



2C Landrock Road
London

Basement Impact Assessment

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Remarks:	Preliminary						

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1 Introduction

Tunstall Smith King (TSK) were appointed to work with HSSP Architects to advise on the structural implications of the construction of a basement that will constitute part of a new three-storey building at 2C Landrock Road.

1.1 Project Objectives

The following report has been produced with the aim to consider the effects of the proposed basement construction on the local slope stability, surface water and groundwater regime at 2C Landrock Road and help ensure that the proposed development and the neighbouring properties will not be compromised during construction. The report provides information on the site, the proposed development and the adjacent properties and incorporates information on how the works will be constructed.

The statements and recommendations contained within this report are based on information derived from the sources referenced within the document and may include information provided by the Client and other parties, as well as anecdotal information. It must be noted that there might be special conditions on site which have not been revealed within the sources, and subsequently, have not been reflected in this report. No liability can be accepted for any such conditions.

It is understood that this report will constitute part of a planning application for the development at 2C Landrock Road to be submitted to Haringey Council by the Client.

1.2 Planning Policy Context

This report complies with our interpretation of the requirements set out in the RBKC (Royal Borough of Kensington and Chelsea) Basements Planning Policy CL7, which has been adopted by the London Borough of Haringey.

The Basement Planning Policy applies to all new basement developments. It requires the proposed developments to safeguard the structural stability of the existing and nearby buildings and infrastructure and to be protected against the effects of flooding from surface water and sewer. The proposed developments shall include drainage systems that do not impact the adjacent properties or the water environment by way of changing the groundwater regime.

1.3 Data Sources

- British Geological Survey (BGS)
- Haringey Council (March 2013). Sustainable Design & Construction Supplementary Planning Document
- Haringey Council (July 2017). Development Management Plan Document (DPD) in Haringey

- Haringey Council (2011). Surface Water Management Plan for London Borough of Haringey
- Environmental Agency Flood Maps (<https://flood-map-for-planning.service.gov.uk/>),

2 Site Information

2.1 Location

The application site is located in 2C Landrock Road, London, N8 9HP with the general area being under the authority of the London Borough of Haringey. The Ordinance Survey Grid Reference is approximately TQ305883. The site location plan is given in below.



Figure 1 – Site location plan

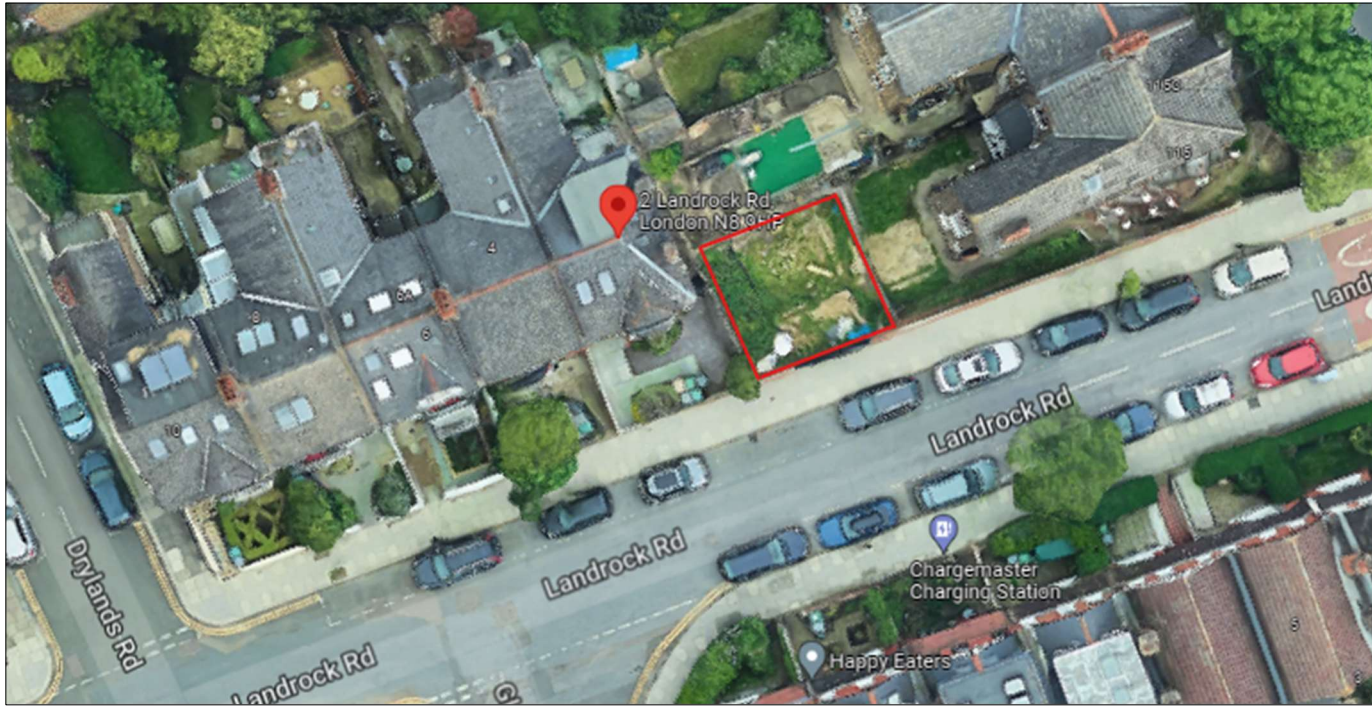


Figure 2 – Aerial view of site

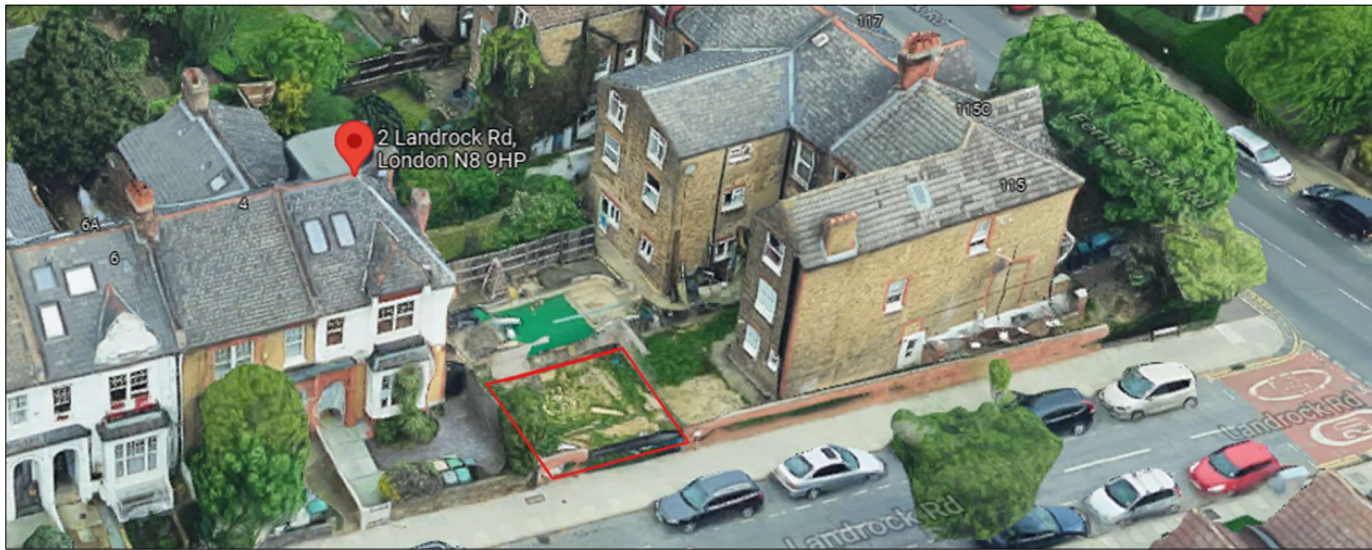


Figure 3 – 3D view showing the buildings adjacent to the site

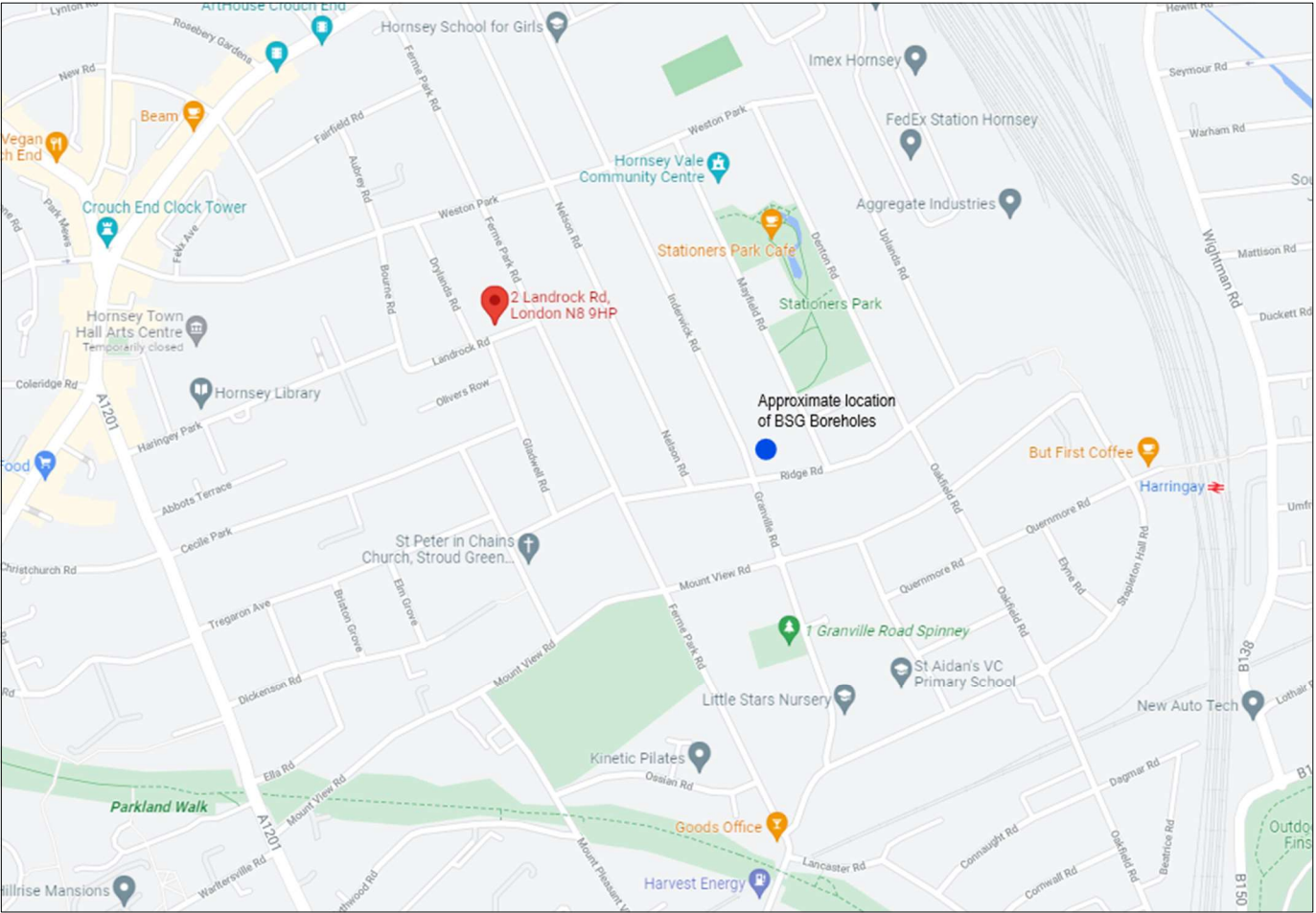


Figure 4 – Approximate location of site

2.2 Site Layout and History

The site is not currently occupied by any structures or trees (Figure 3). There are existing properties to the sides (2 Landrock Road and 115 Ferme Park Road), both comprising three-storey terraced houses. There are gardens to the rear of the site where some mature trees are located. There is also an underground reservoir near the site (Crouch Hill Reservoir) which was built in 1880 and can be seen in Figure 6 and Figure 7.



