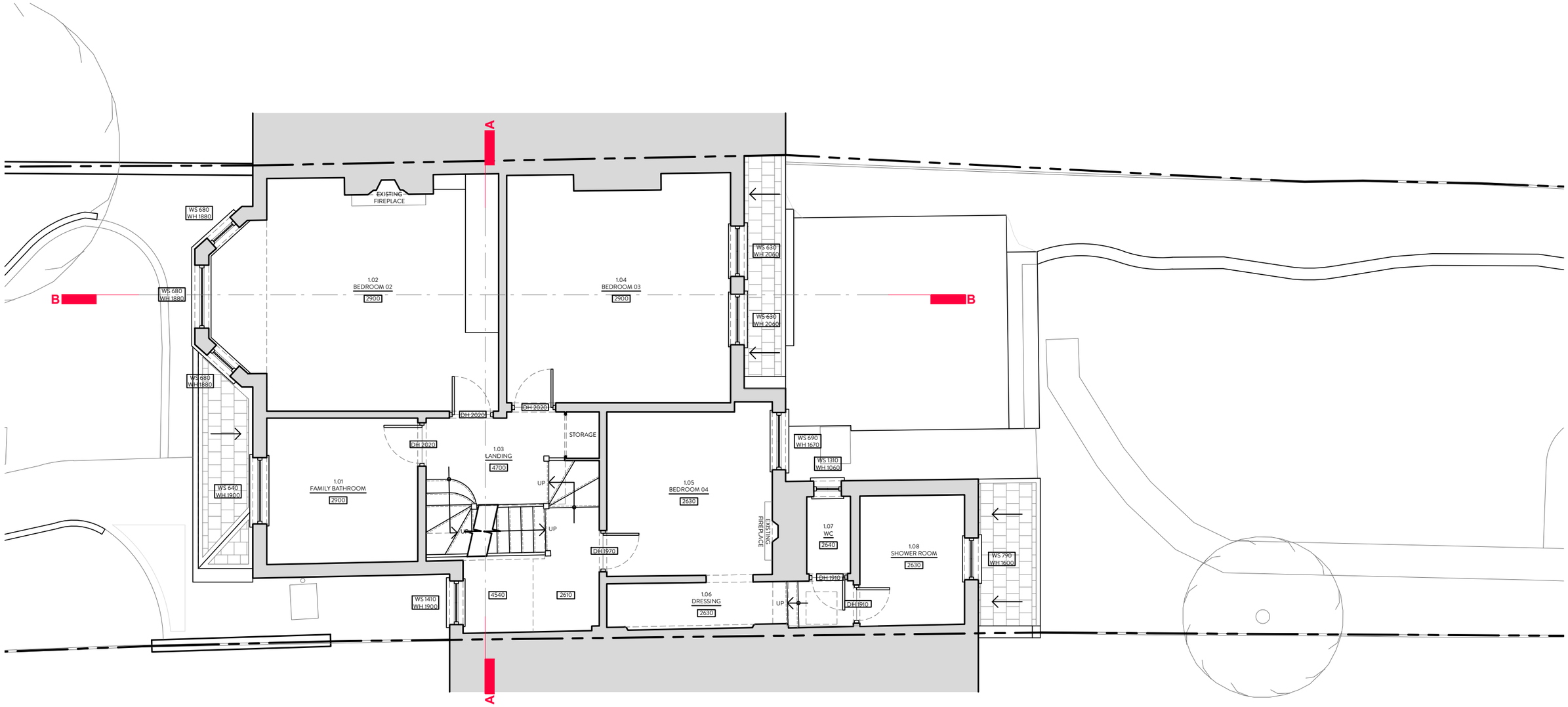

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DATE: AUG 2024 STATUS: PLANNING SCALE: 1:75 @ A3 DWG NO/REV:

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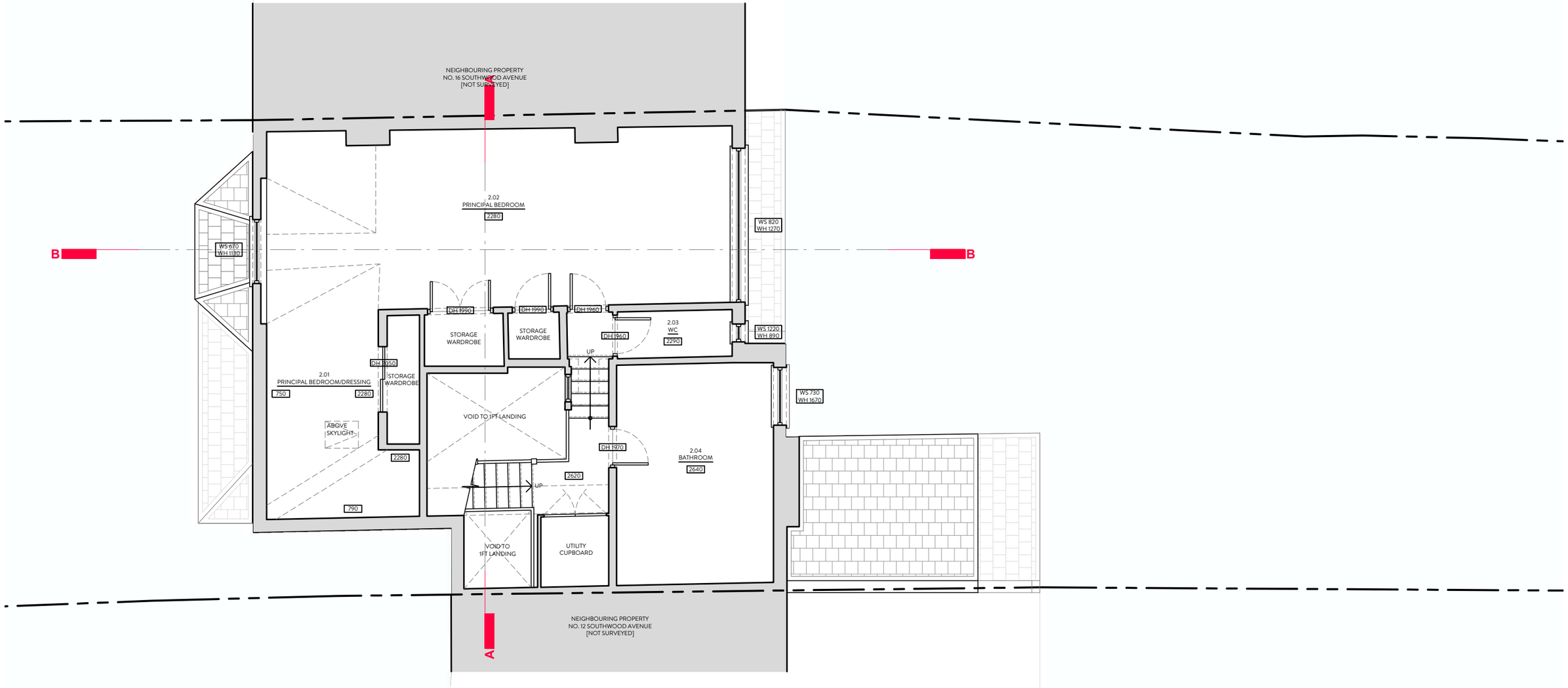

