

2 TANCRED ROAD

HARINGEY

BASEMENT IMPACT ASSESSMENT
(BIA)

CONTENTS:

0.0	EXECUTIVE SUMMARY	3
1.0	INTRODUCTION	3
2.0	THE SITE AND EXISTING BUILDINGS	4
2.1	GEOLOGY	6
2.2	HYDROGEOLOGY	8
2.3	EXISTING DRAINAGE	10
3.0	THE PROPOSED DEVELOPMENT	11
3.1	THE PROPOSED SUBSTRUCTURE	11
3.2	THE PROPOSED DRAINAGE	12
4.0	SEQUENCE OF WORKS	12
5.0	IMPACT ON SURROUNDING STRUCTURES	13
6.0	UNDERPINNING SPECIFICATION	14
7.0	CONCLUSIONS	15
8.0	DESKTOP STUDY	16
9.0	APPENDICES	19

PREPARED BY: Pierpaolo Zeni MEng CEng MICE

0.0 EXECUTIVE SUMMARY

- The proposal comprises a rear extension to the existing lower ground floor, including a potential reduction of the current finished floor level (FFL) by up to 1m
- The British Geological Survey indicates that the site is underlain by London Clay, which is classified as unproductive strata for ground water;
- A site investigation will be carried out prior to commencement of the works. For the purposes of the preliminary design, existing borehole logs obtained from the BGS database have been used;
- The borehole logs do not show ground water in the area
- The New river is about 100m away from the site and it is at a different elevation;
- Environmental Agency maps for fluvial, surface water and reservoir flooding indicate the site is a low risk of flooding;
- The proposed formation level will be in the London clay

1.0 INTRODUCTION

Walder Sharp Consulting Engineers have prepared the following report in accordance with Haringey Borough Local plan policy for the proposed subterranean development at 2 Tancred Road, London, N4 1EH.

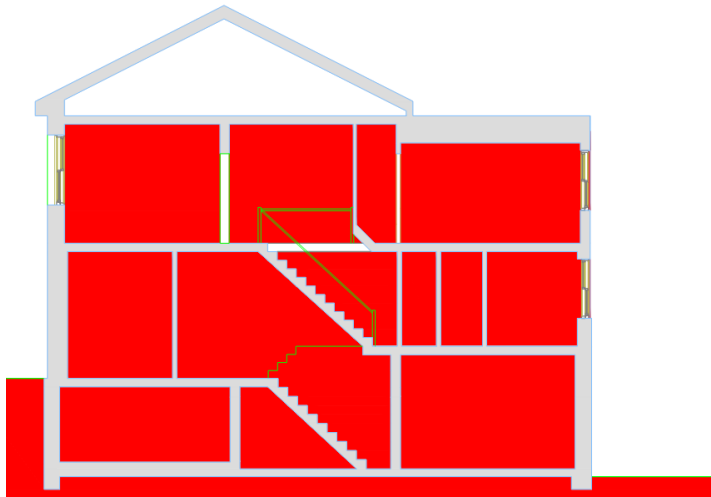
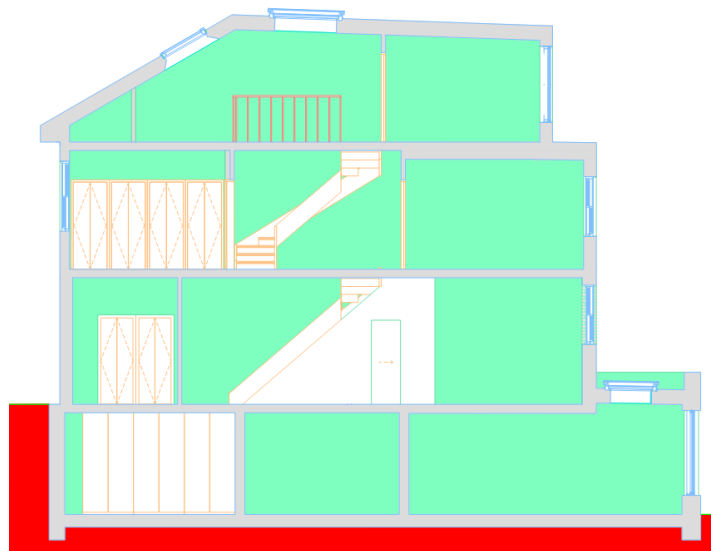
This document should be read in conjunction with Walder Sharp's Structural Drawings, the information provided by the client.

It is proposed to undertake remodelling, and refurbishment works generally across the property; including the construction of a Lower ground floor extension to the rear and partially to the front extending the existing vault. The construction of a small extension at ground floor to the rear to infill the property and the loft conversion at second floor. plus alterations to all the layouts.

This report concentrates on the practicalities of constructing the subterranean development. The report details the geology and hydrogeology local to the site, proposed forms of construction, sequencing of works and the impact the proposed works would have on the surrounding structures.