Figure 5 – Historical map dated 1850

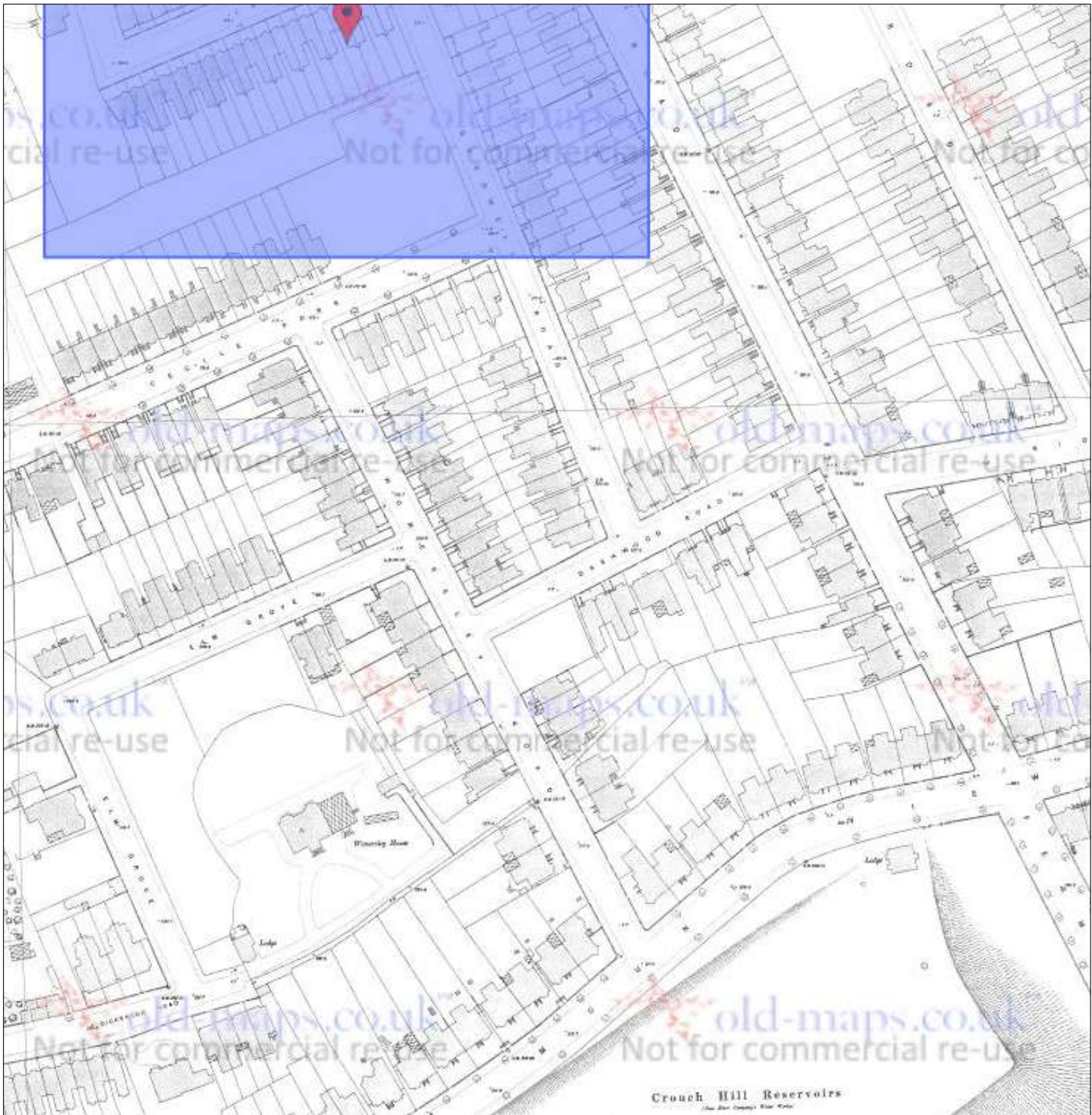


Figure 6 – Historical map dated 1894 (with Crouch Hill Reservoir at bottom right)



Figure 7 – Historical map dated 1990 – 1996 (Crouch Hill Reservoir covered)

2.3 Geology

Maps available online from the British Geological Society (BGS) indicate that the surface geology of the bedrock in the area is London Clay Formation – Clay Silt and Sand (Figure 8). Historic borehole records in the nearby area, 2-4 Inderwick Road (Figure 9), obtained from the BGS website, show the presence of a made ground layer with depth varying from 2.5m to 3.1mbgl (meters below ground level). Below this is the natural strata which comprises soft to firm ground clay (weathered London clay), the clay increased to stiff brown clay between 3m and 4m below that.

Standing water was recorded on one Borehole only, Borehole No.1, at 1.2mbgl. No water entries were observed during boring in any of the three boreholes.

The ground conditions specific to the site under consideration (2C Landrock Road) are expected to be similar to those recorded in the nearby site (2-4 Inderwick Road). A review of the Ordnance Survey Maps showed that the levels at the two sites differ approximately 5m, with the levels sloping down as moving from 2C Landrock Road to 2-4 Inderwick Road. It is expected to have 2.5-5.0m of fill material over the top of London Clay at 2C Landrock Road. (Note: the London clay formation has been documented to be at its lowest level along River Thames and be sloping up both sides as moving away from the river. Considering that the two sites, 2C Landrock Road and 2-4 Inderwick Road, are within a distance of 200m one from the other, this assumption of the ground conditions at the two sites being similar is reasonable.)

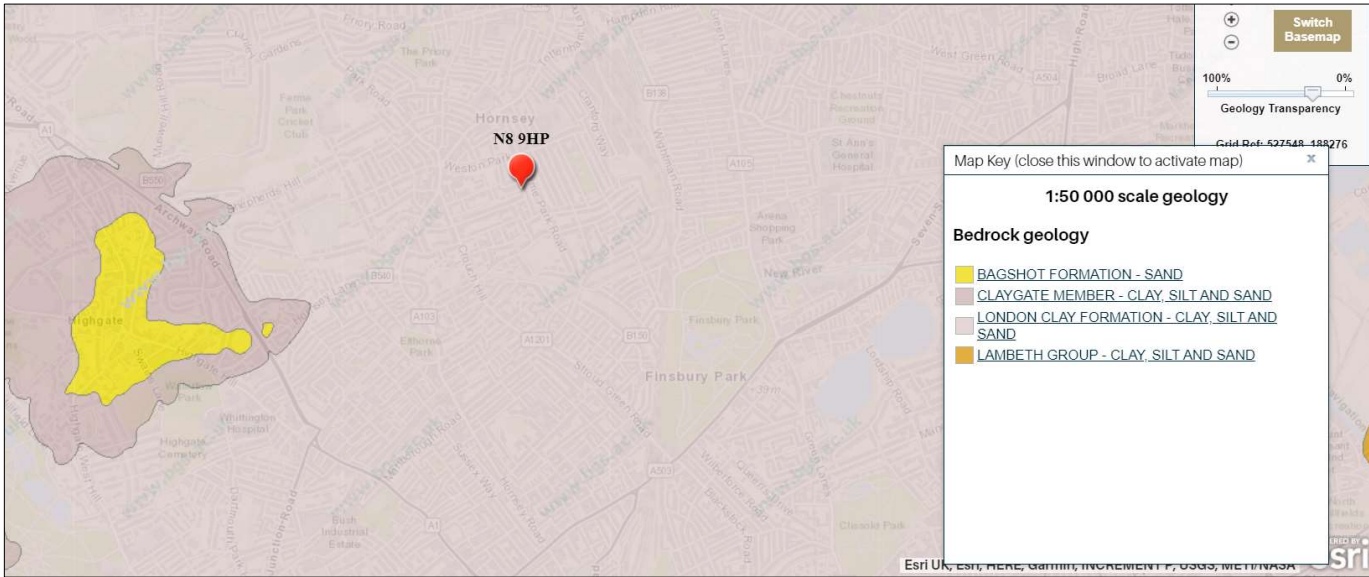


Figure 8 – Bedrock geology

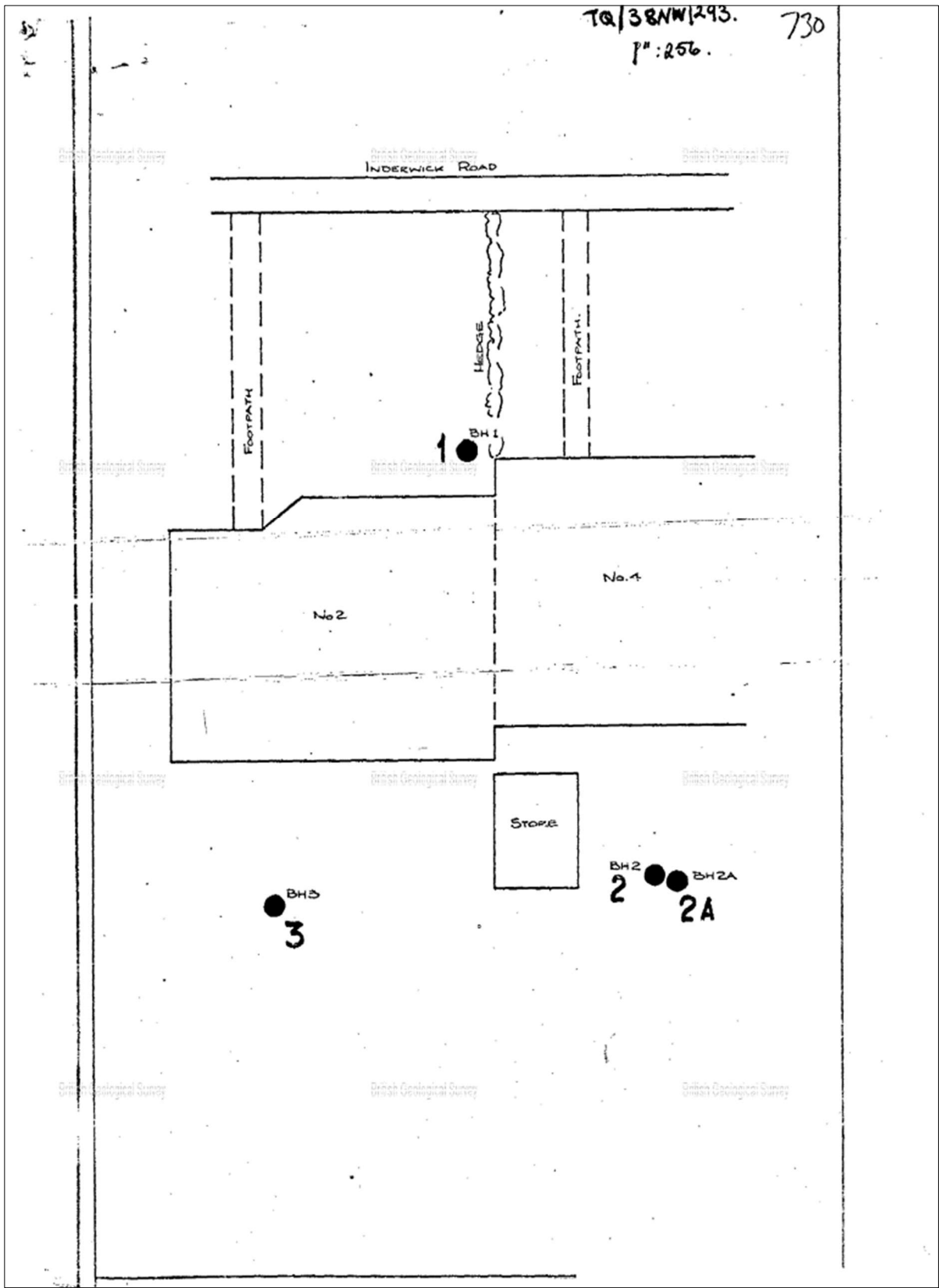


Figure 9 – Borehole locations on nearby area (2-4 Inderwick Road) taken from BGS website.

* Refer to Figure 4 for location of Inderwick Road.