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PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

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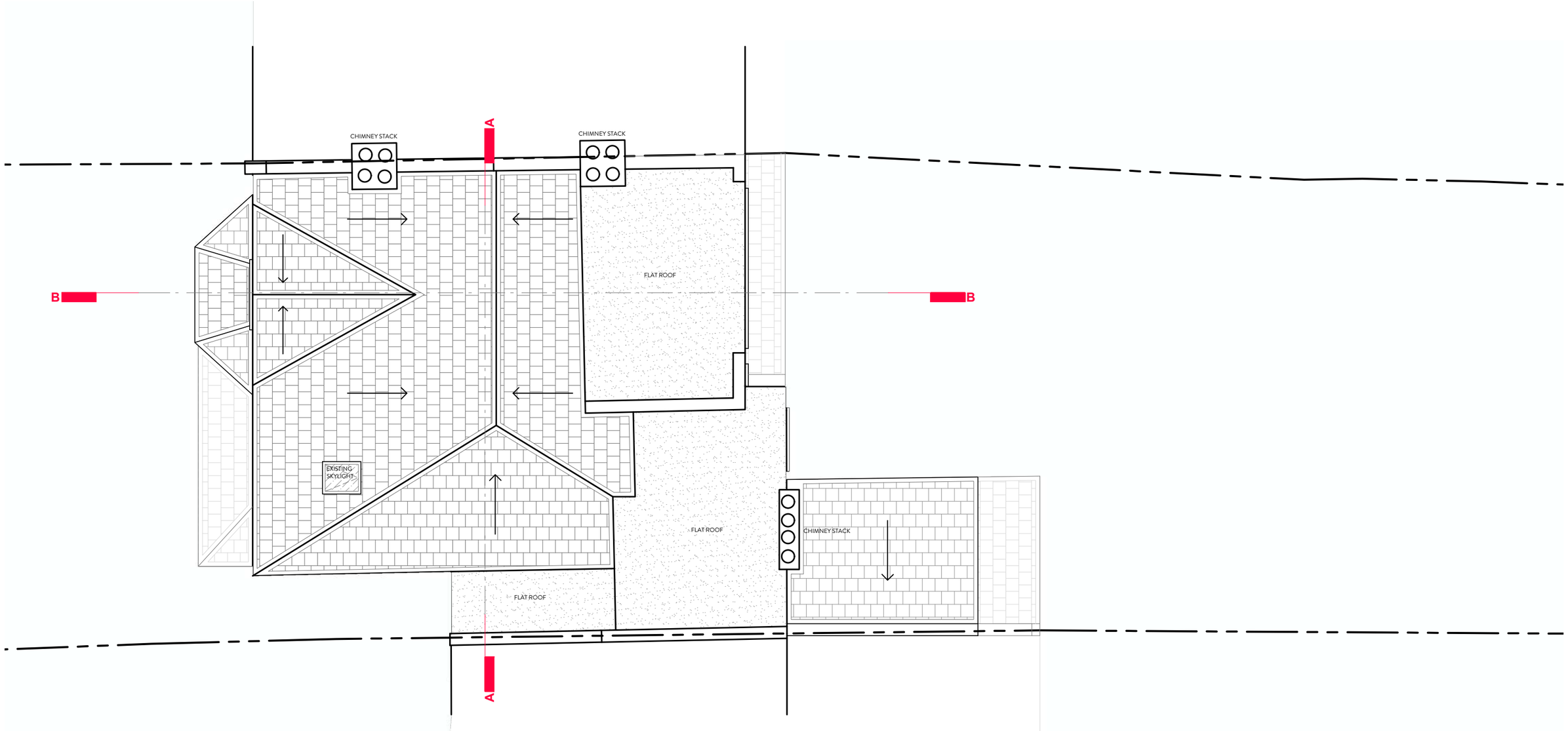

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100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

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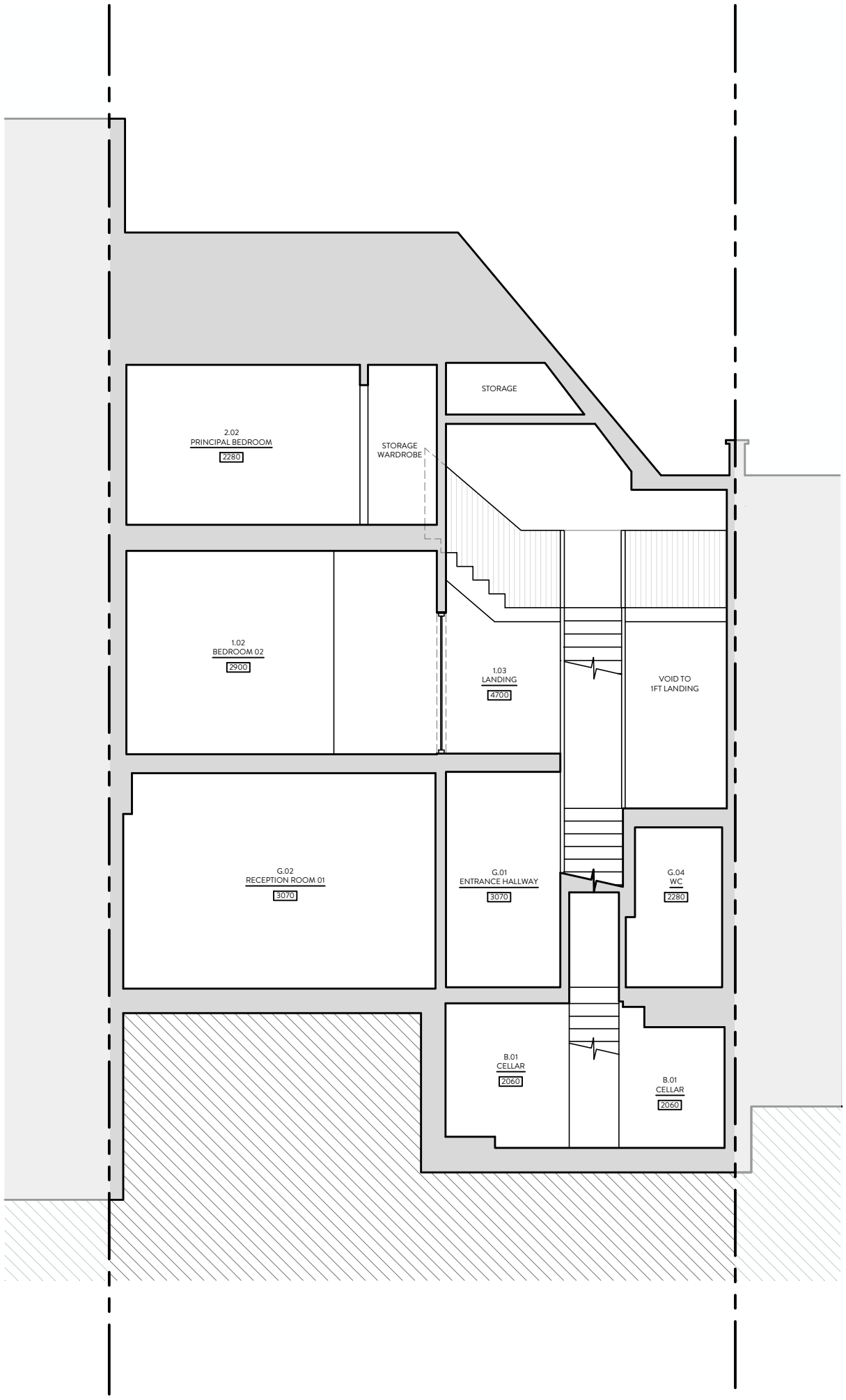