This report and accompanying drawings have been prepared for the purpose of the planning submission. For construction a full technical pack should be prepared by the Structural Engineer which the Contractor should work to along with the information produced by the Architect.

EXISTING SECTION

**PROPOSED SECTION**

2.0 THE SITE AND EXISTING BUILDINGS

Review of historic maps indicate the building and associated run of terraces were constructed at the end of the 19th century, in the period between 1869 and 1893 as shown in Figures 1 and 2 below.

The existing building is a two-storey terraced property located in The Borough of Haringey.

The building is anticipated to be formed in traditional construction with load-bearing masonry walls supporting timber joist floors and a traditional mansard roof. The construction is consistent across the run of terraces.

Opening up works will be undertaken prior to construction to confirm the existing structural arrangement and its condition. We anticipate that floors are formed in timber joists spanning front to back, receiving support from the front and rear facades with intermediate support from the central spine wall.

Haringey Borough's planning portal was reviewed for No.2 Tancred Road, and the neighbouring properties. Below a list of recent planning applications:

- No 6 Tancred Road: basement excavation and construction of a dormer and loft conversion 2022
- No 3 Tancred Road: construction of a dormer and loft conversion 2022
- No 8 Tancred Road: rear extension 2022
- No 5 Tancred Road: conversion of a loft dormer