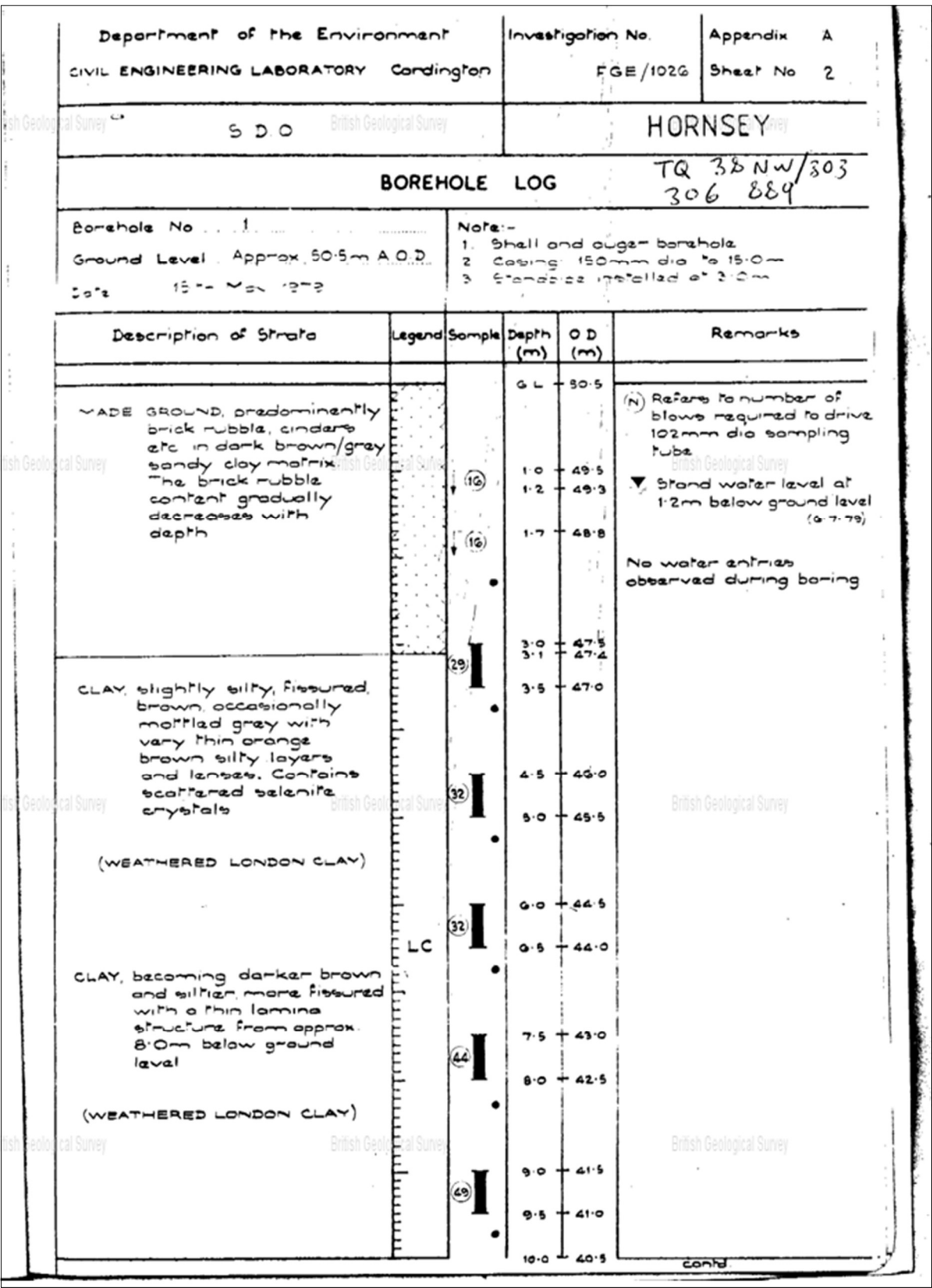


Figure 10 – Borehole No. 1 recording at 2-4 Inderwick Road

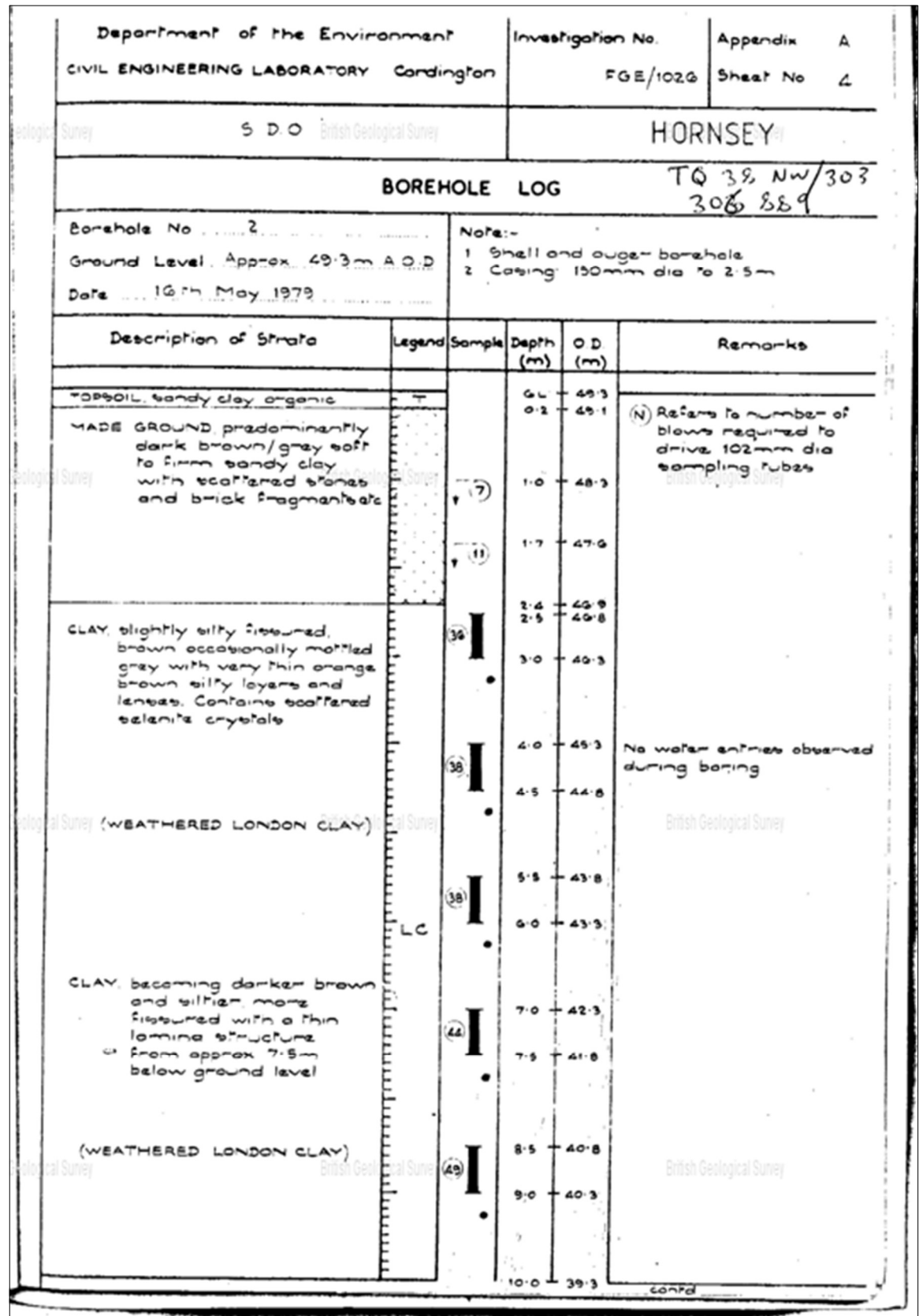


Figure 11 – Borehole No. 2 recording at 2-4 Inderwick Road

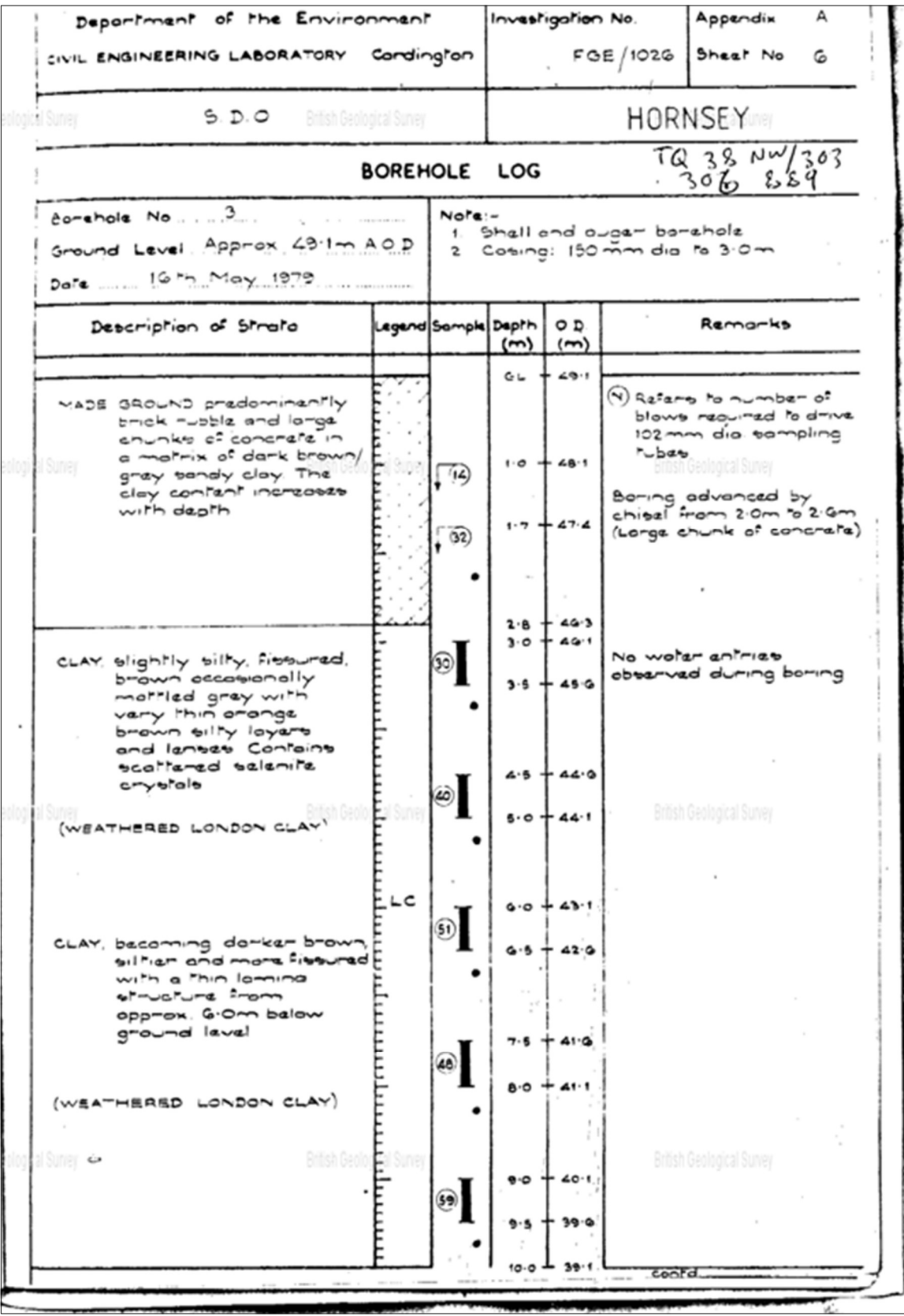


Figure 12 – Borehole No. 3 recording at 2-4 Inderwick Road

3 Hydrological Statement

Borehole No.1 taken from the nearby area (2-4 Inderwick Road) recorded standing water at 1.2mbgl. There is no other indication about water in any of the three boreholes. Considering the presence of London Clay underneath, it is concluded that water encountered in Borehole No.1 is from surface water only. The basement is, therefore, not expected to experience any water ingress from ground water during construction. There might be minor water ingress due to rainfall or any other surface water. We recommend using short-term ground water pumping equipment to protect the excavation from perched water on temporary conditions.

4 Flood Risk

The site is located within Flood Zone 1 as shown on the Environmental Agency Flood Maps (<https://flood-map-for-planning.service.gov.uk/>), therefore the risk of the property flooding is low.

4.1 Surface Water Flooding

Modelling of surface water flooding has been carried out by the Environment Agency and flood maps have been published on their website, identifying four levels of risk: high, medium, low, very low. An extract of a map showing the extend of flooding from surface water at 2C Landrock Road is shown on Figure 13. The modelling shows low-to-medium risk of flooding from surface water.

4.2 Flooding From Reservoirs

There is no risk of flooding from reservoirs as shown on the Environmental Agency map presented in Figure 14.

4.3 Sewer Flooding

We are not aware of any record of sewer flooding for the site under consideration, therefore the risk of sewer flooding is considered low.

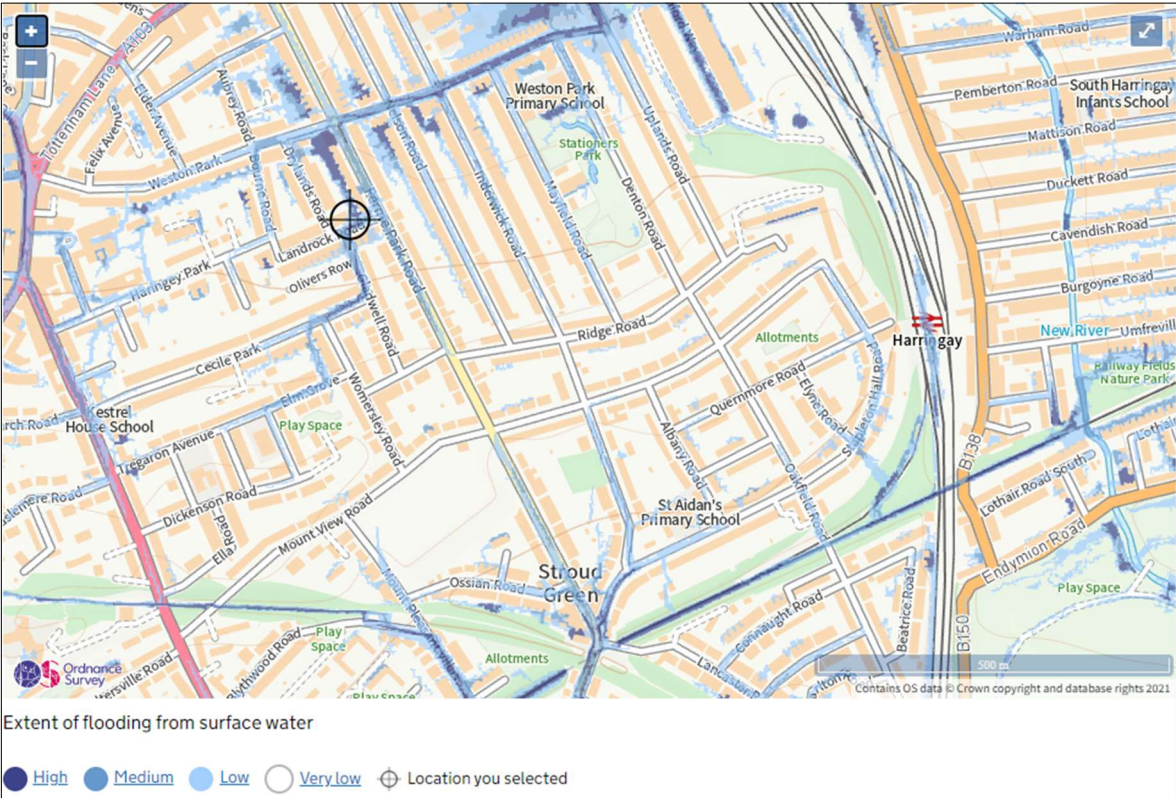


Figure 13 – Map showing the risk of flooding from Surface water, obtained from the Environment Agency Website

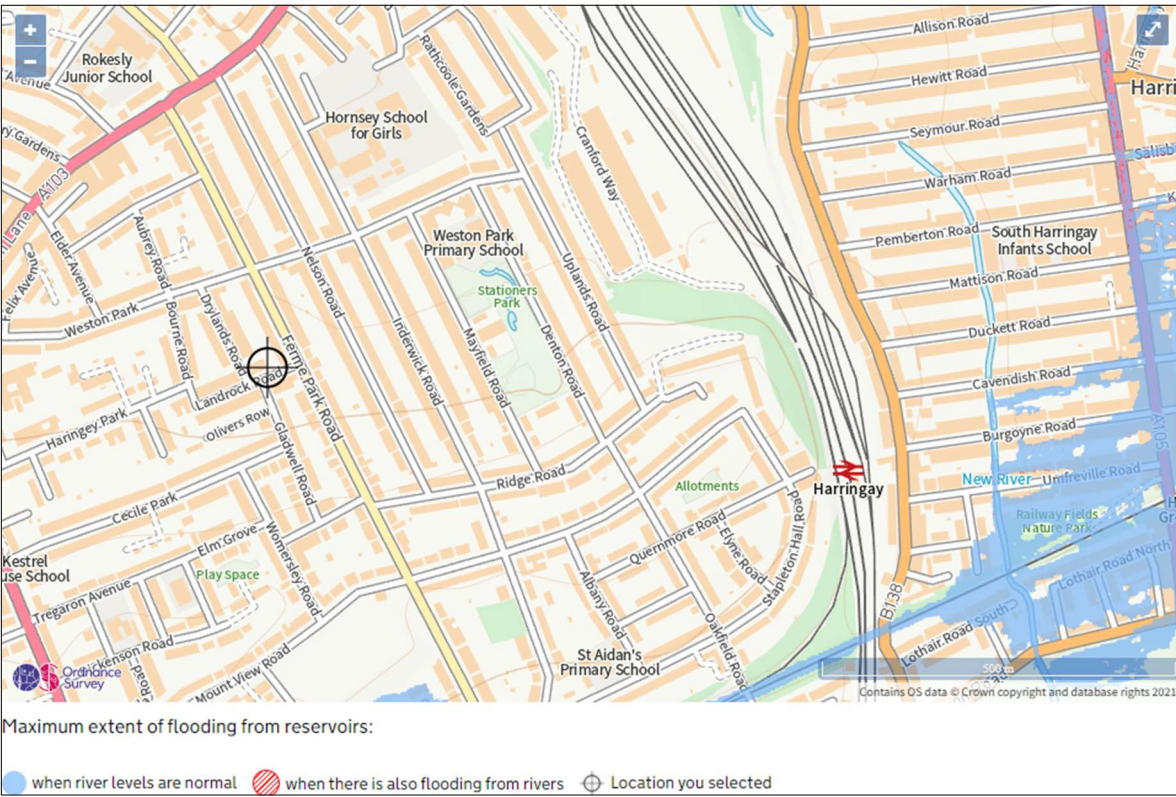


Figure 14 – Map showing risk of flooding from reservoirs, obtained from Environment Agency Website

5 Proposed Development

The proposed development is a three-storey house with a ground floor, a lower ground floor and a basement (Figure 15). Two courtyards are to be introduced, one at lower ground floor and one at basement level. The basement footprint including the lower courtyard are to occupy the entire site. At ground floor level there will be a balcony.