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121/106

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: EXISTING SECTION BB/SIDE ELEVATION

DATE: AUG 2024 STATUS: PLANNING SCALE: 1:75 @ A3 DWG NO/REV:

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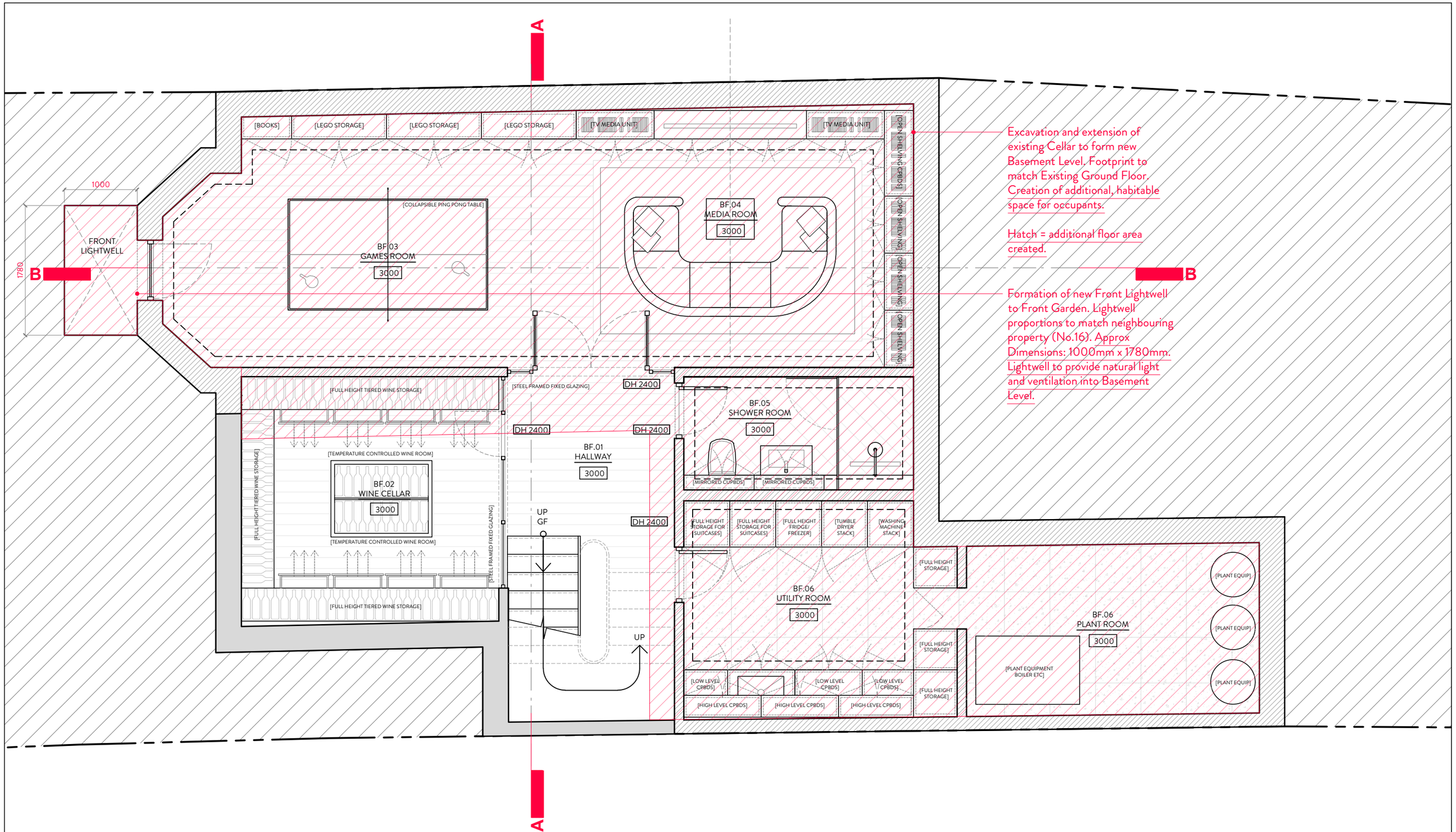

Excavation and extension of existing Cellar to form new Basement Level. Footprint to match Existing Ground Floor. Creation of additional, habitable space for occupants.

Hatch = additional floor area created.

Formation of new Front Lightwell to Front Garden. Lightwell proportions to match neighbouring property (No.16). Approx Dimensions: 1000mm x 1780mm. Lightwell to provide natural light and ventilation into Basement Level.

