BASEMENT IMPACT ASSESSMENT
83 MAYES ROAD N22 6UP

PARMARBROOK URBAN

SEPT 2024

1.0 INTRODUCTION

1.1 This document constitutes the construction approach and methodology for forming the new basement for the proposed development at 83 Mayes Road. The document is produced by Parmarbrook Urban Limited, who were approached by Mehmet Kocakerim to provide The Basement Impact Assessment and the Construction Method Statement.

1.2 Parmarbrook Urban Limited is a small design studio founded by Director Anthony Holdbrook in April 2016, with offices on the South Coast and in North London. Anthony is an experienced Chartered Structural Engineer and a Member of the Institute of Structural Engineers, with 30 years demonstrated history in the Structural Engineering industry and has designed and delivered many Basement Schemes over London and the Home Counties.

1.3 This Basement Impact Assessment is based upon drawings by ARCHITECT THAT.

2.0 EXISTING SITE

2.1 The existing pub is currently trading as a Restaurant, Bar and Shisha Lounge, with residential flats above.

3.0 PROPOSED DEVELOPMENT

3.1 The development involves the retention of the main pub and the demolition of the ancillary buildings at the rear. A new basement is to be formed under the footprint of the whole site, with a one storey vertical extension over the pub and a new 5 storey (including the basement) building to the rear. This will comprise 8 dwellings and 13 pub rooms.

3.2 The scope of the development is shown on ARCHITECT THAT drawings, which are to be submitted as part of the planning application.

3.3 It is proposed to construct the basement using reinforced concrete retaining wall construction. Once the buildings to the rear are demolished and the site is reduced to a suitable level, the construction of the basement walls can commence. Firstly, a continuous reinforced concrete ring beam will be formed to the rear and flank wall. This ring beam will then be 'underpinned' together with the party wall and the existing basement walls to the pub. This is described in Section 9.0.

3.4 These proposed methods of construction have been employed successfully on subterranean developments in many London Boroughs and it is considered that the proposed works will have no impact on the structural stability of the existing and adjoining buildings.

3.5 The subterranean development will be a Grade 3 water-resisting basement to provide a "dry environment" suitable for ventilated usage under BS 8102. The waterproofing details will be to a specialist's specification, which will provide a 10-year warranty for the waterproofing works. It is understood that a Type A membrane will be provided on the internal face of the reinforced concrete basement. Additionally, a Type C wall and floor cavity waterproofing system with additional vapour barriers will be installed within the basement.

4.0 SITE INVESTIGATION AND GROUND CONDITIONS

A soil investigation has been carried out by LMB Geosolutions Ltd and is appended to this report.

The ground conditions encountered in the exploratory borehole comprised Made Ground overlying a sequence of River Terrace Deposits, which in turn overlie firm to stiff London Clay.

For the foundation design typical allowable bearing pressures at basement level would be;
Strip Footings 120 kN/m2
Pad foundations (2mx2m) 160 kN/m2

For the retaining wall design the following parameters have been recommended (London Clay)
Ka =0.4
Kp = 2.7
Bulk Density = 1.83 kN/m2

Also, the report recommends that the basement design takes into account the following:

- The potential for short term and long-term heave and inward yielding during construction and following construction.
- The potential for groundwater to cause both lateral and uplift pressure.

5.0 STRUCTURAL DESIGN

5.1 The works will be designed in accordance with current British Standards Codes of Practice, including but not limited to:

BS6399: Loading
BS8004: Foundations
BS8110: Concrete
BS5950: Steelwork
BS5628: Masonry
BS5268: Timber

6.0 ROBUSTNESS

6.1 The Building Regulations Approved Document A requires that buildings are sufficiently robust to sustain a limited extent of damage or failure, without collapse in the event of an accident.

6.2 The new build dwellings located behind the existing pub building will be a three-storey structure over retail premises (plus basement) and will be defined as Building Class 2B. The vertical Extension over the existing masonry building will also define the Building Class as 2B

6.3 Compliance with the robustness requirements for Building Class 2B (new build) is achieved by providing effective horizontal ties and vertical ties (concrete framed construction) to all supporting floors and walls as described in the British Standards Codes of Practice.