The proximity of the neighbouring buildings (at the sides), the garden (at the rear of the site) and Landrock Road (at the front) to the edges of the basement means that battered-back open excavation is not possible. Thus, the basement walls along the perimeter will be formed by contiguous piled retaining walls with internal RC lining, to support the ground and protect the adjacent properties during excavations. There is an estimated difference of 1.2m at ground levels between the left and right-hand side of the building, therefore, part of the lower ground floor perimeter wall will constitute contiguous piled retaining wall. The contiguous piles will be 400mm diameter, with a 250mm thick RC lining wall and will be inset 150mm from any boundary to allow for tolerance on the piles. The piles will be locally excavated on top to allow for the installation of capping beams. Temporary propping will be needed to stabilize the excavation in temporary conditions and control lateral movements until the construction of the basement concrete shell is finished.

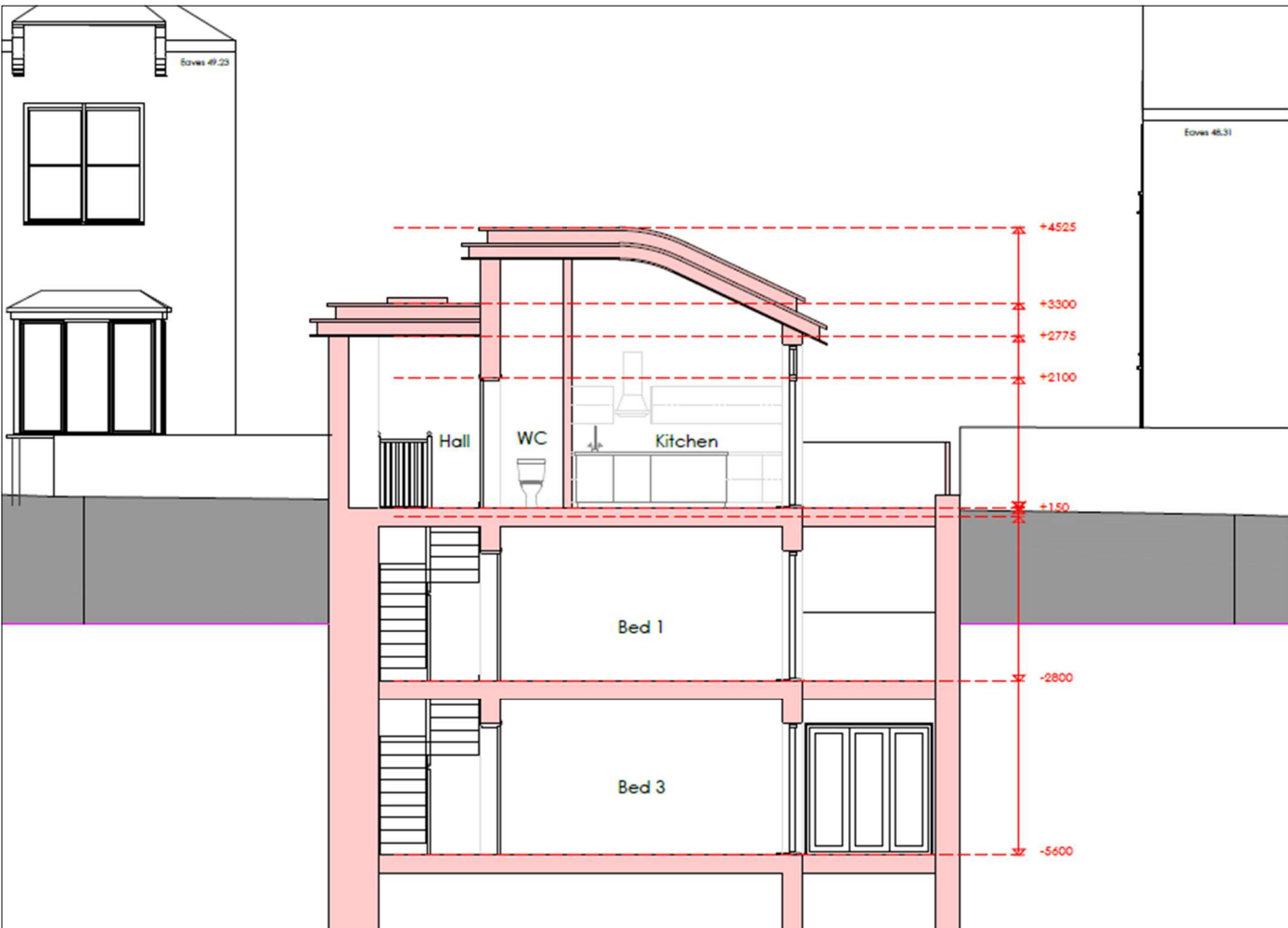


Figure 15 - Proposed building section

The undertaking of such works requires relevant expertise and experience on this type of projects. Therefore, TSK will be involved in the selection of a suitable Contractor for this project. The Contractor shall carry out the works in line with the agreed method of construction. An estimated sequence of works has been detailed in Section 8 of this report to ensure that the neighbouring structures will be safeguarded during construction. Once the works begin, TSK will play a major role in monitoring that the site works are undertaken as set out in the method statement, design drawings and specification.

For further details to the proposed plans and details of the contiguous piled retaining wall, refer to Appendix A and Appendix B.

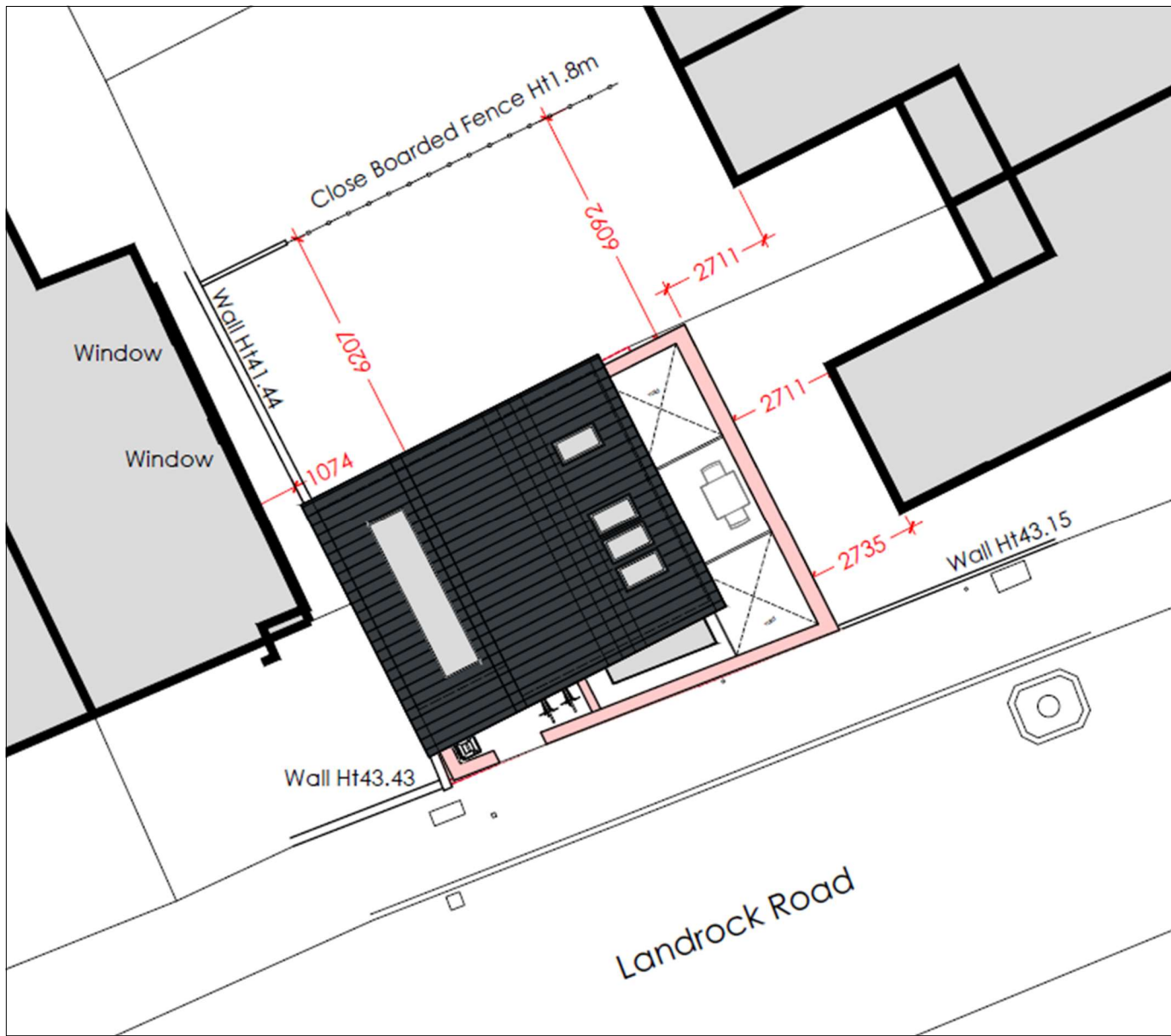


Figure 16 - Proposed building roof plan



Figure 17 – Indicative 3D visuals

6 Proposed Drainage

Subject to the outcome of this planning application, a specialist Mechanical Engineering Consultant will be appointed to design the internal foul and external storm drainage. It is anticipated that ground floor drainage will run via a gravity fed system and feed into the main sewer. The foul drainage and storm from waterproofing sump tank systems will be collected at basement level. The collected drainage will then be pumped back to ground level and discharged into the main sewer. A non-return valve will be installed at the main outfall to secure that the basement areas are not flooded by the combined sewer system in times of sustained heavy rainfall.

7 Basement Waterproofing

The basement will be designed to achieve a Grade 3 level of waterproofing protection (Drained Protection), as specified in BS8102 “Protection of Structures Against Water from the Ground”. The reinforced concrete lining walls and slabs will be constructed using a water-resistant concrete, thus acting as a primary barrier to minimise water ingress. An internal drained cavity system will be installed to act as a secondary barrier. Any moisture accumulated behind the retaining walls will discharge into the cavity and will be collected into a sump to be pumped back to ground level, where it will drain to the main sewer under gravity.

8 Assumed Sequence of construction

A sequence of the works to be taken on site is listed below. This should be read in conjunction with the structural drawings given in Appendix B.

Stage 1: Site Set-up

Install hoardings to the accessible sides of the site boundary and notify the neighbouring properties of commencing works. Locate all services and cap off any live services within the site.

Stage 2: Trial Pits

Before commencing of the construction works, the Contractor is to undertake trial pits, as required, to verify the exact depth of the neighbouring buildings foundations. Local underpinning will be carried out where necessary. All underpins to be cast in maximum 1m-wide sections.

Stage 3: Installation of Piles and Capping Beam to form Contiguous Piled Walls

Install contiguous piles along the perimeter of the proposed basement. Cut down the top of the piles and install reinforced concrete capping beam.