N

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED BASEMENT FLOOR PLAN

DATE: SEPT 2024 STATUS: PLANNING SCALE: 1:50 @ A3 DWG NO/REV:

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121/200

NEIGHBOURING PROPERTY
NO. 16 SOUTHWOOD AVENUE
[NOT SURVEYED]

A

1360

PROPOSED FIREPLACE

[OPEN SHELVING]

[OPEN SHELVING]

WS 690
WH 2130

WS 690
WH 2130

WS 690
WH 2130

B

WALK ON GRATE

G.02
LIVING ROOM
3070

DN
LGF

[PIANO STRAIGHT]

G.04
DINING ROOM
3100

DH 3000

[GLAZED HINGED DOOR]

REAR TERRACE

B

[SLIDING DOORS]

DH 3000

G.03
WC
2600
DH 2400

[CLOAK/BOOT STORAGE]

[CLOAK/BOOT STORAGE]

[CLOAK/BOOT STORAGE]

FRONT PORCH

DN
LGF

G.01
ENTRANCE HALLWAY
3070

UP
1F

DN
BF

UP

LINE OF EXISTING REAR/SIDE OF NO.14

G.05
KITCHEN
3100

[HOB]

[BAR AREA]

[FULL HEIGHT FRIDGE]

[FULL HEIGHT FREEZER]

[FULL OVEN MICROWAVE STACK]

[CORNER CPBDS]

[LOW CPBDS]

[LOW DRAWERS]

[LOW DRAWERS]

[LOW CPBDS]

[DW]

[LOW CPBDS]

[SINK WITH STORAGE]

[P/O BINS]

[LOW CPBDS]

[LOW CPBDS]

[LOW CPBDS]

[LOW CPBDS]

[HIGH LEVEL CUPBOARDS]

[HIGH LEVEL CUPBOARDS]

[HIGH LEVEL CUPBOARDS]

[HIGH LEVEL CUPBOARDS]

RWP

MANHOLE

1670

WH 3000

[FIXED GLAZING]

NEIGHBOURING PROPERTY
NO. 12 SOUTHWOOD AVENUE
[NOT SURVEYED]

A

Creation of new Ground Floor Rear/Side Extension to provide additional living space for occupants. Extension to include double glazed, aluminium doors to Rear Garden. Rear Extension to project approx. 1360mm from Existing Rear Elevation.

Due to North Direction there are no light restrictions to No.16.

New side extension from Existing GF Rear Addition. Extension to include new double glazed aluminium windows and doors to Rear Garden.

Side Extension to project approx. 1670mm from existing wall towards No.16.

N

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED GROUND FLOOR PLAN

DATE: SEPT 2024 STATUS: PLANNING SCALE: 1:50 @ A3 DWG NO/REV:

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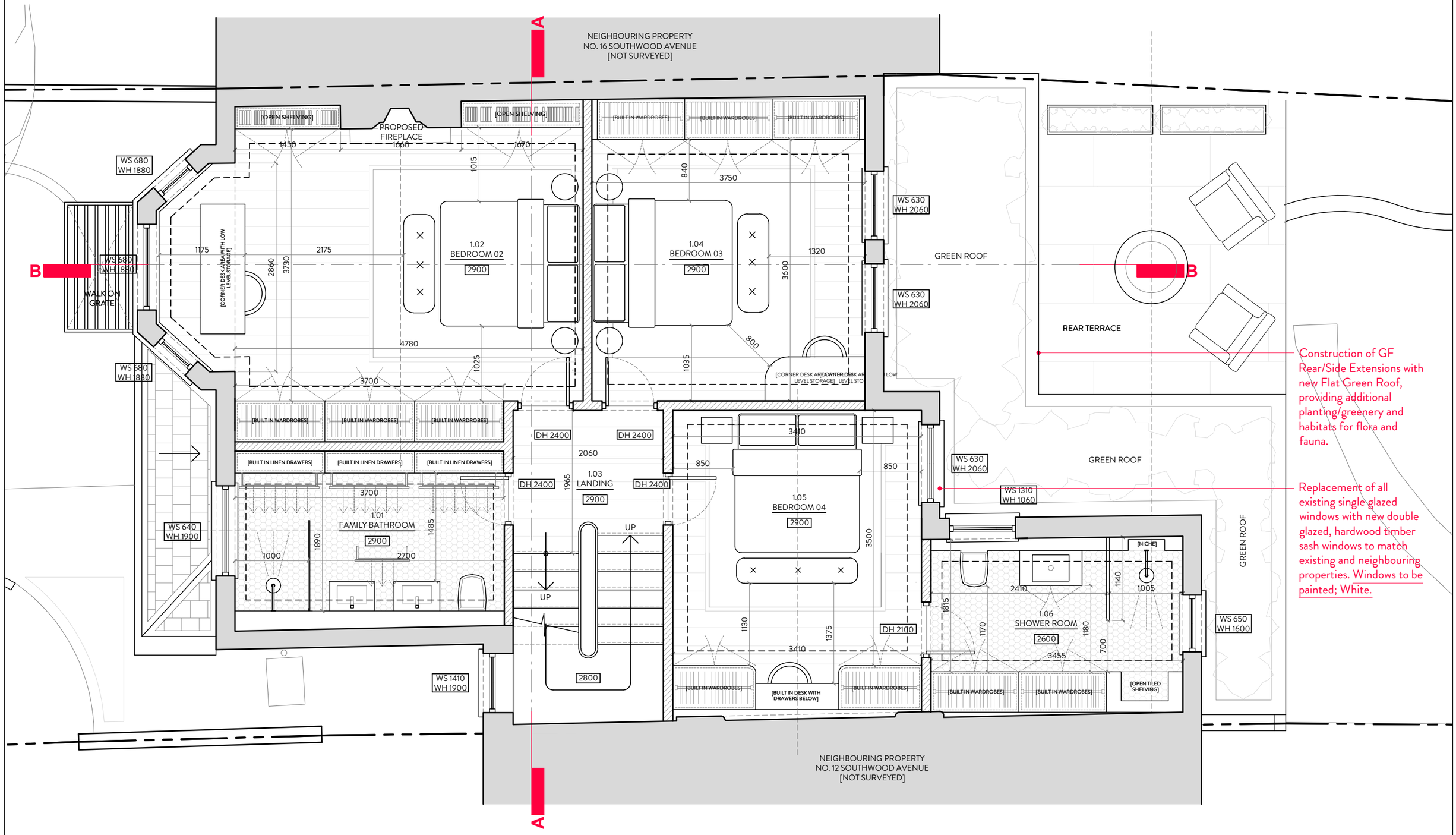

Construction of GF Rear/Side Extensions with new Flat Green Roof, providing additional planting/greenery and habitats for flora and fauna.

Replacement of all existing single glazed windows with new double glazed, hardwood timber sash windows to match existing and neighbouring properties. Windows to be painted; White.