6.4 To comply with robustness requirements the vertical extension over the existing building will be designed so upon the notional removal of a supporting element below, the building remains stable. This will be achieved by providing a steel ring beam /grillage across the entire rooftop structure, which will span over the existing structure in the event of an accident in the building below. This new vertical structure will be designed as a lightweight steel frame.

7.0 TEMPORARY WORKS

7.1 The contractor is entirely responsible for all the temporary works from possession of the site until practical completion.

7.2 The contractor shall design, install and maintain all necessary temporary works.

7.3 The contractor shall submit detailed proposals for the temporary works to the Contract Administrator/ Architect and Parmarbrook Urban at least 10 working days before commencing the works. The proposals shall include temporary works supports and a sequence of construction and shall be supported by calculations that have been carried out by a suitable Structural Engineer.

7.4 All temporary works to the side of excavations for new foundations shall be designed in accordance with BS 8000 Part 1: 1989 and any other approved documents.

7.5 All scaffolding required, whether for access or support, shall be designed for purpose, in accordance with relevant British Standards (e.g. BS 5973), and shall meet all requirements of The Construction (H, S & W) Regulations 1996.

7.6 The Contractor shall prepare a detailed method statement and sequence of construction for the basement works, at least ten working days before commencing the works.

7.7 Parmarbrook Urban shall review Contractor's temporary works, method statements and sequences of construction of all works on site.

8.0 CONSTRUCTION METHOD STATEMENT (GENERAL)

8.1 The subterranean basement development will be constructed by a competent and experienced Contractor.

8.2 The property is located within a residential area. The Contractor must employ appropriate methods of construction to minimise noise and nuisance to neighbours as far as reasonably practicable.

8.3 Access is available from Mayes Road and Coburg Road.

8.4 The Contractor shall obtain all necessary licences and approvals in respect of work on site, for example parking bay suspensions, yellow line dispensations and skips, disposal of specified wastes and noise notices.

8.5 The Contractor shall ensure that all plant or materials temporarily stored on the Public Highway/footway does not cause an obstruction or hazard to third parties.

8.6 The Contractor will be responsible for all matters in respect of loading, unloading, access, etc, and he shall agree all such matters with the Local Authority and Client. The Contractor shall ensure that safe access routes are provided along the public footway during loading/unloading operations if applicable

9.0 CMS – BASEMENT WORKS (refer to drawing numbers 24055/01-07)

9.1 Stage 1- Demolish rear building and out buildings. Install enabling beams and remove columns in the existing building.

9.2 Stage 2- It is anticipated at this stage that basement excavation will be formed by installing a reinforced concrete ring beam to 2 sides of the basement, then all walls underpinned in the conventional manner.

9.3 Stage 3- Once cast and cured (min 48 hours) the ring beam will be underpinned to an agreed sequence (Type 2 Underpin). Each pin will be propped top and bottom against the earth bund. The remainder of the walls will be underpinned (Type 1, Type 3 and Type 4) as indicated on the plan and section.

9.4 Stage 4- Once the underpinning is complete the excavation to formation level can be carried out and blinded with concrete blinding.

9.5 Cast Lift pit and walls.

9.6 The basement slab is then cast with kickers to form the internal concrete loadbearing walls and columns.

9.7 The internal walls are then cast to the underside of the proposed ground floor slab.

9.8 Stage 5- When the concrete walls are cured and the concrete reaches the required strength, then the ground floor slab to the new structure can be cast. This slab will act as a horizontal prop to the concrete retaining walls. Existing ground floor is then timber joisted out.