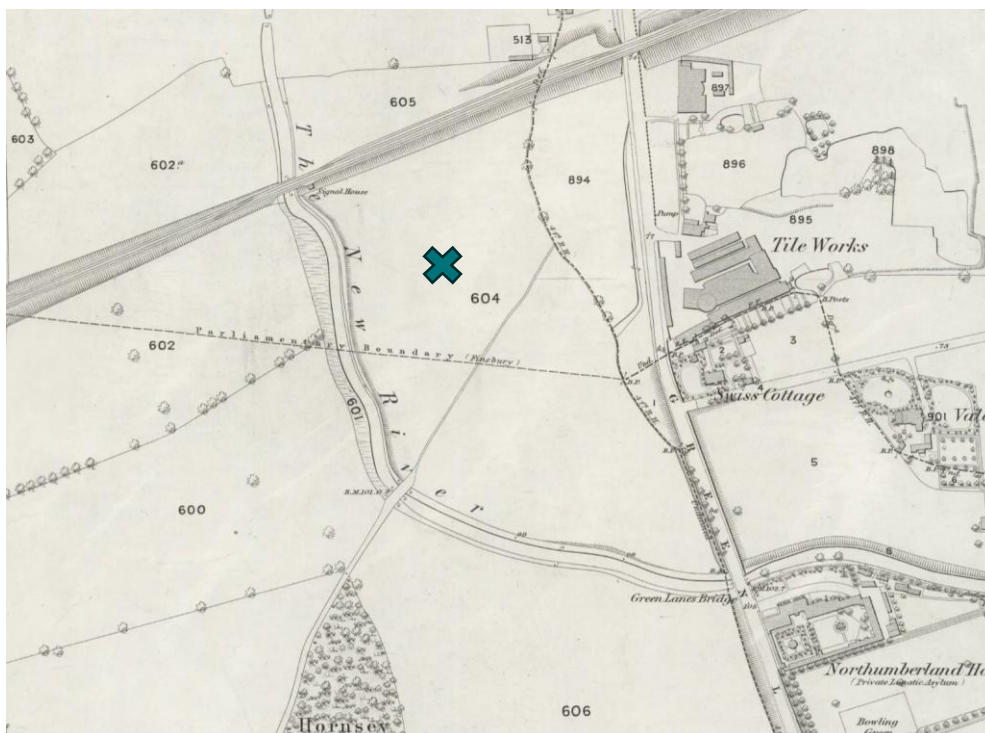


Figure 1 -- 1869

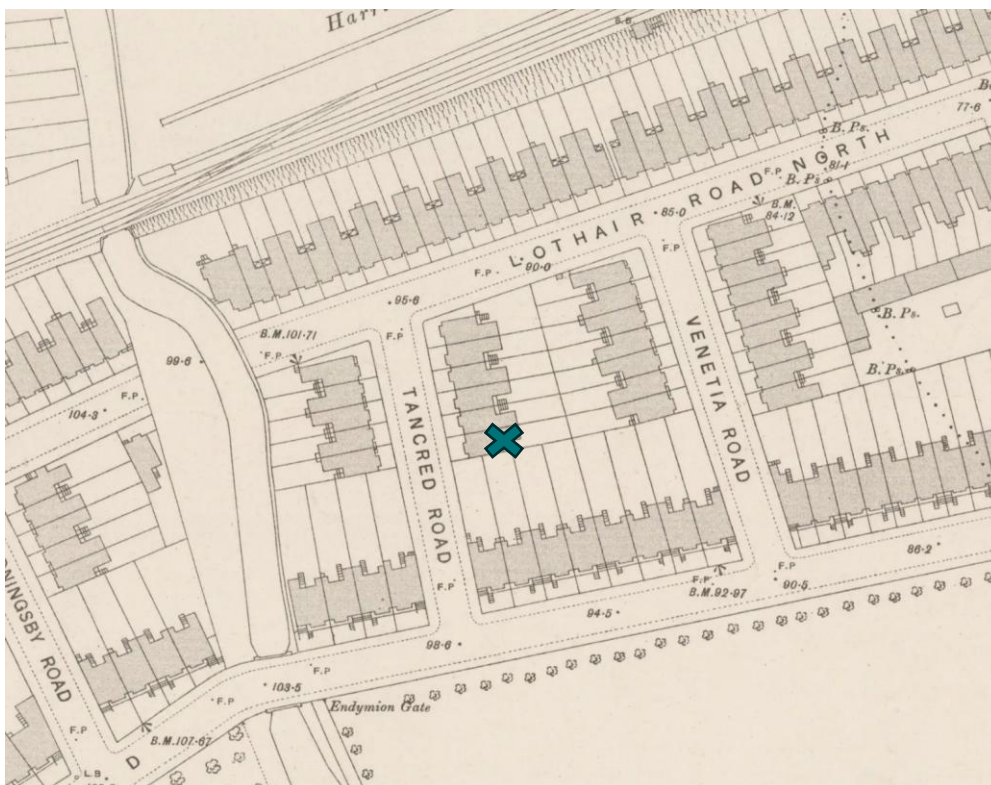


Figure 2 -- 1893

2.1 GEOLOGY

The British Geological Survey (BGS) map database was reviewed as part of the desk top study. This indicates that the geology local to the site the bedrock geology is London Clay Formation, with clay, silt and.