N

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED FIRST FLOOR PLAN

DATE: SEPT 2024 STATUS: PLANNING SCALE: 1:50 @ A3 DWG NO/REV:

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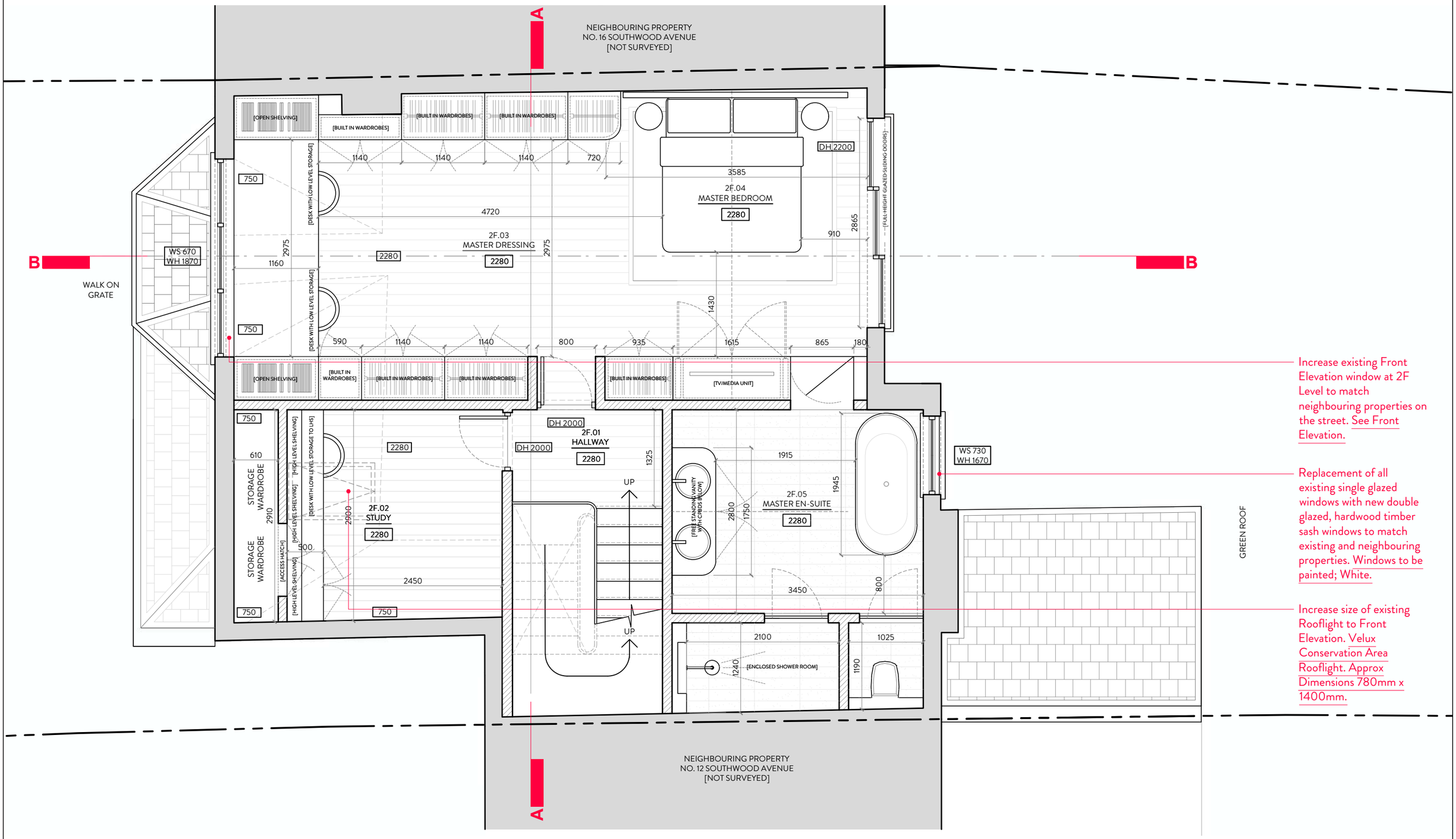

Increase existing Front Elevation window at 2F Level to match neighbouring properties on the street. See Front Elevation.

Replacement of all existing single glazed windows with new double glazed, hardwood timber sash windows to match existing and neighbouring properties. Windows to be painted; White.

Increase size of existing Rooflight to Front Elevation. Velux Conservation Area Rooflight. Approx Dimensions 780mm x 1400mm.

N

0 500 2500mm
100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED SECOND FLOOR PLAN

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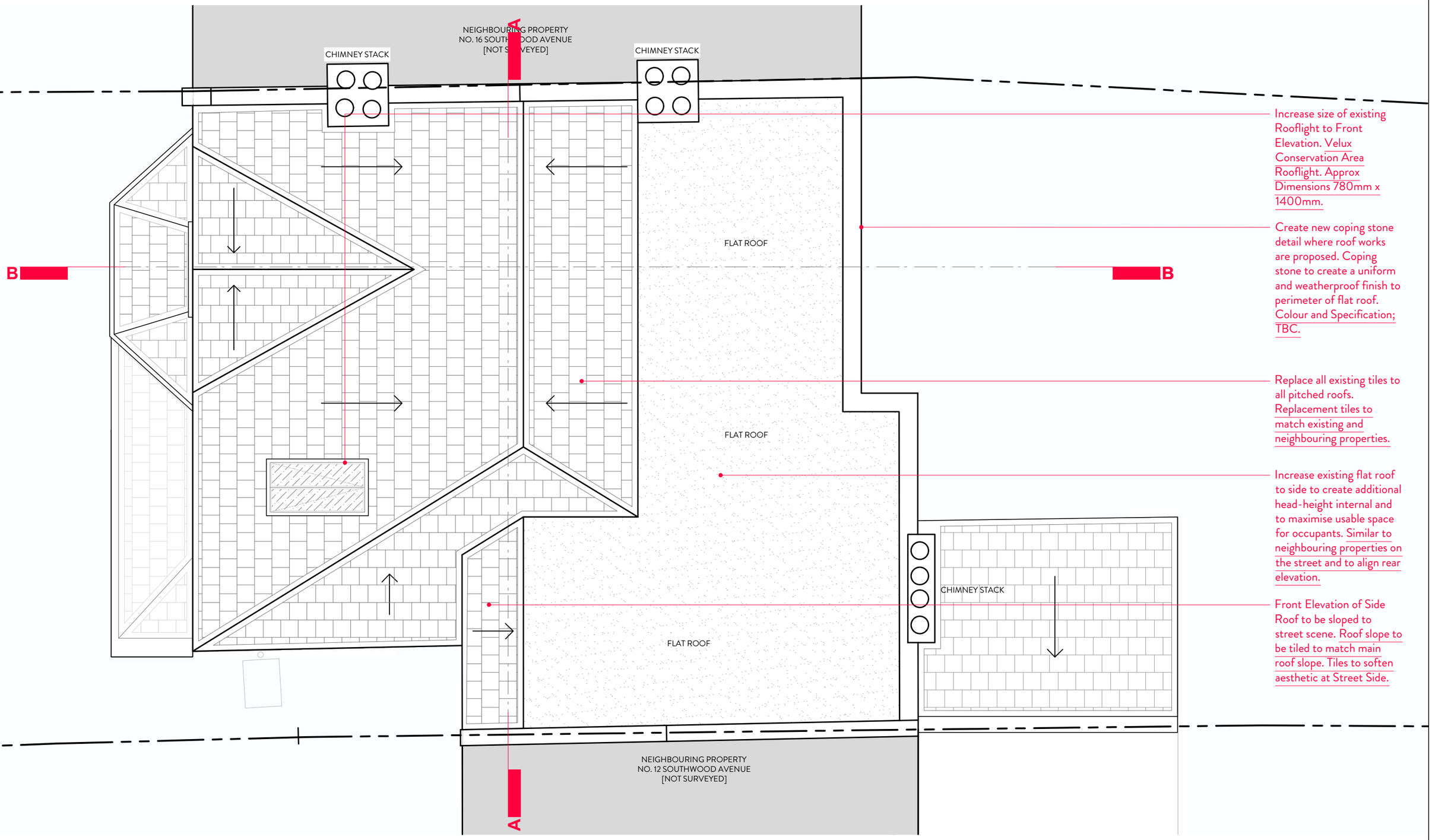

Increase size of existing Rooflight to Front Elevation. Velux Conservation Area Rooflight. Approx Dimensions 780mm x 1400mm.