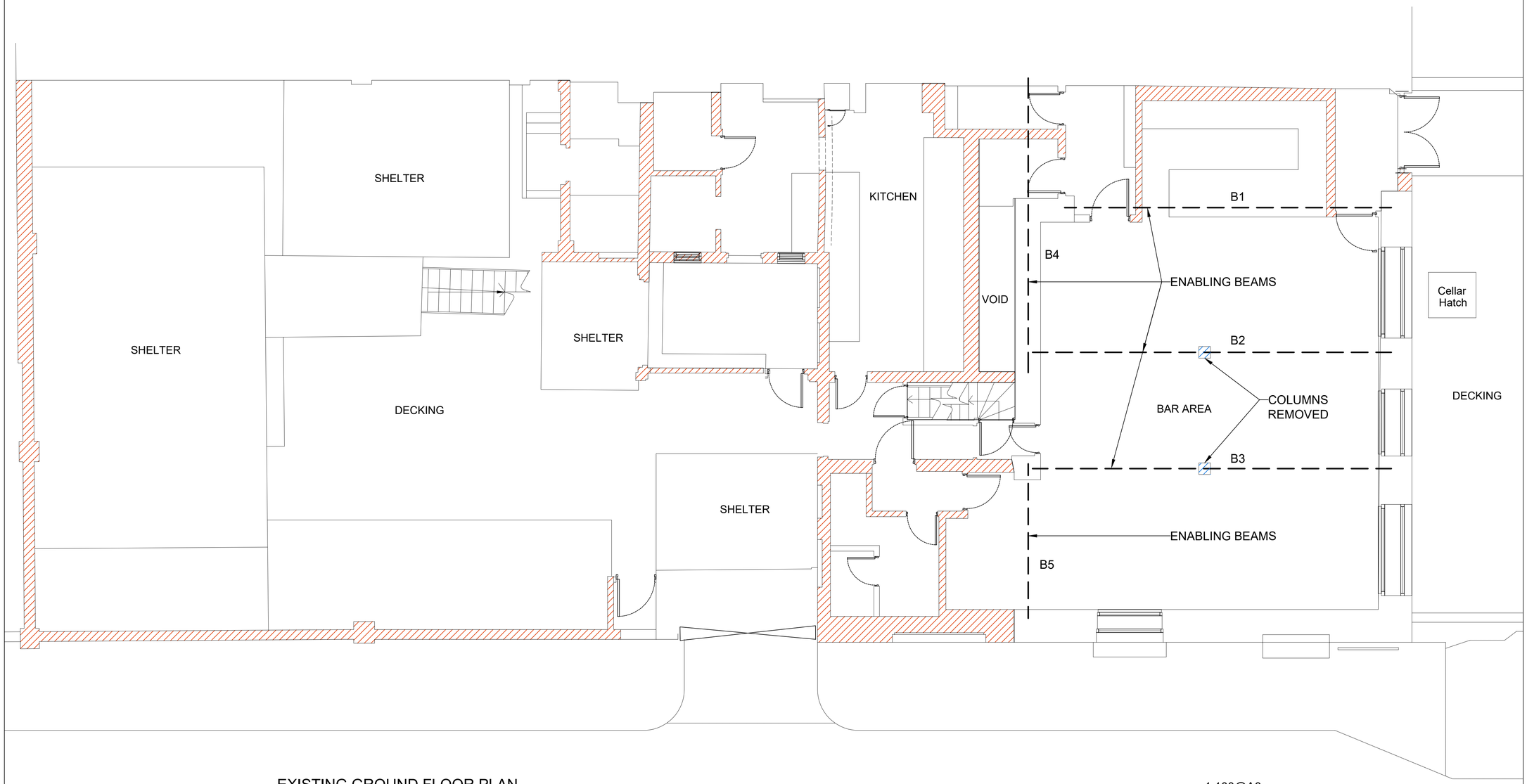
9.9 The superstructure can then be built in the traditional manner from ground floor level upwards.

10.0 FLOOD RISK ASSESSMENT

10.1 A flood risk assessment was carried out by Symmetrys Structural/Civil Engineers in 2021 and is appended to this report.