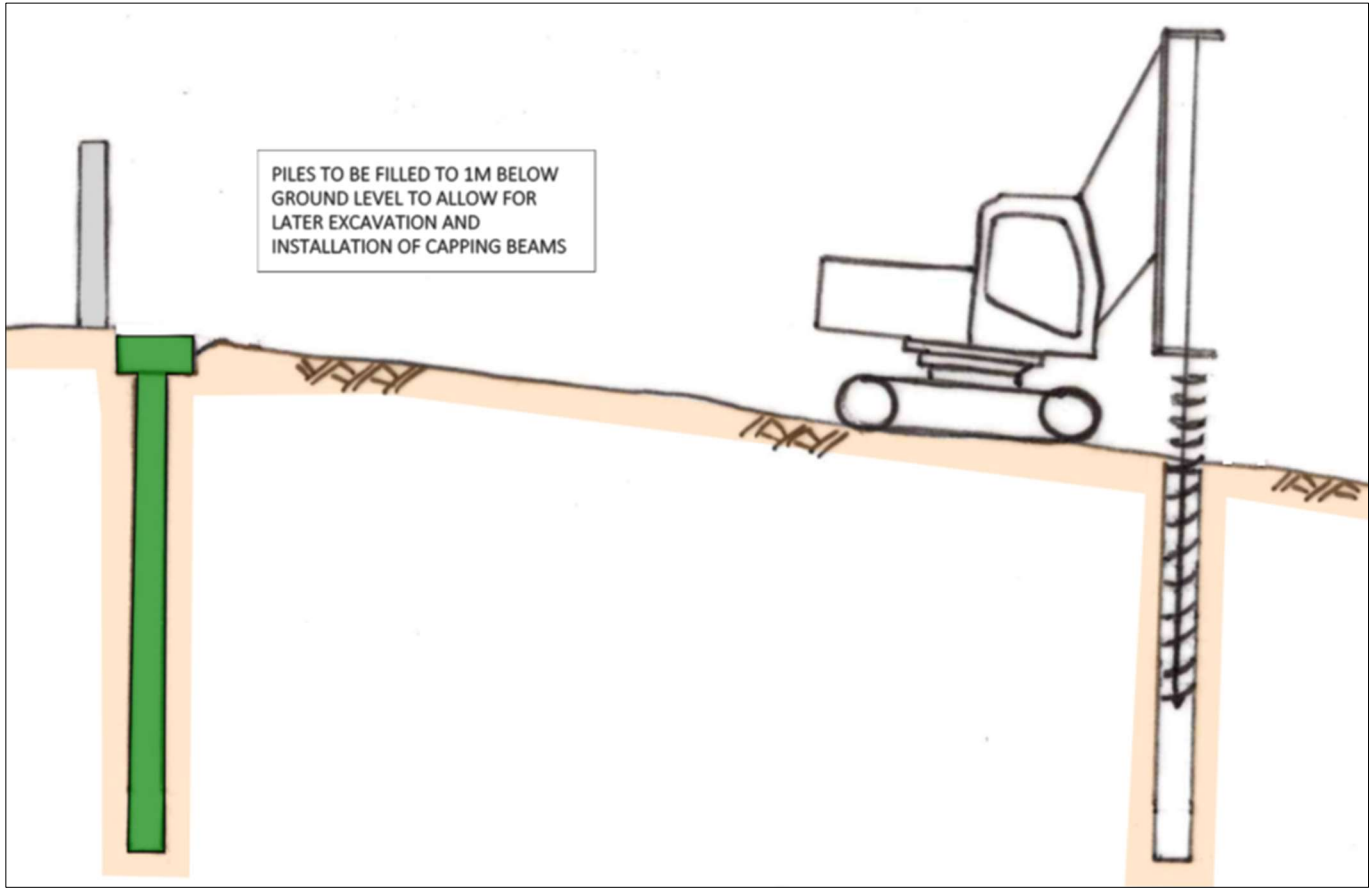


Figure 18 – Stage 3: Installation of Piles and Capping Beam to form Contiguous Piled Walls

Stage 4: Bulk Excavation and Temporary Propping

Start the bulk excavation and place temporary propping to the sides of the basement at the height of the lower capping beam. As the excavation progresses to formation level install additional propping at low level. The props shall be preloaded so that lateral movements at the vertical faces of the excavation are minimised. The Contractor is to ensure that the temporary propping is suitably tight by undertaking routine checks on all temporary work. The later will remain in place until the basement concrete slab and lining walls are cast and cured sufficiently.

Stage 5: Cast the Basement Slab and Concrete Lining Walls

Install a layer of concrete blinding onto ground, below the slab formation level, to provide a clean, level and dry working surface for installing the basement slab reinforcement and to prevent soil from interfering with the structure. Complete the underground drainage by cutting slots in blinding. Use temporary propping, as needed, to support the trenches and pumping station excavation. Upon completion of the above works, place compressible void formers as required (refer to Appendix B) and cast the basement slab. Once the slab has cured, remove the temporary propping at lower level, install the lining walls reinforcement, ensuring adequate lap with the starter bars is achieved, and cast the RC lining walls at the basement.

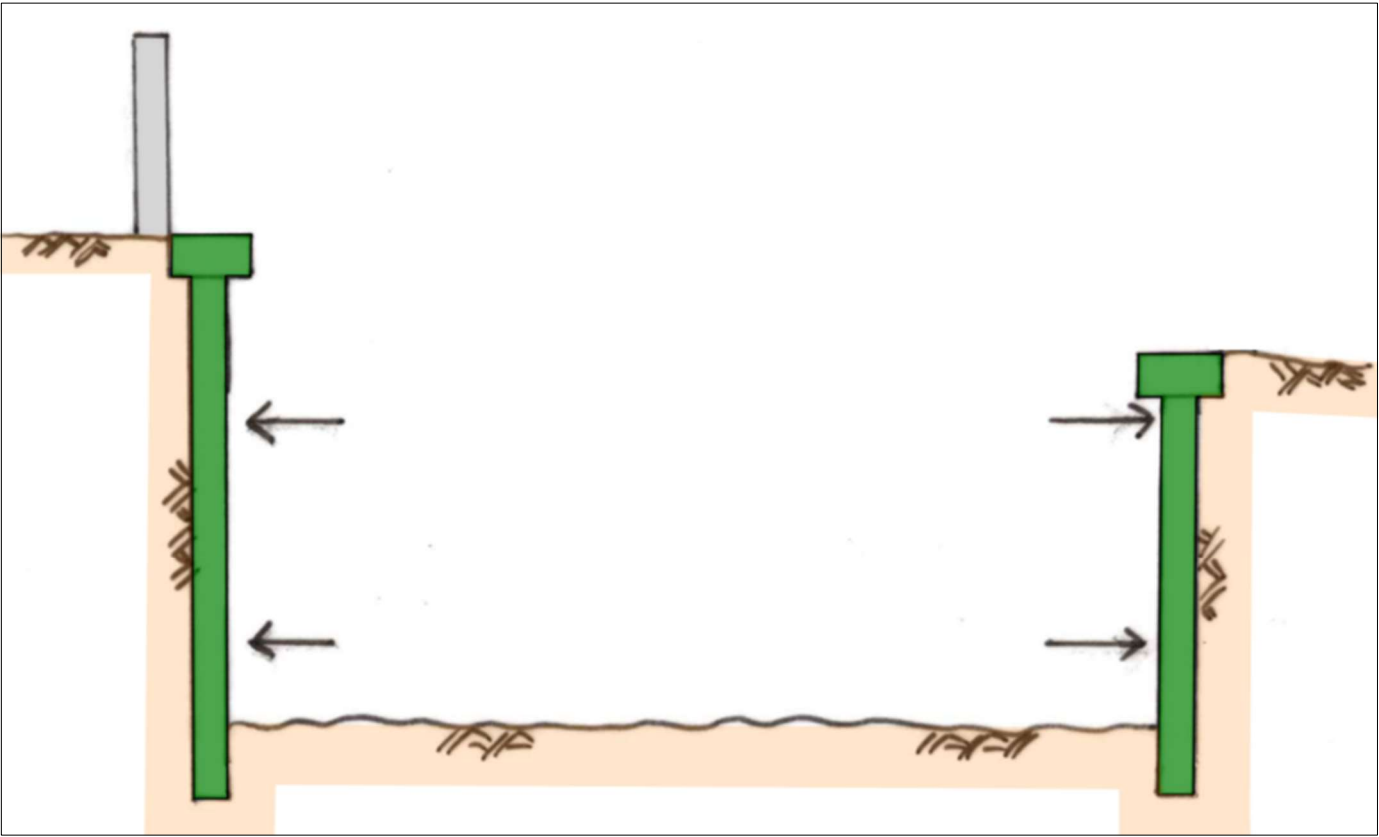


Figure 19 – Stage 4: Bulk Excavation and Temporary Propping

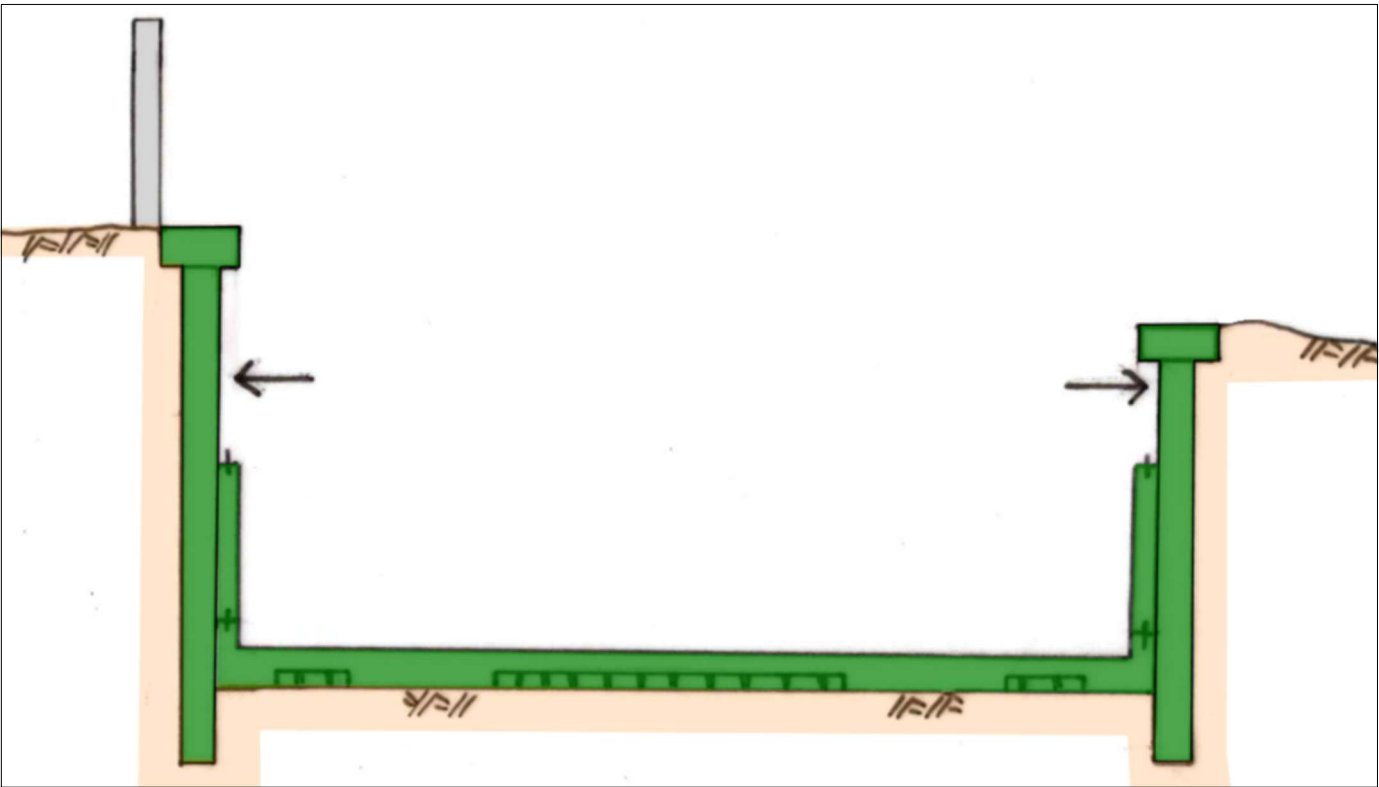


Figure 20 – Stage 5: Cast the Basement Slab and Concrete Lining Walls

Stage 6: Cast Basement Roof and Superstructure Works

Install reinforcement and cast the basement roof slab (lower ground floor slab) and downstand beams. Once the basement roof slab has cured, remove the upper temporary propping and cast the RC lining walls at lower ground floor level. Install reinforcement and cast the ground floor slab and downstand beams. Construct the superstructure and the internal load bearing walls at lower ground floor and basement.

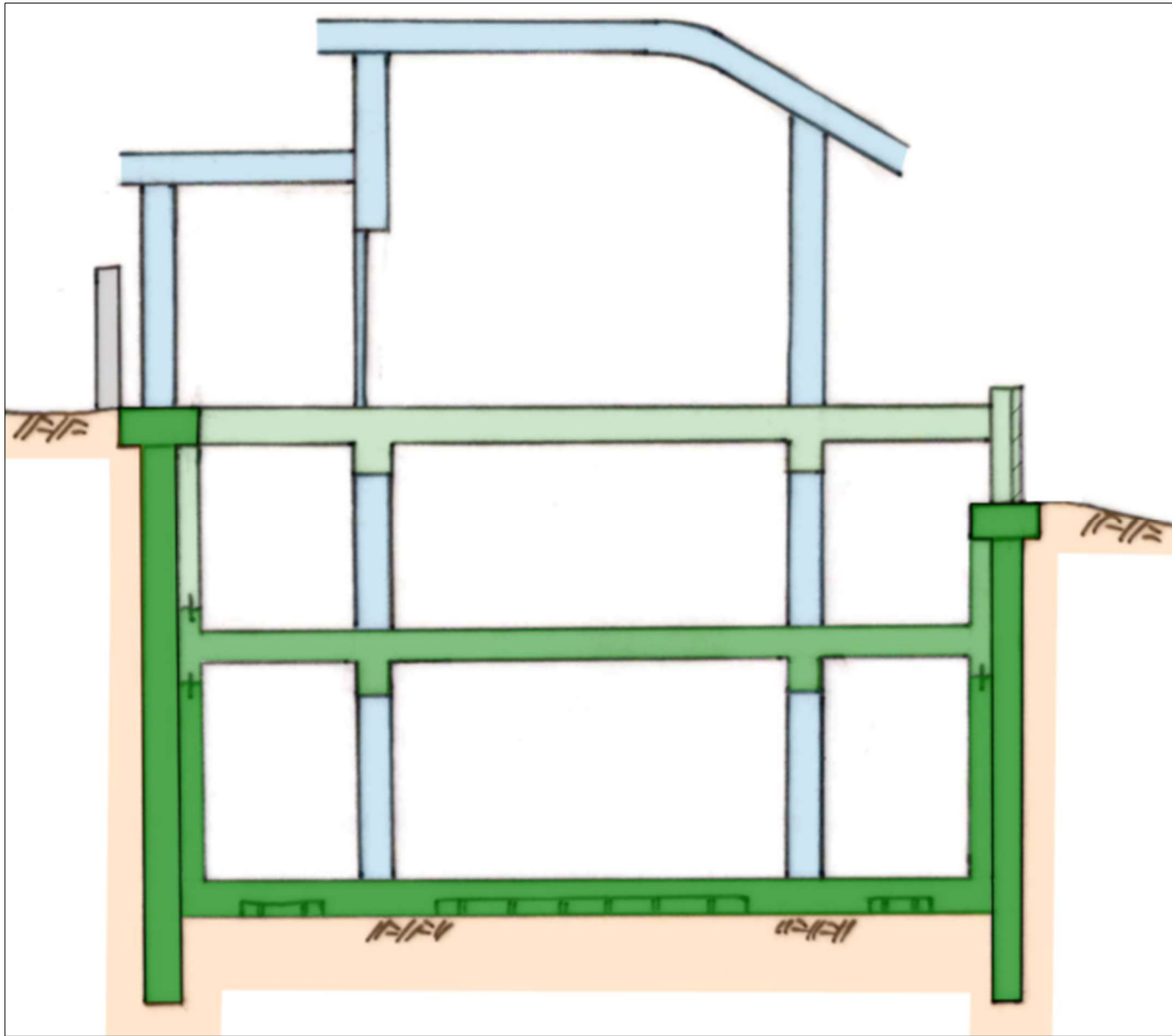


Figure 21 – Stage 6: Cast Basement Roof and Superstructure Works

9 Noise, Vibration and Dust Mitigation

The RBKC (Royal Borough of Kensington and Chelsea) Basements Planning Policy CL7 - which has been adopted by the London Borough of Haringey - states that any basement works should “ensure that construction impacts such as noise, vibration and dust are kept to acceptable levels for the duration of works”.