Create new coping stone detail where roof works are proposed. Coping stone to create a uniform and weatherproof finish to perimeter of flat roof. Colour and Specification; TBC.

Replace all existing tiles to all pitched roofs. Replacement tiles to match existing and neighbouring properties.

Increase existing flat roof to side to create additional head-height internal and to maximise usable space for occupants. Similar to neighbouring properties on the street and to align rear elevation.

Front Elevation of Side Roof to be sloped to street scene. Roof slope to be tiled to match main roof slope. Tiles to soften aesthetic at Street Side.

N

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED ROOF PLAN

DATE: SEPT 2024 STATUS: PLANNING SCALE: 1:50 @ A3 DWG NO/REV:

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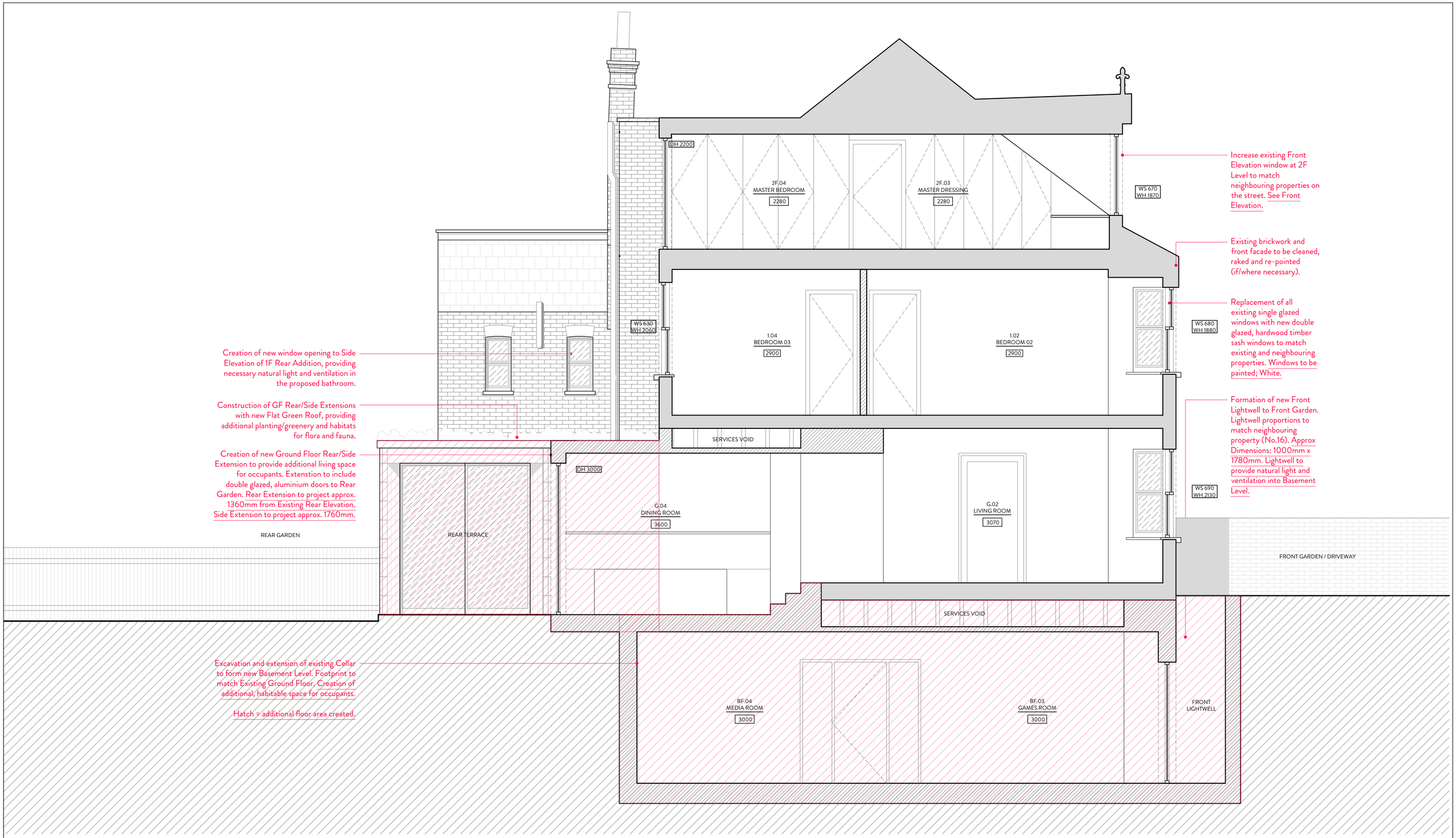

0 500 2500mm

100 1000

PROJECT: 14 SOUTHWOOD AVENUE, HIGHGATE N6 5RZ

DRAWING TITLE: PROPOSED SECTION BB

DATE: SEPT 2024 STATUS: PLANNING SCALE: 1:50 @ A2 DWG NO/REV:

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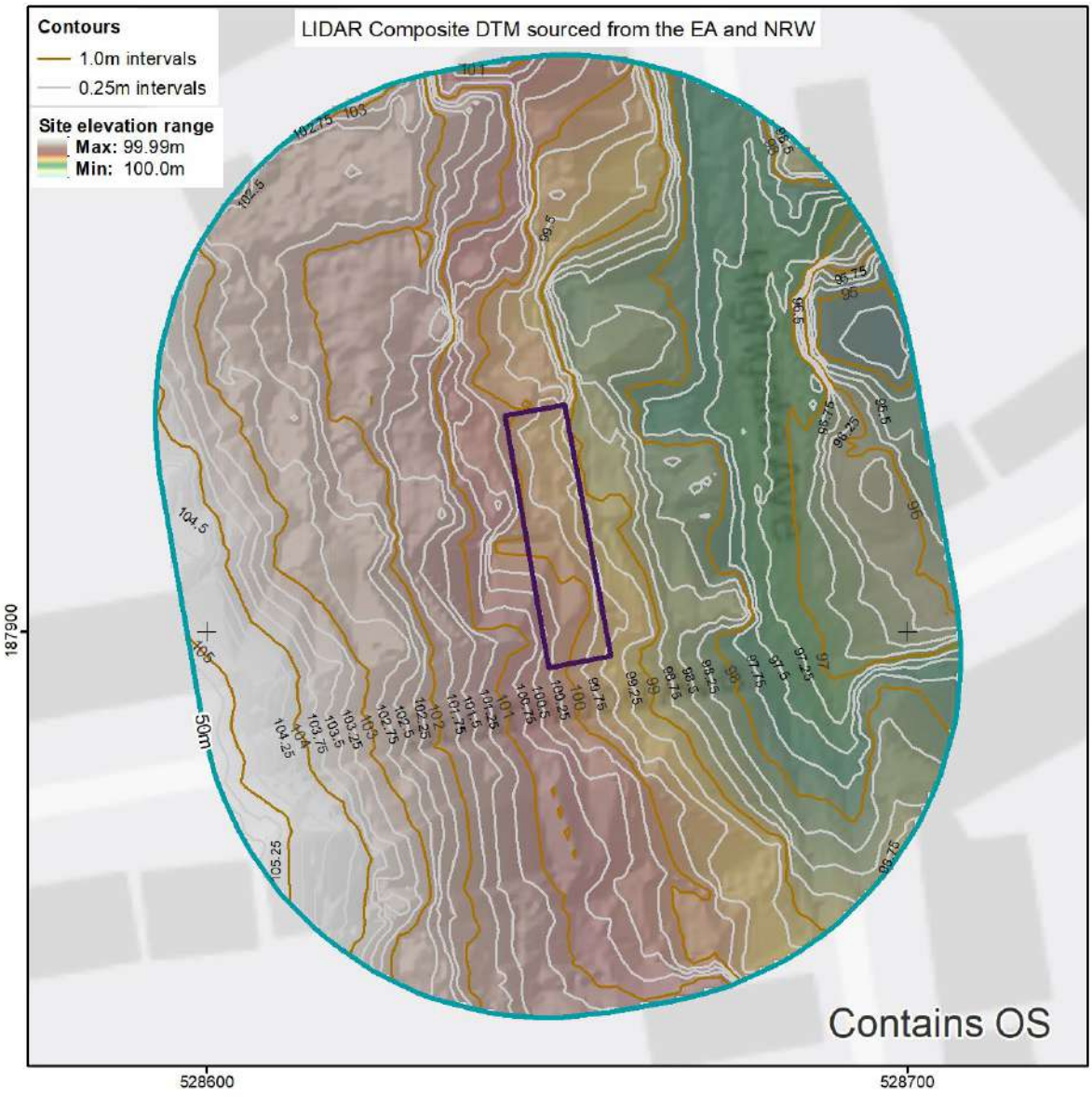
121/205

GeoSmart Information

Appendix B

Environment Agency LiDAR map



GeoSmart Information

Appendix C

Thames Water sewer flooding report

Sewer Flooding
History Enquiry

Property Searches

GeoSmart Information Ltd

Bellstone

Search address supplied	14 Southwood Avenue London N6 5RZ
Your reference	84302
Our reference	SFH/SFH Standard/2024_5086643
Received date	**26 November 2024**
Search date	**26 November 2024**

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Sewer Flooding
History Enquiry

Property Searches

Search address supplied: 14,Southwood Avenue,London,N6 5RZ

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

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0800 009 4540

Sewer Flooding
History Enquiry

Thames Water Property Searches

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.

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: 0800 316 9800 or website www.thameswater.co.uk

Thames Water Utilities Ltd
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searches@thameswater.co.uk
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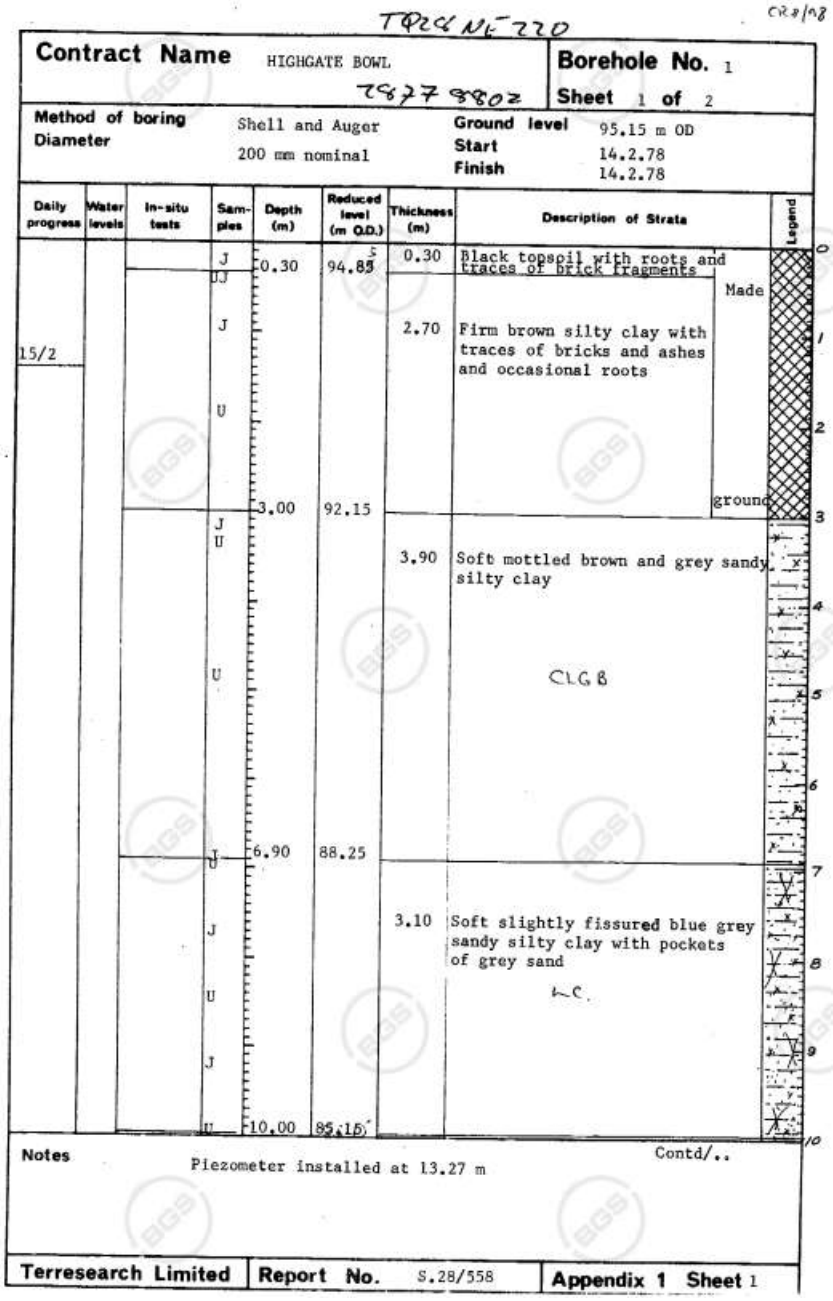
0800 009 4540