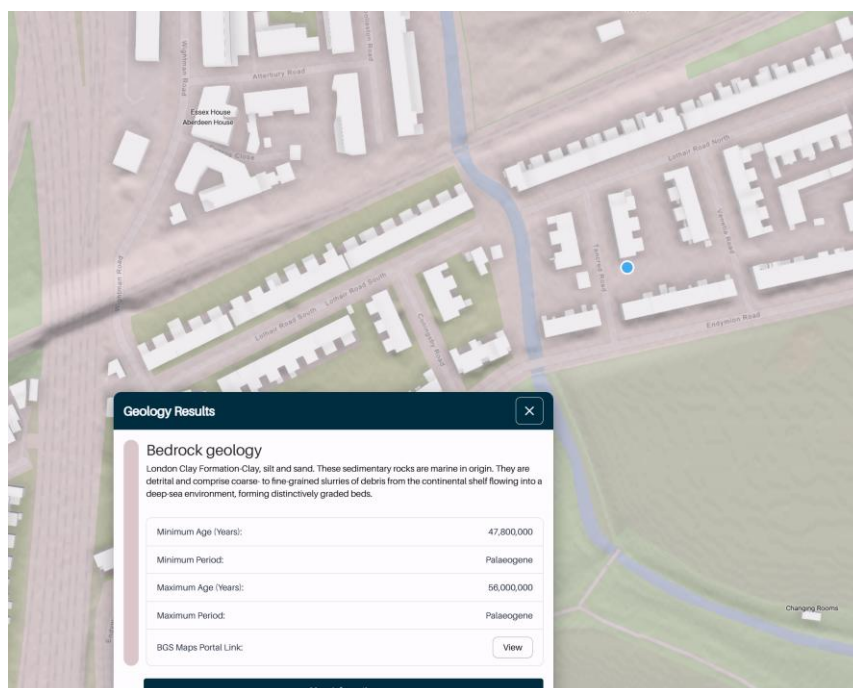


Figure 3 – extract From British Geology Survey website

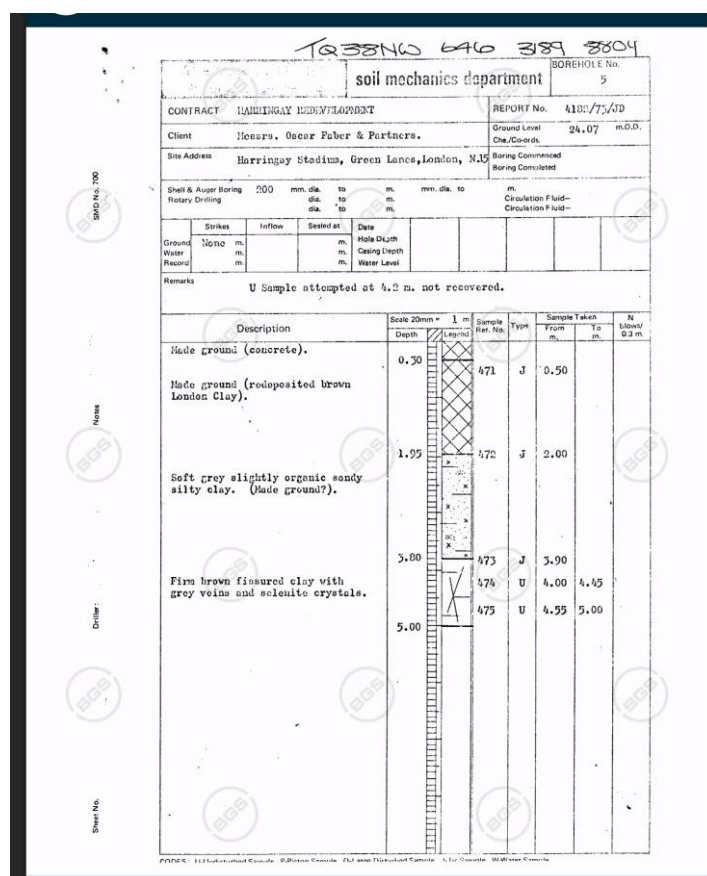


Figure 4 - Borehole log from a nearby site

A review of nearby borehole log, Figure 4, which is for borehole carried out within 200m of the site identify layer of made ground approximately 1.5 m thick, followed by an intermediate layer of sandy clay extending down to 4 m depth overlaying the London clay formation. The information made available from a site at No Tancred Road shows that it is not predicted to encounter water in the sandy stratum.

For the initial design for the ground works and foundations, a limiting safe bearing pressure of 100 kN/m² at ground level increasing to 150 kN/m² at basement level will be set for all design works.

A comprehensive site investigation will be carried out prior to the start of works to confirm the assumptions made based on the geological information of the site.

2.2 HYDROGEOLOGY

The information from the recorded borehole logs on the BGS website and the information made available from a nearby site (No 6 Tancred Road) do not shown water in the first 4 m below ground level.

Given the proposed depths of the subterranean works we anticipate that the new basement slab will be founded within the softy grey silty clay, above the London clay formation.

Review of the Environmental Agency (EA) maps confirm that the property is located within Flood Zone 1, low probability of flooding – Land having a less than 1 in 1,000 annual probabilities of river or sea flooding. Refer to figure 5 for the EA's flood risk map.

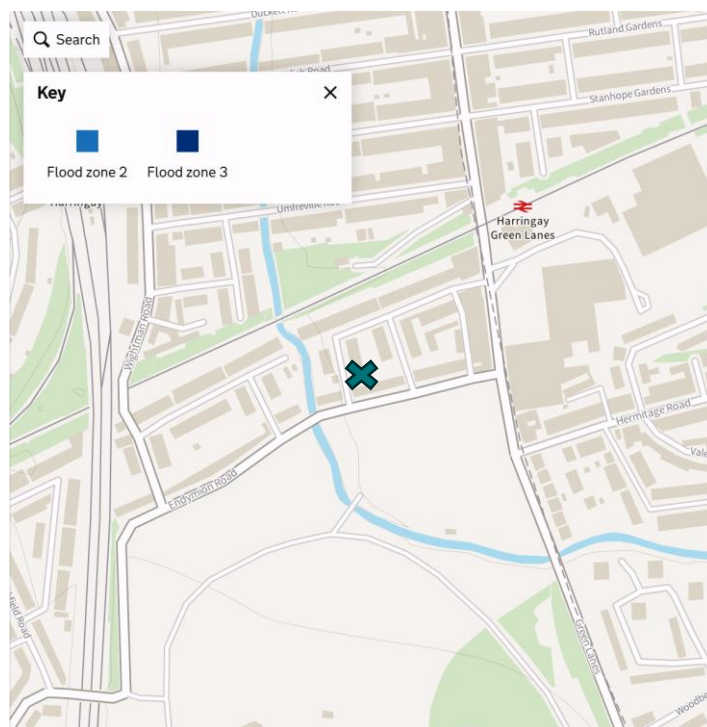


Figure 5 - Extract from Environmental Agency's flood map for planning

Flood risk summary

Your selected location: 2, Tancred Road, London, N4 1EH

This information tells you the flood risk of the land around a building, not the building itself.

► [How we assess an area's flood risk](#)

► [Flood risk and climate change](#)

Surface water [More about your surface water flood risk](#)

Yearly chance of flooding

Very low Low Medium High

Yearly chance of flooding between 2040 and 2060

Very low Low Medium High

What surface water is
Surface water flooding is sometimes known as flash flooding. It happens when rainwater cannot drain away through normal drainage systems.
► [Why surface water flooding is a problem](#)

Rivers and the sea [More about your rivers and sea flood risk](#)

Yearly chance of flooding

Very low Low Medium High

Yearly chance of flooding between 2036 and 2069

Very low Low Medium High

Figure 6 -- Summary for the flood risk from the EA's website

2.3 EXISTING DRAINAGE

The existing drainage on the site is yet to be surveyed, however, prior to the technical phase of the design this will be undertaken via a below ground CCTV survey.