The construction works for the proposed development at 2C Landrock Road (three-storey new residential property with a two-storey basement) will involve installation of contiguous piled walls on three sides along the perimeter of the site, excavation and installation of the basement shell and construction of a single-storey structure at ground level.

The neighbouring properties on the east and west sides of the site are most likely to be disturbed by noise, dust and vibration, generated during the construction works. Hence, mitigation measures are described in the following paragraphs, so that noise, vibration and dust are kept to acceptable levels.

9.1 Mitigation Measures for Piling

The contiguous piled wall should be constructed using the continuous flight augering (CFA) technique, i.e., the piles being drilled and concreted in one continuous operation each. This piling approach benefits from low noise levels and significantly less vibration compared to the alternative driven piles.

9.2 Mitigation Measures for Bulk Excavation

Due to the size of the basement (two-storey basement) it is expected that some mechanical plant might be necessary for carrying out the bulk excavation. In such case, the Contractor should make sure that any mechanical plant is switched off when not in use and that regular maintenance checks and servicing are in place.

9.3 Mitigation Measures for the Construction of the Concrete Shell

The Contractor should ensure that any pouring of concrete is solely undertaken during the permitted hours for noise generating works. The Contractor should allow for a contingency period to secure that, in case of unforeseen circumstances, such as batching plant delays, traffic congestion etc., completion of pouring works will be achieved within these permitted hours. Fabrication and cutting of the reinforcing bars should be carried out off site. In any rebar need to be trimmed on site, this should be done by means of hydraulic or pneumatic tools rather than angle grinders.

9.4 Dust Control

The Contractor should ensure that dust generating works such as cutting, grinding and sawing are done off site if possible. Where this is not practicable, the relevant equipment should be fitted with a dust suppression or dust collection facility.

The Contractor shall be responsible for maintaining the site in good order with regards to dust. Regular sweeping, cleaning and washing down of the hoardings and the scaffoldings should be agreed to this end. The Contractor selected will be a member of the Considerate Contractors Scheme. Contact details of the Contractor will be displayed on the site boundary - this will enable local residents to make contact with the Contractor and raise any concerns relating to noise and dust.

The building shall be enclosed within suitable scaffold sheeting and any stockpiles of sand or dust-generating materials be covered. Cement, fine aggregates, sand and other fine powders should be sealed after use.

10 Structural Monitoring Proposals and Limits on Ground Movements During Excavation and Construction

The Contractor shall provide monitoring on the external walls of the properties that are likely to be impacted by the proposed excavation. Monitoring points should be installed on the perimeter walls of both, 2 Landrock Road and 115 Ferme Park Road residences, as well as the site boundary walls near the proposed excavation during the construction of the basement.

Monitoring reports should be issued within 48 hours of survey during basement construction works.

Monitoring shall be completed as follows:

- 1) A base reading to be provided one month prior to any works commencing.
- 2) Weekly readings during the excavation and until the basement slab and RC lining walls have been cast.
- 3) Readings on a monthly basis thereafter, for a 3-month period following completion of the notifiable works.

For the neighbouring buildings, the total movement of the monitoring points shall not exceed the limiting values for settlement and lateral displacement:

a) Settlement:

Code amber trigger values: +/-6mm

Code red trigger values: +/-12mm

b) Lateral displacement:

Code amber trigger values: +/-6mm

Code red trigger values: +/-12mm

For non-sensitive structures such as, boundary walls, the above limits may be relaxed to +/- 10mm and +/- 20mm. However, subject to Party Wall approval, if any minor cracks occur these will need repair.

In case of monitored movements approaching the critical values, the following actions should be taken:

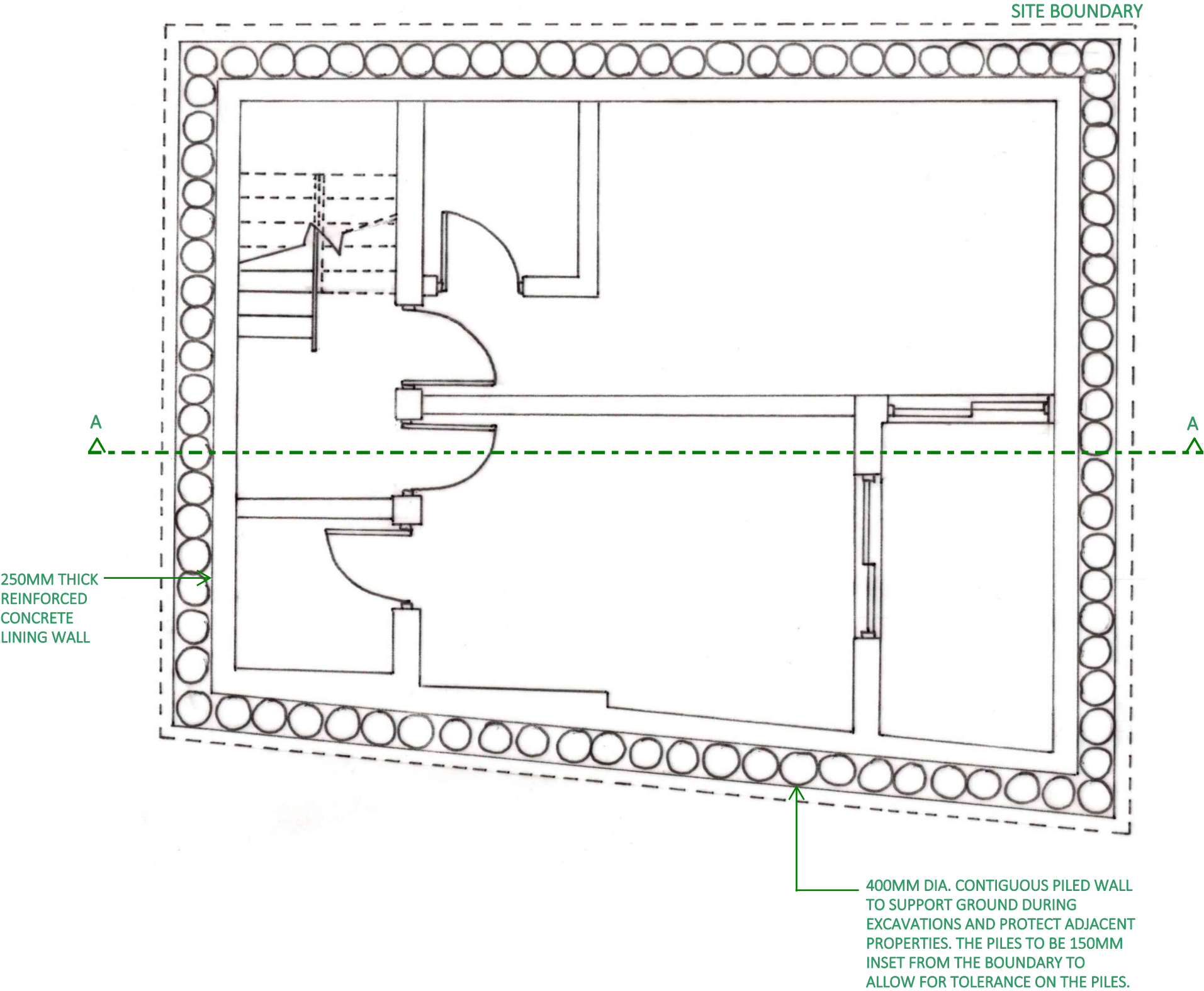
Code amber trigger value:

All interested parties, including the Adjoining Owner’s Surveyor and his Engineer, should become aware of the situation and any further actions agreed. The works may still progress, however, measures should be set in place to minimise the risk of further movement. The movement monitoring results trend should be evaluated to determine whether the amber trigger has been reached and whether this is a false trigger as a result of +/- 2mm accuracy tolerance.

Code red trigger value:

All interested parties, including Adjoining Owner’s Surveyor and Engineer must be notified immediately. Any work will stop and be made safe using methods and equipment agreed at the above stage. The Contractor shall ensure that the movement has ceased following the completion of remedial works designed and installed at this stage. The adjacent buildings shall be examined to detect any visible signs of movement such as hairline cracking. Any additional measures, permanent or temporary, designed at this stage, shall be approved with the Party Wall Surveyors. After the above has been done and the agreed measures installed, construction works may continue.

Appendix A – Proposed Development Plans



P1	15/12/21	KZ	PS	Preliminary
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Client

Mr Karimi

Project

Proposed New Dwelling
2C Landrock Road
Islington, London

Drawing Title

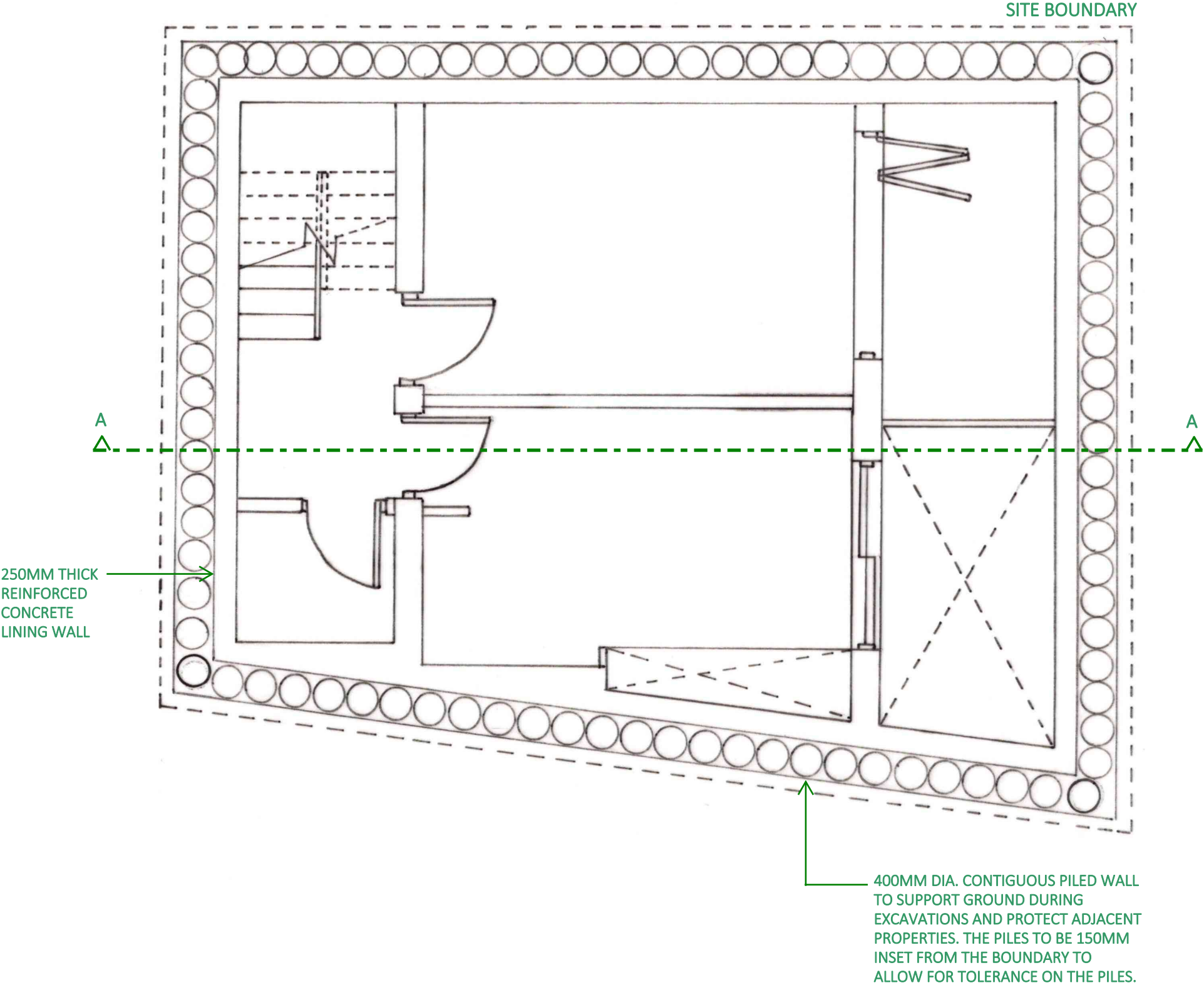
Proposed Basement Plan

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Drawing Status.