GeoSmart Information

Appendix D

BGS Borehole logs



TQ26NE 220

CR8/78

Contract Name HIGHGATE BOWL 7877 8802

Borehole No. 1

Sheet 1 **of** 2

Method of boring Shell and Auger

Diameter 200 mm nominal

Ground level 95.15 m OD

Start 14.2.78

Finish 14.2.78

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata	Legend
			J	0.30	94.85	0.30	Black topsoil with roots and traces of brick fragments	
			UJ				Made	
15/2			J			2.70	Firm brown silty clay with traces of bricks and ashes and occasional roots	
			U					
				3.00	92.15		ground	
			J			3.90	Soft mottled brown and grey sandy silty clay	
			U				CLG 8	
				6.90	88.25			
			J			3.10	Soft slightly fissured blue grey sandy silty clay with pockets of grey sand	
			U				LC.	
			J					
			U	10.00	85.15			

Notes Piezometer installed at 13.27 m

Contd/..

Terresearch Limited | **Report No.** S.28/558 | **Appendix 1 Sheet** 1

TQ26NE220

Contract Name	HIGHGATE BOWL	Borehole No. 1
		Sheet 2 of 2
Method of boring Diameter		Ground level Start Finish

Daily progress	Water levels	In-situ tests	Samples	Depth (m)	Reduced level (m O.D.)	Thickness (m)	Description of Strata	Legend
	16/2		W J U J U U			5.00	Stiff fissured blue grey silty clay	
15/2			J	15.00	80.15		Bottom of Borehole	

Notes

Terresearch Limited	Report No. S.28/558	Appendix 1 Sheet 2

GROUND EXPLORATIONS LTD.

TQ/28NE/82
2862 8809

BOREHOLE No. C

Contract Name ARCHWAY ROAD. Report No. 3874/SJB

Client London Borough of Haringey, Site Address Highgate,

Address Hornsey Town Hall, London, N.6.
The Broadway,
Crouch End, N.8.

Standing Water Level 19'6" Method of Boring Shell/Auger.

Water Struck 25'0" Diameter 6/5 inches.

Ground Level 328·7 (+100 m) Start 13.12.66. Finish 19.12.66.

Remarks

JARS		CORES	BULK
4201 2'0"	4226 65'0"	4203 6'6"	
4202 5'6"	4227 Water.	4205 11'6"	
4204 10'6"		4207 16'6"	
4206 15'6"		4209 21'6"	
4208 20'6"		4211 26'6"	
4210 25'6"		4213 31'6"	
4212 30'6"		4215 36'6"	
4214 35'6"		4217 41'6"	
4216 40'6"		4219 47'6"	
4218 45'6"		4221 53'6"	
4220 50'6"		4223 58'6"	
4222 55'6"		4225 63'6"	
4224 60'6"			

	Description	Thickness	Depth
MGRD	Made ground (topsoil, clay etc.,)	5'0"	5'0"
LC	Stiff Brown/grey mottled silty clay	15'0"	20'0"
	Stiff blue silty clay, with fragments of shells near base.	34'0"	54'0"
LC	Stiff blue fissured clay.	11'0"	65'0"

Disclaimer

This report has been prepared by GeoSmart in its professional capacity as soil, groundwater, flood risk and drainage specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client and is provided by GeoSmart solely for the internal use of its client.

The advice and opinions in this report should be read and relied on only in the context of the report as a whole, taking account of the terms of reference agreed with the client. The findings are based on the information made available to GeoSmart at the date of the report (and will have been assumed to be correct) and on current UK standards, codes, technology and practices as at that time. They do not purport to include any manner of legal advice or opinion. New information or changes in conditions and regulatory requirements may occur in future, which will change the conclusions presented here.

This report is confidential to the client. The client may submit the report to regulatory bodies, where appropriate. Should the client wish to release this report to any other third party for that party's reliance, GeoSmart may, by prior written agreement, agree to such release, provided that it is acknowledged that GeoSmart accepts no responsibility of any nature to any third party to whom this report or any part thereof is made known. GeoSmart accepts no responsibility for any loss or damage incurred as a result, and the third party does not acquire any rights whatsoever, contractual or otherwise, against GeoSmart except as expressly agreed with GeoSmart in writing.

For full T&Cs see http://geosmartinfo.co.uk/terms-conditions

Important consumer protection information

This search has been produced by GeoSmart Information Limited, Suite 9-11, 1st Floor, Old Bank Buildings, Bellstone, Shrewsbury, SY1 1HU.

Tel: 01743 298 100

Email: info@geosmartinfo.co.uk

GeoSmart Information Limited is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom.
- sets out minimum standards which firms compiling and selling search reports have to meet.
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals.
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.
- By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports.
- act with integrity and carry out work with due skill, care and diligence.
- at all times maintain adequate and appropriate insurance to protect consumers.
- conduct business in an honest, fair and professional manner.
- handle complaints speedily and fairly.
- ensure that products and services comply with industry registration rules and standards and relevant laws.
- monitor their compliance with the Code.

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs contact details:

The Property Ombudsman scheme

Milford House

43-55 Milford Street

Salisbury

Wiltshire SP1 2BP

Tel: 01722 333306

Fax: 01722 332296

Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk.

Please ask your search provider if you would like a copy of the search code

Complaints procedure

GeoSmart Information Limited is registered with the Property Codes Compliance Board as a subscriber to the Search Code. A key commitment under the Code is that firms will handle any complaints both speedily and fairly. If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt.
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt.
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time.
- Provide a final response, in writing, at the latest within 40 working days of receipt.
- Liaise, at your request, with anyone acting formally on your behalf.

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs): Tel: 01722 333306, E-mail: admin@tpos.co.uk.

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision. Complaints should be sent to:

Martin Lucass

Commercial Director

GeoSmart Information Limited

Suite 9-11, 1st Floor,

Old Bank Buildings,

Bellstone, Shrewsbury, SY1 1HU

Tel: 01743 298 100

martinlucass@geosmartinfo.co.uk

10. Terms and conditions, CDM regulations and data limitations

Terms and conditions can be found on our website:

http://geosmartinfo.co.uk/terms-conditions/

CDM regulations can be found on our website:

http://geosmartinfo.co.uk/knowledge-hub/cdm-2015/

Data use and limitations can be found on our website:

http://geosmartinfo.co.uk/data-limitations/

End of Report