It is assumed that the drainage on site is via a combined sewerage system connecting into the main Thames Water Asset running below Flood Street at the front of the site.

3.0 THE PROPOSED DEVELOPMENT

The proposed works involve the remodelling of the property, including a rear extension to the existing lower ground floor, with the slab formation level lowered by approximately 1m from the current level. The scheme also comprises a comprehensive refurbishment of all floors to create a new layout at each level, together with a loft conversion.

3.1 THE PROPOSED SUBSTRUCTURE

It is proposed to reduce the existing Lower Ground Floor (LGF) level by approximately 1 m and construct a rear extension at this level, together with a partial infill at Ground Floor (GF).

To achieve the revised LGF formation level, underpinning of the front façade and party walls will be undertaken, alongside the construction of a reinforced concrete (RC) box forming the structural enclosure of the extension.

At GF level, the existing rear façade will be supported by a steel portal frame founded on the RC liner walls below. The LGF extension will comprise RC retaining/liner walls constructed in a hit-and-miss sequence, integrated with RC slabs at both LGF and GF levels to form a rigid and watertight box structure. Existing foundations will be underpinned using mass concrete

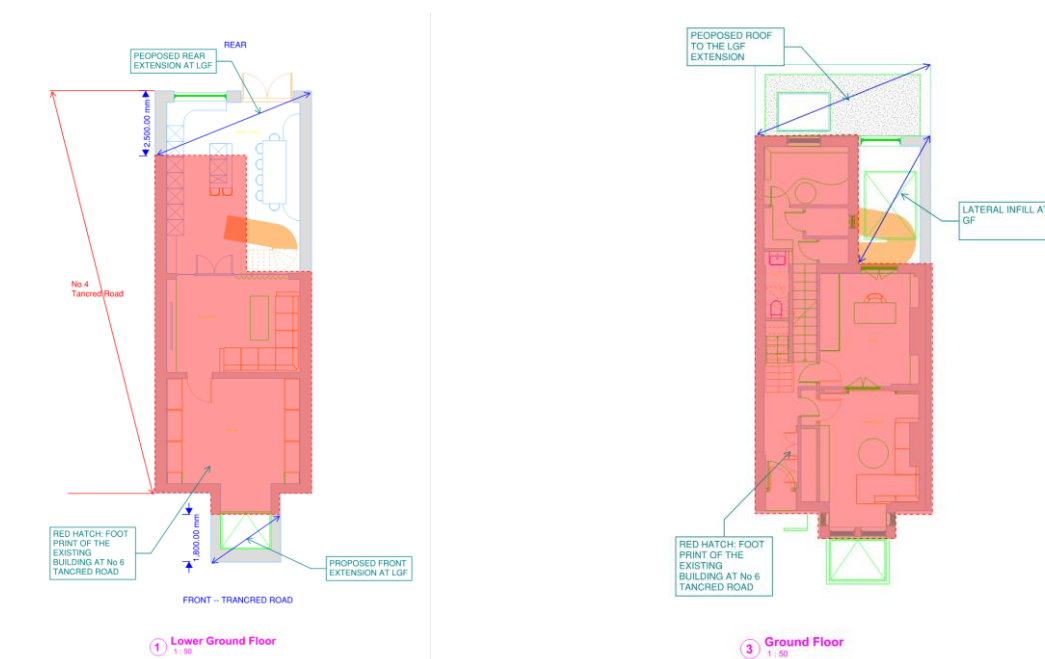


Figure 7-- PROPOSED LGF AND GF PLANS

Prior to commencement, the depth and configuration of the existing foundations will be verified through trial pits. These investigations are expected to confirm the presence of masonry corbelled footings, including their geometry, condition, and founding level.

The new LGF extension will be formed by underpinning the existing perimeter walls down to the proposed formation level and constructing a contiguous RC box structure. To enable safe excavation to formation level and facilitate construction of the lower slab, RC retaining walls will be installed beneath the perimeter walls.

Underpinning works will be executed in a single-stage sequence. Reinforced concrete underpin elements will extend to the required depth, with L-shaped RC pins forming both the retaining wall system and the base foundation of the basement structure.

The retaining walls will be designed to resist lateral earth and hydrostatic pressures, assuming a worst-case groundwater level at existing ground level, in accordance with the Eurocodes. To minimise temporary works, the walls will be constructed sequentially in an underpinning arrangement around the full perimeter of the building.

The new basement slab will consist of an RC raft tied into the base of the perimeter retaining walls, providing restraint at their toe. This configuration will create a stiff box structure capable of redistributing lateral loads and ensuring global stability against overturning and sliding. All retaining elements will be designed for worst-case loading conditions, including groundwater effects and surcharge loads.