Preliminary

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Client

Mr Karimi

Project

Proposed New Dwelling
2C Landrock Road
Islington, London

Drawing Title

Proposed Lower Ground Floor Plan

Scale (s)	Date	Drawn
1:50 @ A3	Dec 2021	KZ

Drawing Status.

Preliminary

Job No.	Drawing No.	Revision
221059	SK002	P1

KEYS

GF GROUND FLOOR
LGF LOWER GROUND FLOOR
B BASEMENT

NOTE:
The concrete piles and RC lining walls to be cast using water-resistant concrete mix.

P1	15/12/21	KZ	PS	Preliminary
Rev	Date	By	Chk	Description

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Client
Mr Karimi

Project
Proposed New Dwelling
2C Landrock Road
Islington, London

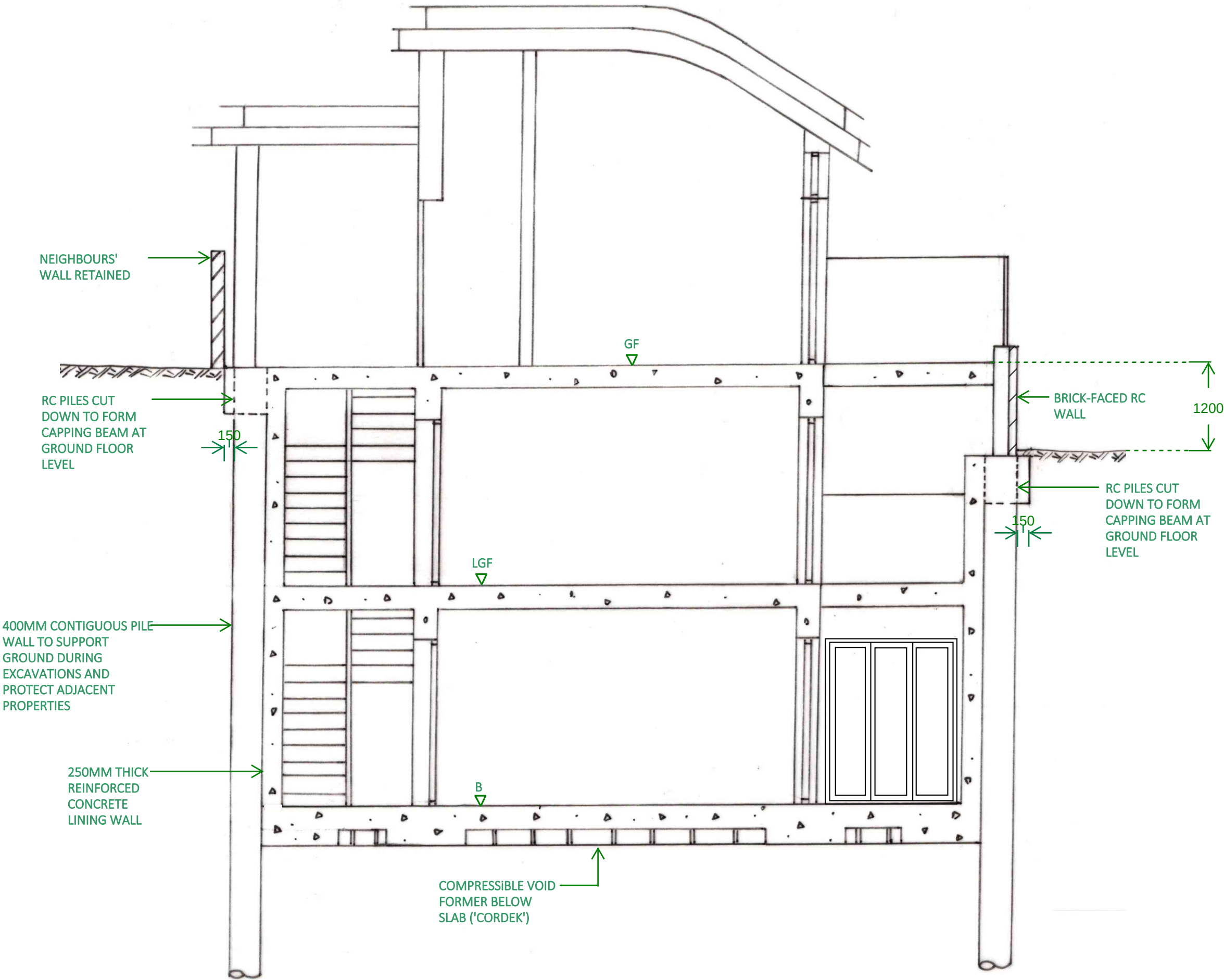
Drawing Title
Proposed Building Section

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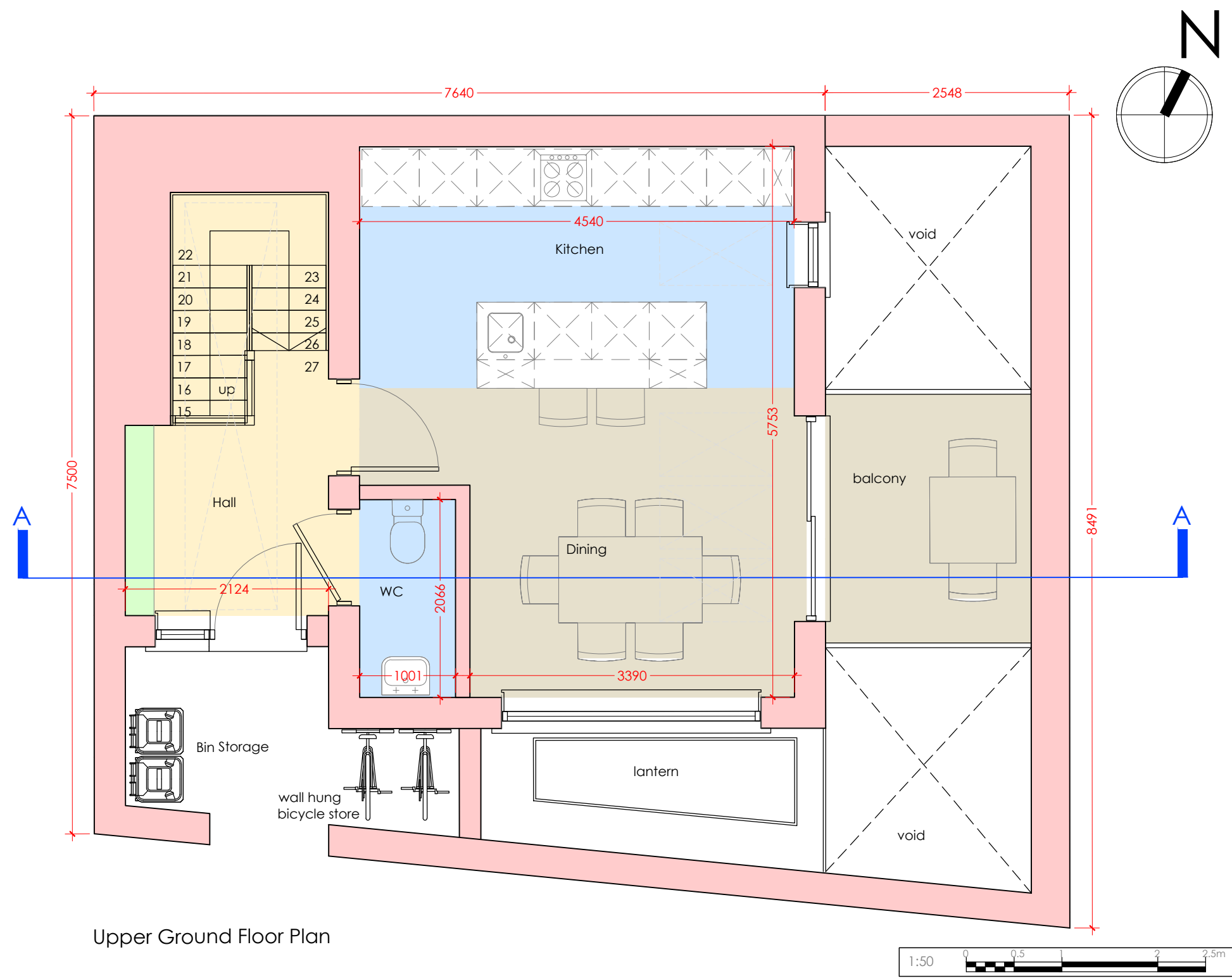
Drawing Status.

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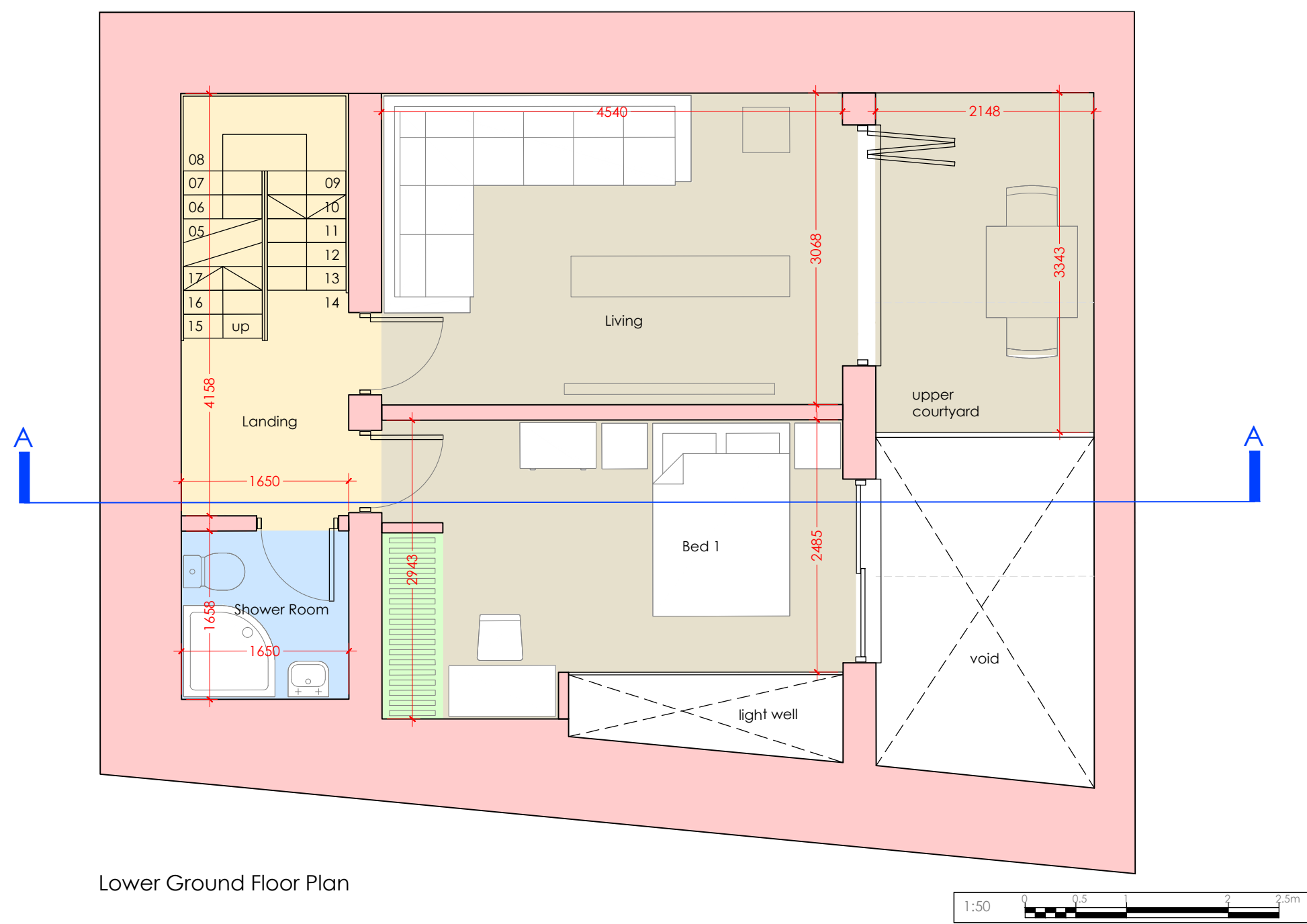
Job No.	Drawing No.	Revision
221059	SK003	P1