3.2 THE PROPOSED DRAINAGE

Waterproofing is to be designed by a specialist subcontractor, it is likely that one form of waterproofing defence for the basement structure will be via membrane cavity system which will discharge water into the existing network.

It is anticipated that the water will run via new drainage runs where required into the existing network before discharging into the mains sewer. Sumps and pumps may be required to connect back to the existing drainage network at street level. Drainage details will be confirmed at technical design stage following confirmation of the existing network and condition via a detailed below ground drainage CCTV survey.

4.0 SEQUENCE OF WORKS

Prior to commencement initial investigations in the form of trial holes and boreholes are to be undertaken to confirm the details of the existing foundation, presence of adjacent basement construction and confirm the ground conditions and water table at proposed formation depth.

An outline sequence of works is as follows:

- SQ1. Site set-up and installation of temporary works, including support to the front bay and rear façade to ensure stability during the works.
- SQ2. Removal of the existing Lower Ground Floor (LGF) slab and internal strip-out.
- SQ3. Installation of conveyor system through the front bay to facilitate removal of excavation arisings.
- SQ4. Construction of underpinning to the perimeter and party walls in a hit-and-miss sequence to the required depth.
- SQ5. Construction of the rear retaining walls in a hit and miss sequence
- SQ6. Progressive excavation within the underpinned structure/retaining walls down to formation level.
- SQ7. Casting of the LGF reinforced concrete slab, tied into the base of the retaining walls and the pins.
- SQ8. Construction of the Ground Floor (GF) slab and installation of permanent structural elements, including the Permanent steel portal frame to support the existing rear elevation.
- SQ9. Completion of remaining permanent works and removal of temporary works.

The first phase of works after site set-up would be to prepare arrangements for the excavator. All excavation will be taken via an excavator belt out the front of the property towards Tancred Road.

It is proposed to undertake the underpinning in one stage.

The underpinning will be carried out in a hit and miss sequence which is shown on drawings 0600 and 0610, where a suggested underpinning sequence has been provided.

In this instance the sections of underpin will be formed in an L-shaped RC pin with the width of the temporary toe to match the original corbel width or slightly deeper to cater for the soil capacity. Mabey 160 props or similar are to be installed diagonally on plan bracing the structure to ensure stability in the temporary case and enable the ground to be reduced.

Excavations for adjacent pins are not to be carried out for a minimum 72 hours after completion of the previous pin. To ensure the safety of the operatives carrying out the works and maintain ground stability proprietary side shutters are to be used.

The toe of the underpin and a kicker will be poured first, the stem of the wall poured after. To ensure sufficient lapping of the bars the contractor will need to ram the bars into the ground during the stem pours. When excavating down these will become exposed and enable the elements to be tied together. Along all joint lines the contractor is to introduce Hydrophilic strips which will seek to mitigate water penetration of the structure.

After the underpin has been completed the contractor is to backfill and compact the ground removed. In the temporary case this will prevent global instabilities of the pin. This process is to be repeated until all existing perimeter walls at LGF are underpinned.

Once all concrete has cured temporary works can be removed and the waterproofing installed with the space fitted out to the Architect's details and specifications.

For LGF extension construction sequencing refer to drawings 0600, 610.

5.0 IMPACT ON SURROUNDING STRUCTURES

As part of the tender process due diligences will be carried out to ensure that the contractor is reputable and has experience of working on projects of a similar nature. The method of construction adopted for the works are well tested and the design of the retaining elements will consider the worst-case possible loadings applied onto it during construction and once completed.

Providing the works are carried out in accordance with engineering specifications and to current standards and good building practices it is anticipated that the damage to the surrounding structures will be less than Category 1 and is anticipated to be within Category 0 (ineligible) or Category 1 (very slight) on the basis of the classifications outlined in table 2.5 of CIRIA C580 report

No visible change to the pavement or road is expected and no long-term movement is expected.

6.0 UNDERPINNING SPECIFICATION

- 110 Before starting the work the Contractor is to check for any services that could be damaged by the underpinning/retaining wall formation work.
- 120 The Contractor shall be responsible for ensuring that their operations do not in any way impair the safety or condition of the building both before and during the execution of the work. They shall immediately inform the Engineer if they consider that more stringent procedures than those specified are necessary.
- 130 Underpinning is to be carried out in short sections not exceeding 1 metre in length. The bottoms of the foundation shall be inspected and approved by the Engineer and the Building Inspector before concrete is poured. The underpinning is to be carried out to the satisfaction of the Engineer and the Building Inspector.
- 140 Projecting portions of the existing footings are to be carefully cut off where directed and the underside of the footings are to be cleaned and hacked free of dirt, soil or loose materials before underpinning.
- 150 The body of the underpinning concrete is to be constructed in RC35 concrete and is to be cast to the widths shown unless otherwise directed by the Engineer. Excavation and concreting of any section of underpinning shall be carried out on the same day.
- 160 The concrete is to be stopped off 75mm below the underside of the existing footing and the final pinning up over the whole of the footing is to be carried out with 1:3 mix cement to sharp sand dry pack mortar, well rammed in 24 hours after the concrete has been poured.
- 170 Excavation to any section of underpinning shall not be started until at least 48 hours after completion of any adjacent sections of the work.
- 180 The sides of the previous underpinning bays are to be roughened or keyed to the satisfaction of the Engineer and Building Inspector.
- 190 Sequence of underpinning to be as shown. All sections marked 1 to be excavated, cast and dry packed before starting excavation of section marked 2 and all sections marked 2 to be complete before excavation for sections marked 3 etc.
- 200 The Contractor is to keep a record of the sequence and dimensions of the underpinning actually carried out, including details of excavation, casting concrete and pinning up for each section.
- 210 Excavated material intended for backfilling is to be kept protected from drying out or wetting and is to be placed in maximum 150mm layers, carefully compacted with a pneumatic or electric percussion tool with compacting plate.

7.0 CONCLUSIONS

- Desk top study and site investigations carried out in nearby sites indicate that the ground conditions are suitable for the proposed construction of the single storey basement below the existing building.
- Investigations will be undertaken to verify the existing foundations, ground conditions and water level.
- The original building walls will be lowered utilising reinforced concrete (RC) underpins, to be constructed in a traditional underpinning style and sequence as shown on structural drawings.
- The new LGF extension to the rear will be an RC ground bearing slab.
- A proposed sequence and method of construction is shown on drawings 600, 610.
- Structural integrity of and stability of neighbouring buildings and assets will be maintained throughout the construction phase, providing an appropriate temporary works strategy is employed. Details of which will be confirmed between the appointed Contractor and Structural Engineer.
- All works to be undertaken in accordance with any Party Wall Awards and CDM regulations.

8.0 DESKTOP STUDY



FIGURE 1: 1869 and 1893 -- ORDNANCE SURVEY MAP



FIGURE 2: 1945 LONDON BOMB MAP

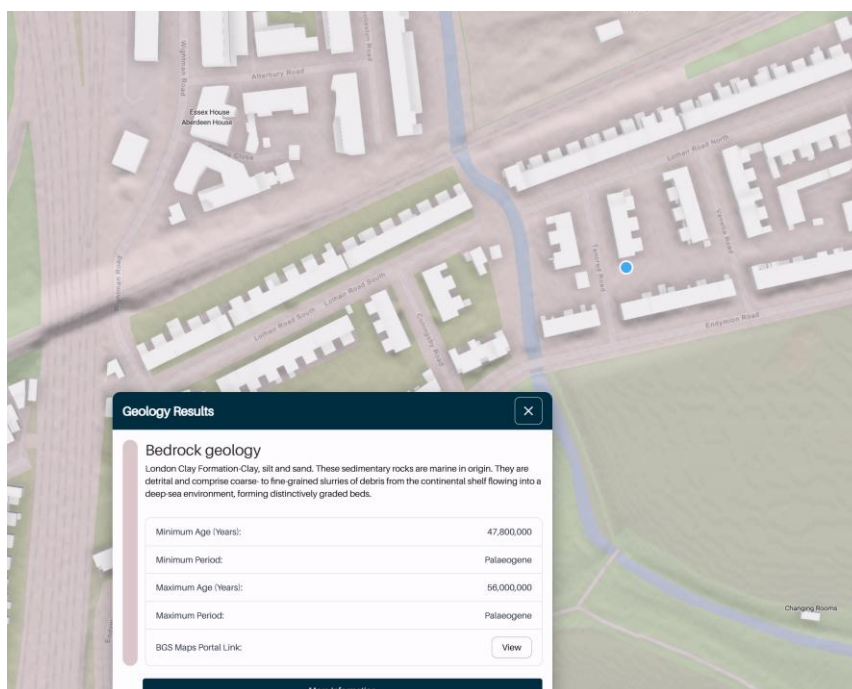


FIGURE 3: BRITISH GEOLOGICAL MAPS (GEOINDEX) – BEDROCK GEOLOGY

Ground conditions indicate superficial deposits of sandy clay overlying London Clay.