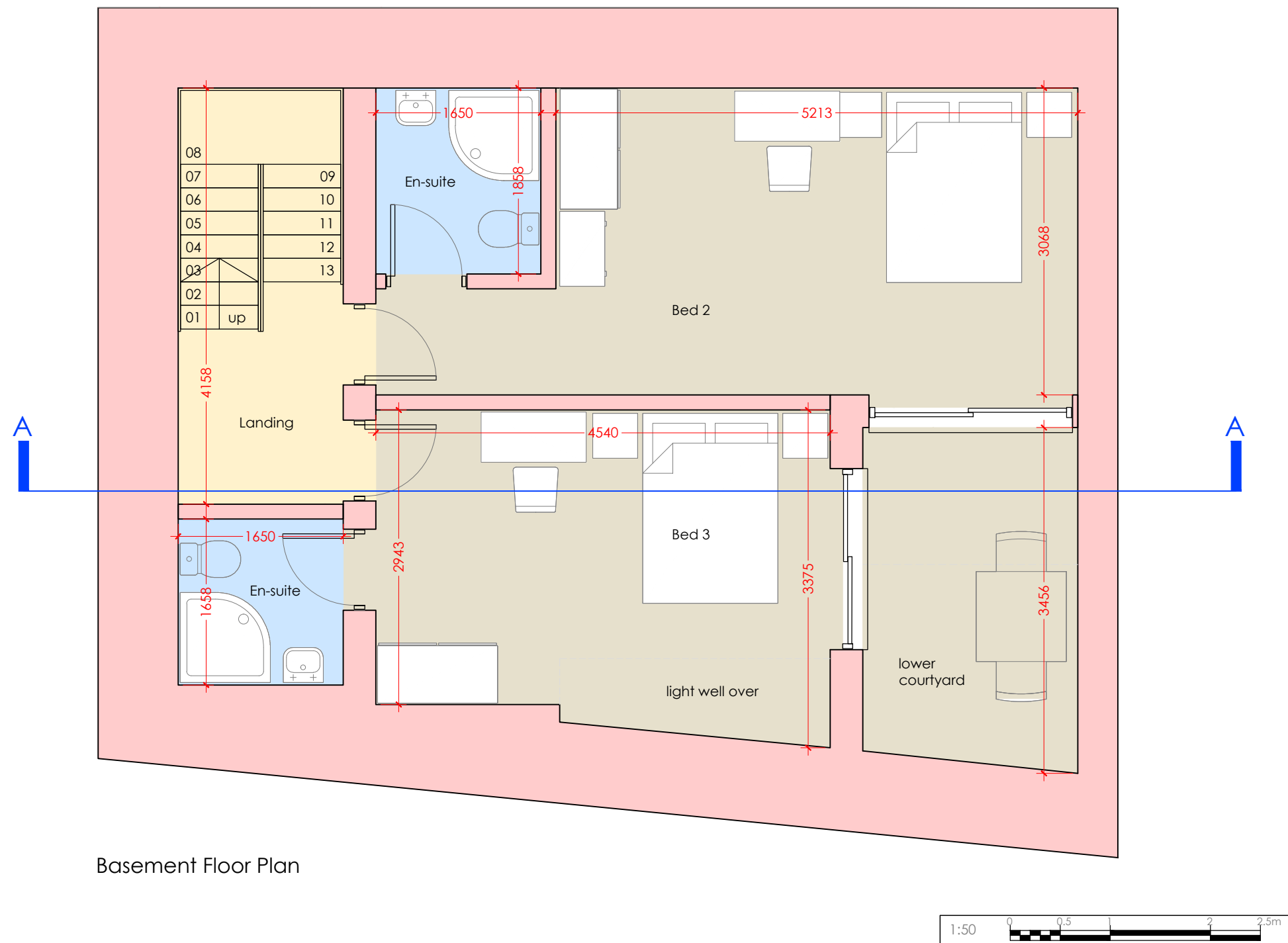
Appendix B – Proposed Structural Drawings



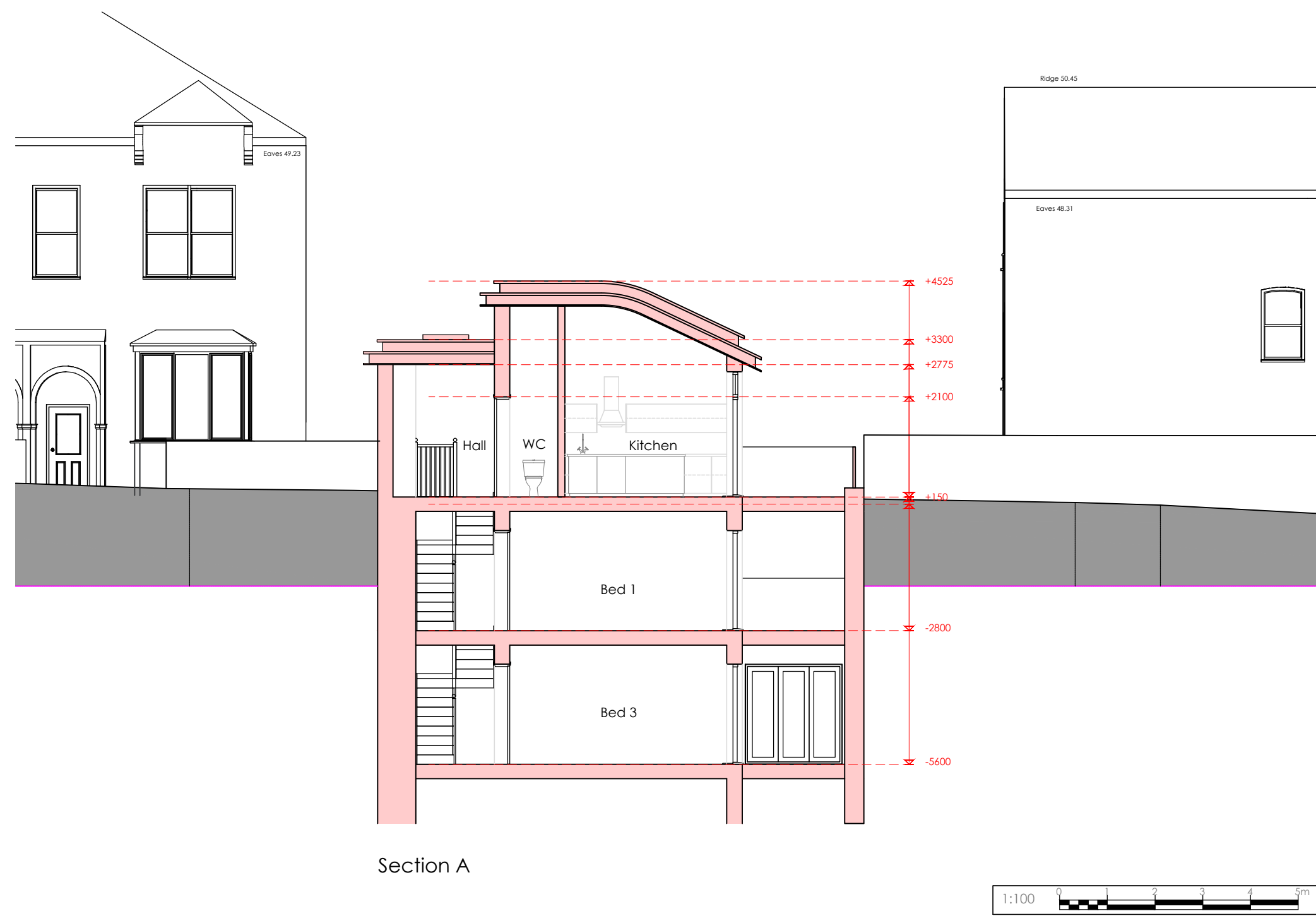
Upper Ground Floor Plan



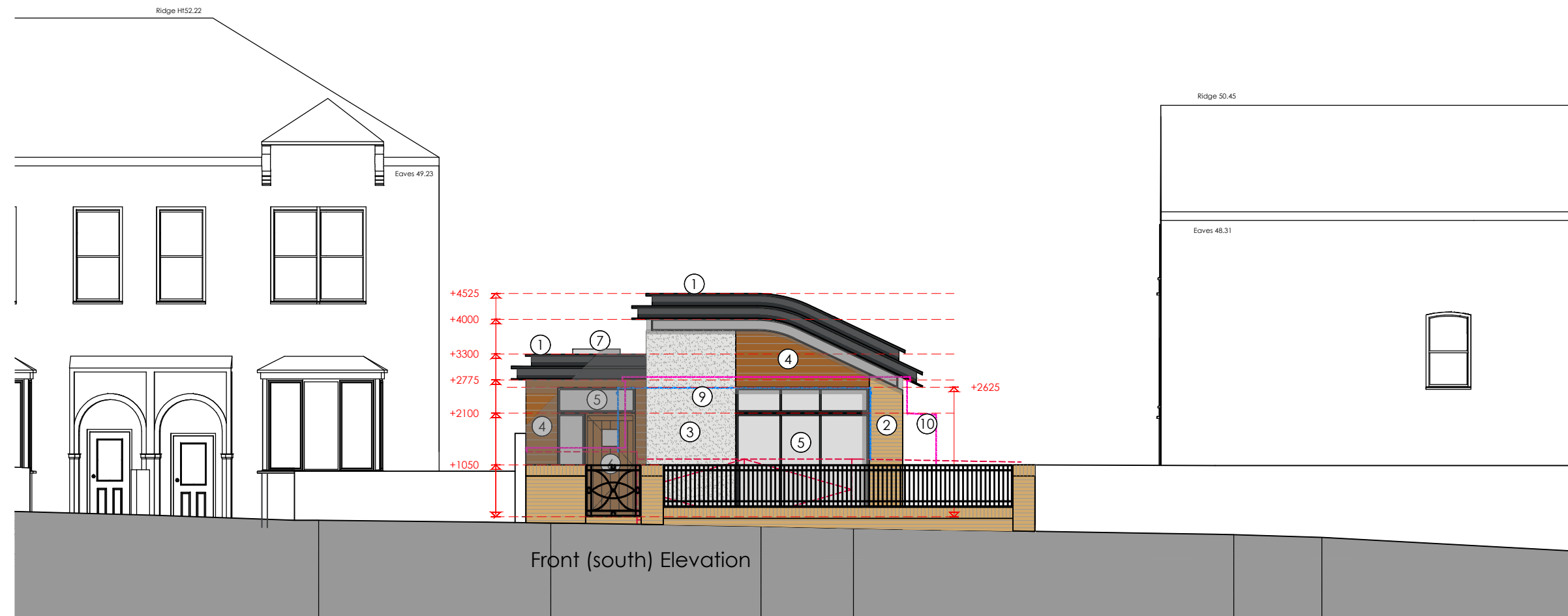
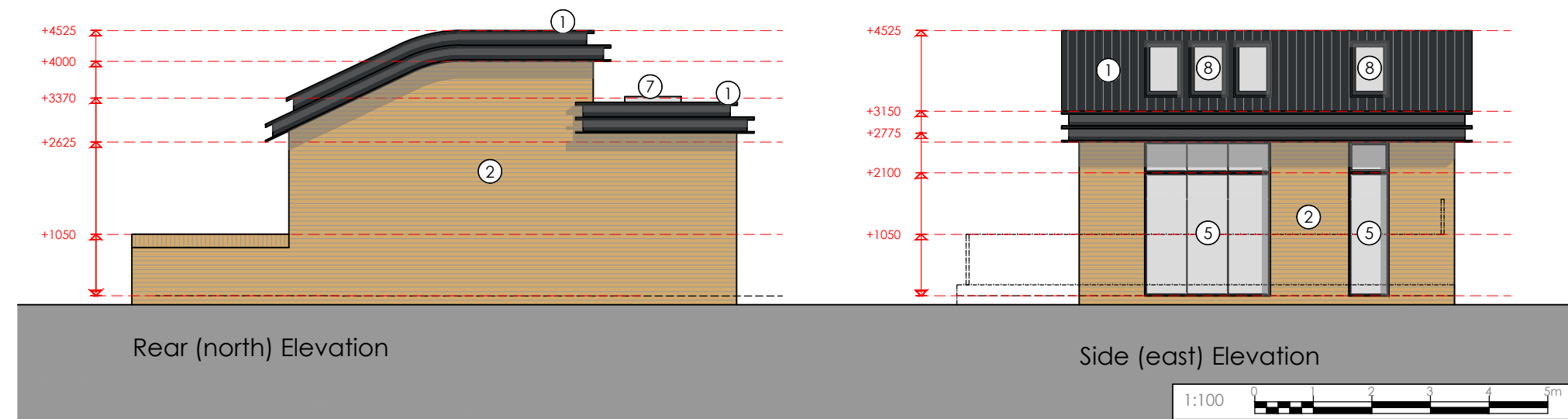
Lower Ground Floor Plan



Basement Floor Plan

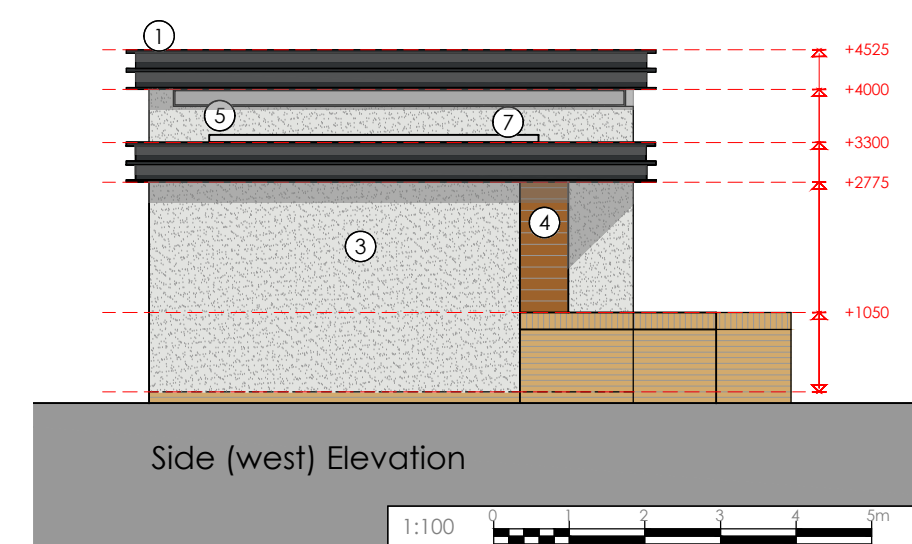


Section A



Indicative 3D Visuals N.T.S.

- Materials:
1. Zinc clad roof
 2. Buff facing brickwork to match surrounding context - Istock Funton Old Chelsea Yellow brick
 3. White through colour render to match surrounding context
 4. Timber boarding
 5. Grey powder coated aluminium double glazed units (RAL 7015)
 6. Timber front door
 7. Roof lantern
 8. Velux roof lights
 9. Line of existing garage
 10. Line of approved dwelling ref: HGY/2016/2971
 11. Grey powder coated aluminium double glazed patio doors to lower ground floors (RAL 7015)



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P1 211129 SG Issued for review and comment

Revision Notes:
Drawing Status:

PLANNING

hssp
architects

Pera Business Park, Nottingham Road
Melton Mowbray, LE13 0PB

Telephone: 01664 563 288 Fax: 01664 563 360
E-Mail: info@hssparchitects.co.uk Web: www.hssparchitects.co.uk

Project:
Proposed New Dwelling
2C Landrock Road
Islington, London
For Mr Karimi

Title:
Proposed Plans and Elevations

Scale:	Drawn:	Checked:	Date:
various	SG	JCB	November '21
Drawing No:	8329-02-003	Revision:	P1

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