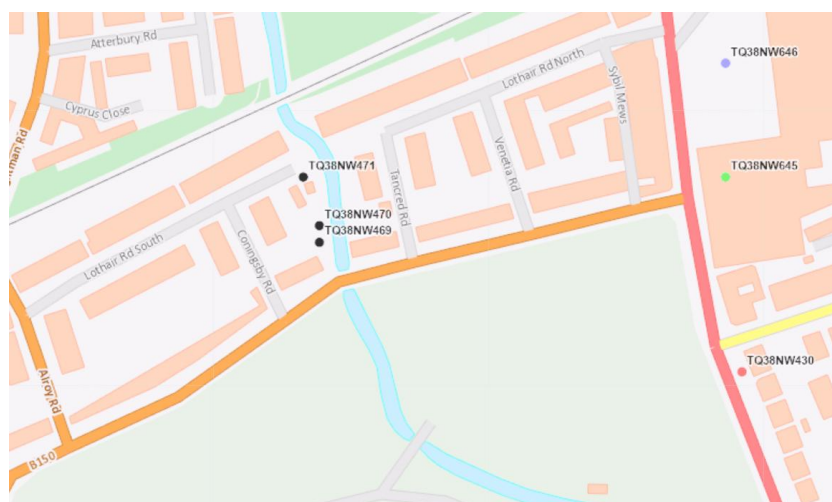


FIGURE 4: BRITISH GEOLOGICAL MAPS SHOWING LOCATIONS OF BOREHOLE LOGS

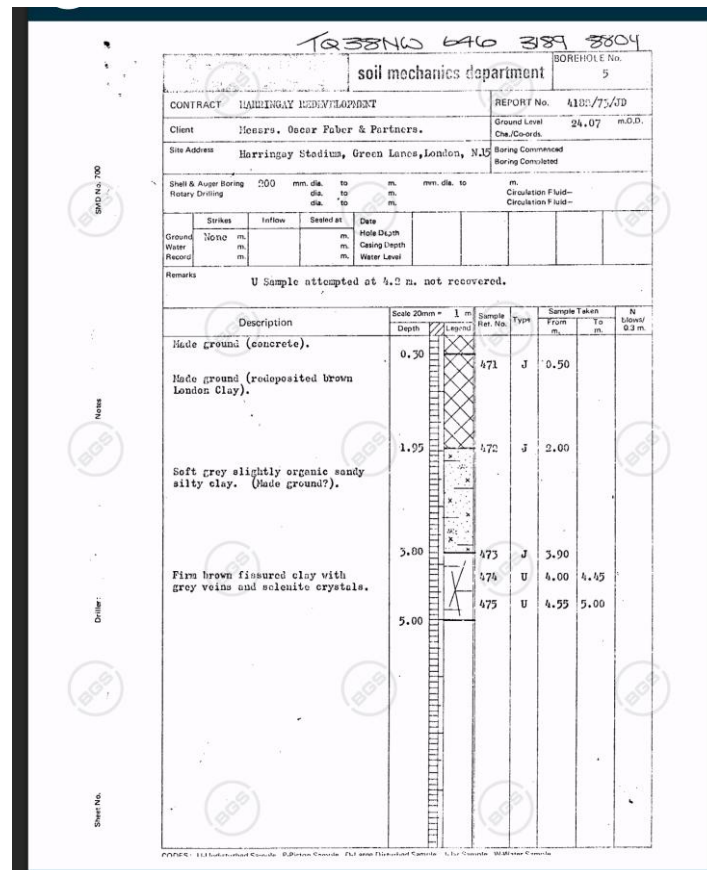


FIGURE 5: BOREHOLE LOGS: CLOSEST BOREHOLE LOG LOCATED NW OF PROPERTY

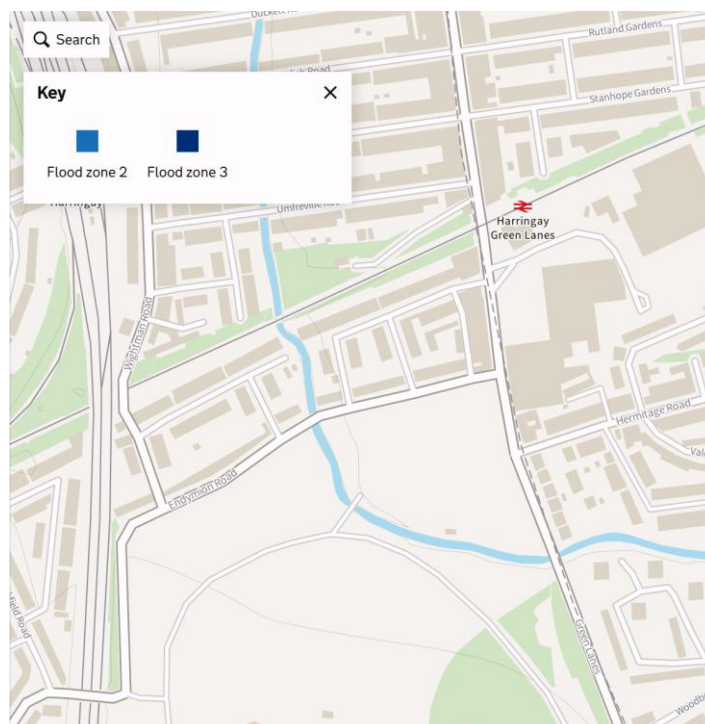


FIGURE 6: ENVIRONMENTAL AGENCY -- FLOOD MAP FOR PLANNING

The flood risk assessment shows that the property is located in a low-risk flood zone.

9.0 APPENDICES