STAGE 1:

* DEMOLISH REAR BUILDING, OUTBUILDINGS AND WALLS (SHOWN SHADED)
* INSTALL ENABLING BEAMS OVER ANY REMOVE COLUMNS
* LEVEL SITE



EXISTING GROUND FLOOR PLAN

1:100@A3
1:50@A1

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REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project:
NEHIR RESIDENCES

Title:
BASEMENT CONSTRUCTION SEQUENCE
STAGE 1

Client:

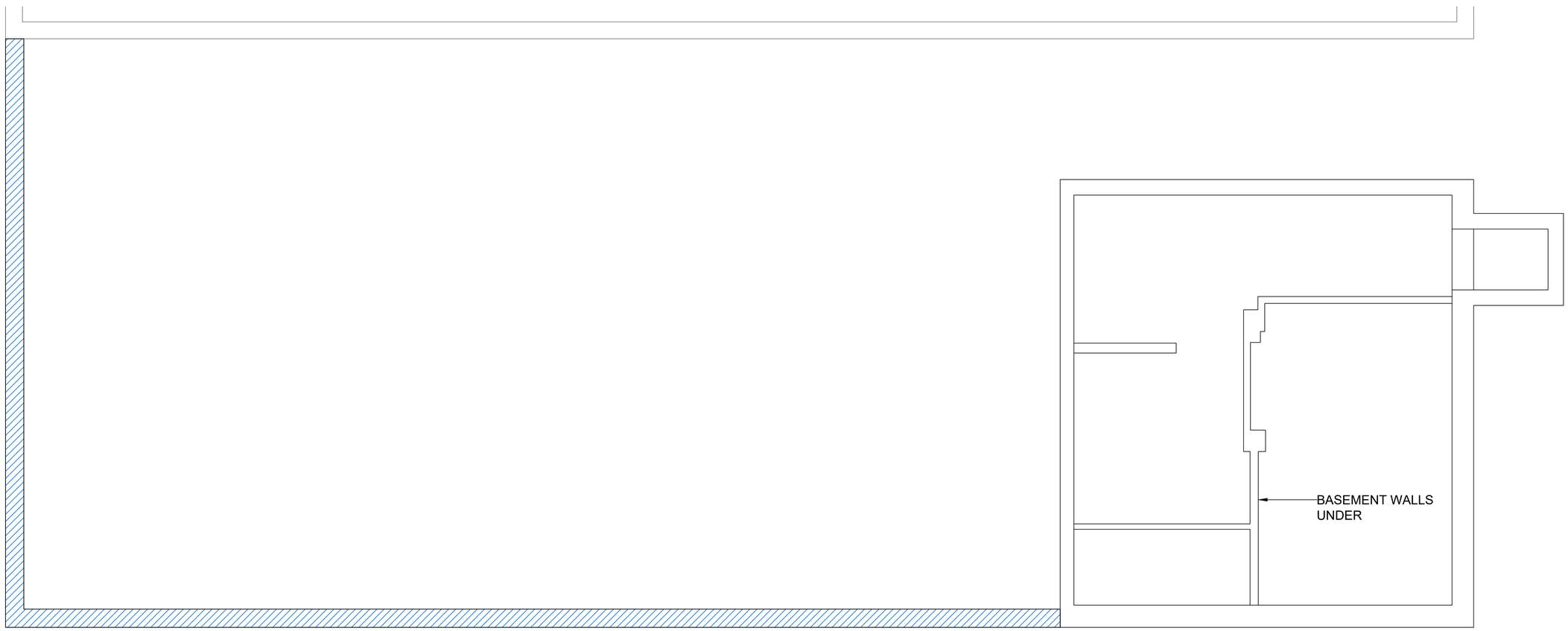
Architect:

INFORMATION

Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	01	Revision:	00

STAGE 2:

* EXCAVATE, SHUTTER AND POUR CONTINUOUS REINFORCED CONCRETE RING BEAM TO 1.8m. BELOW GROUND LEVEL AS SHOWN SHADED (TYPE 2 WALL)



GROUND FLOOR / FOUNDATION PLAN

1:100@A3
1:50@A1

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NOTES:
1. FOR SECTIONS SEE DRAWING NUMBER 24055/06

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project:
NEHIR RESIDENCES

Title:
BASEMENT CONSTRUCTION SEQUENCE
STAGE 2

Client:

Architect:

INFORMATION

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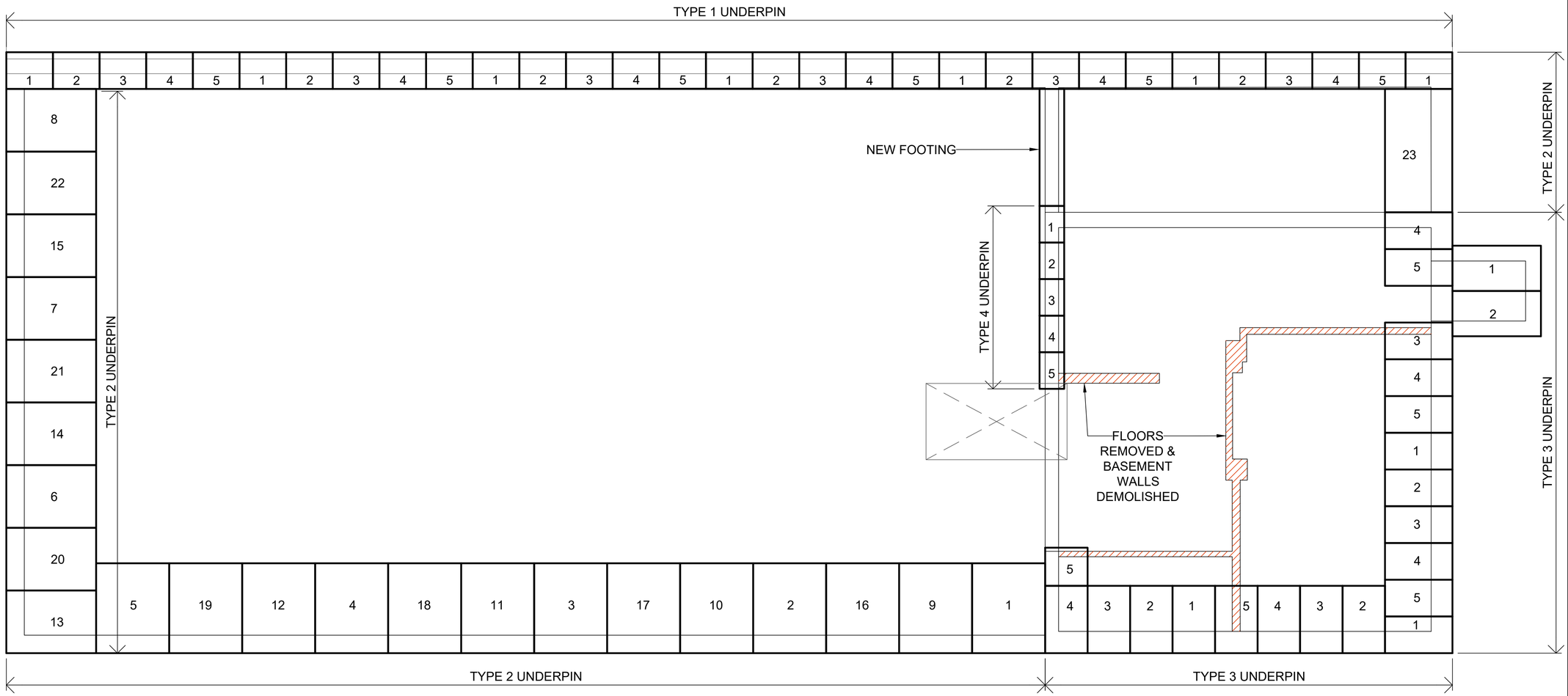
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	02	Revision:	00

STAGE 3:

* UNDERPIN EXISTING PARTY WALLS (TYPE I)
* UNDERPIN REINFORCED CONCRETE RING BEAM (TYPE 2)
* UNDERPIN EXISTING EXTERNAL BASEMENT WALLS (TYPE 3)
* UNDERPIN EXISTING INTERNAL BASEMENT WALLS (TYPE 4)



GROUND FLOOR / FOUNDATION PLAN

1:100@A3
1:50@A1

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AMENDMENTS			

Project:
NEHIR RESIDENCES

Title:
BASEMENT CONSTRUCTION SEQUENCE
STAGE 3

Client:

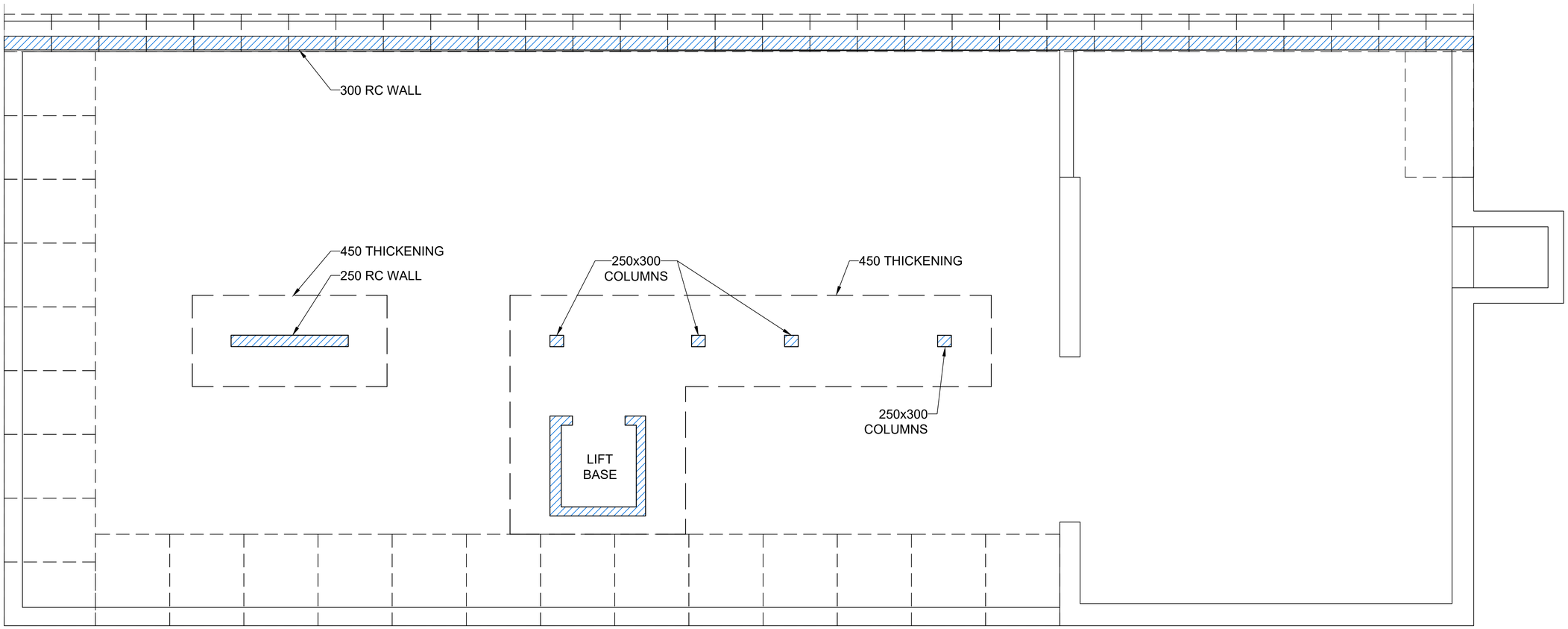
Architect:

INFORMATION

Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	03	Revision:	00

STAGE 4:

* EXCAVATE TO BASEMENT FORMATION LEVEL
* CAST LIFT BASE AND WALLS
* CAST BASEMENT SLAB AND KICKERS FOR WALLS/COLUMNS
* CAST WALLS/COLUMNS TO UNDERSIDE OF BASEMENT SLAB



BASEMENT PLAN

1:100@A3
1:50@A1

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NOTES:
1. FOR SECTIONS SEE DRAWING NUMBER 24055/06

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project:
NEHIR RESIDENCES

Title:
BASEMENT CONSTRUCTION SEQUENCE
STAGE 4

Client:

Architect:

INFORMATION

Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	04	Revision:	00

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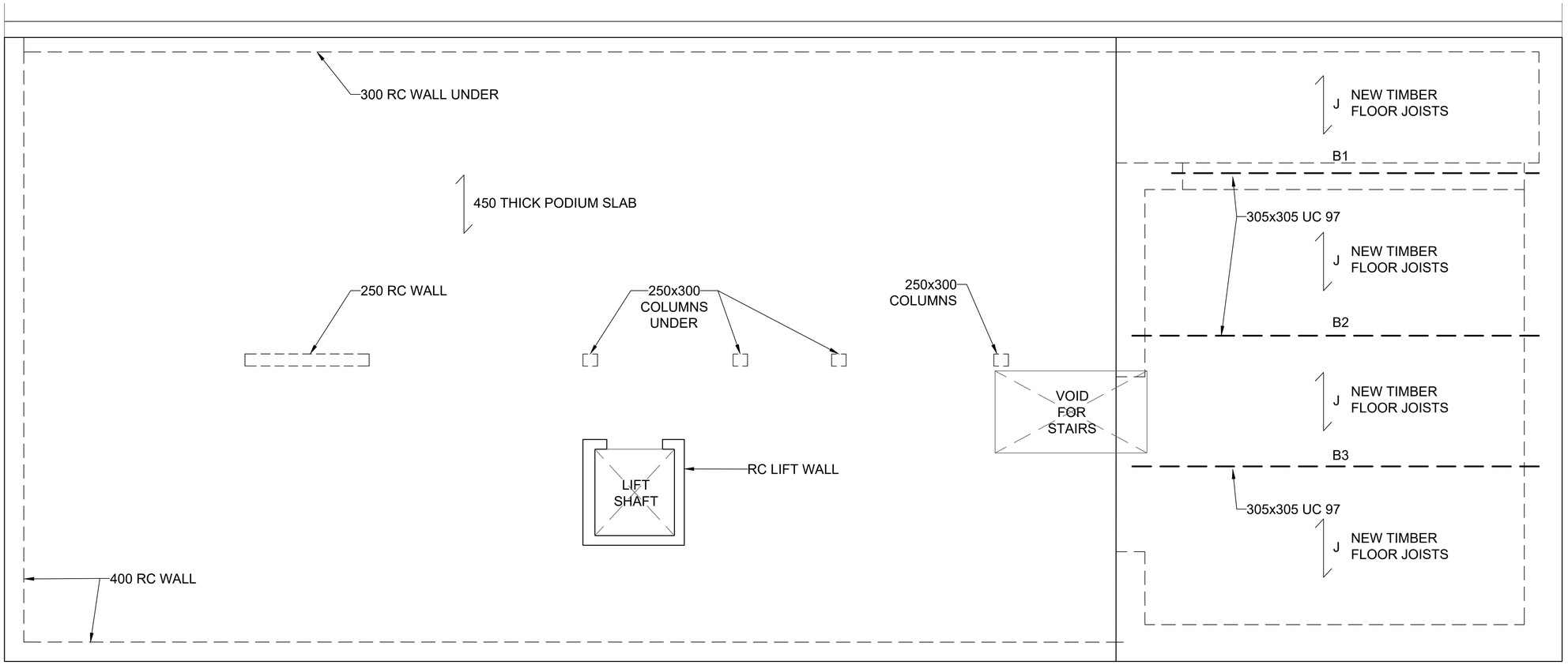
STAGE 5:

* CAST GROUND FLOOR RC SLAB



GROUND FLOOR PLAN

1:100@A3
1:50@A1

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project:
NEHIR RESIDENCES

Title:
BASEMENT CONSTRUCTION SEQUENCE
STAGE 5

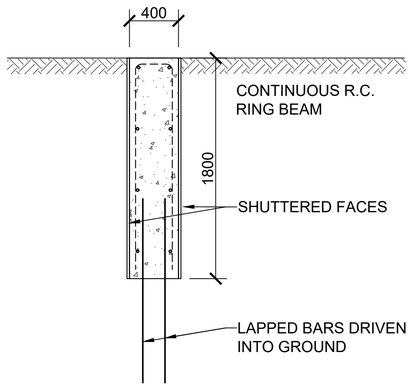
Client:

Architect:

INFORMATION

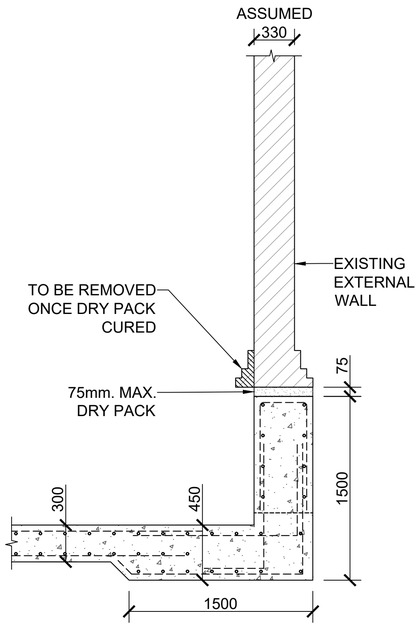
Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	05	Revision:	00

TYPE 2 UNDERPIN



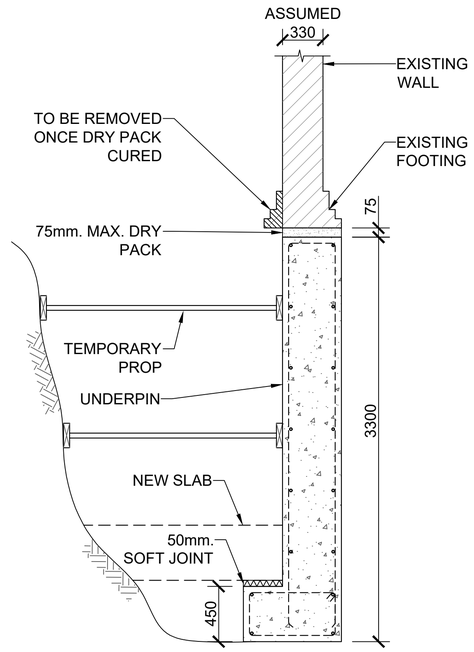
STAGE 2 - CAST CONTINUOUS RING BEAM 1:25@A1

TYPE 3 UNDERPIN



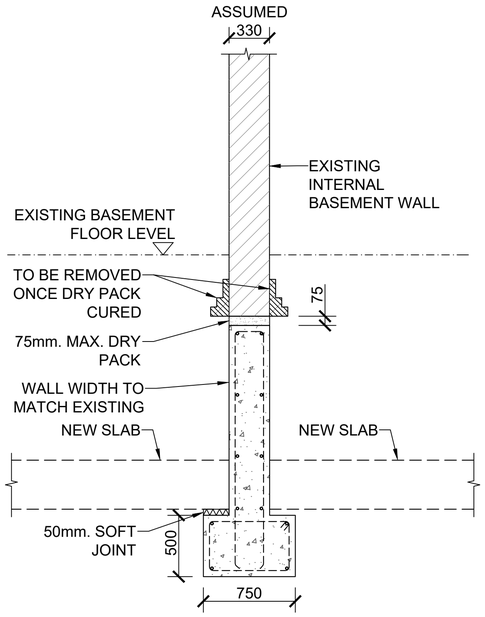
STAGE 3 - UNDERPINNING TO EXISTING BASEMENT WALL 1:25@A1

TYPE 1 UNDERPIN

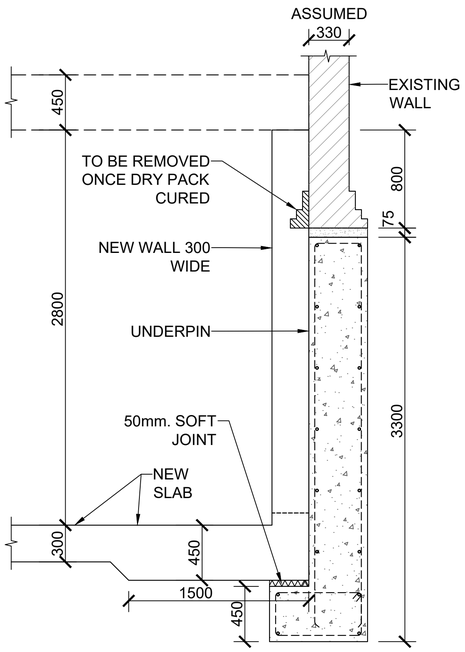


STAGE 3 - UNDERPIN EXISTING WALL 1:25@A1

TYPE 4 UNDERPIN

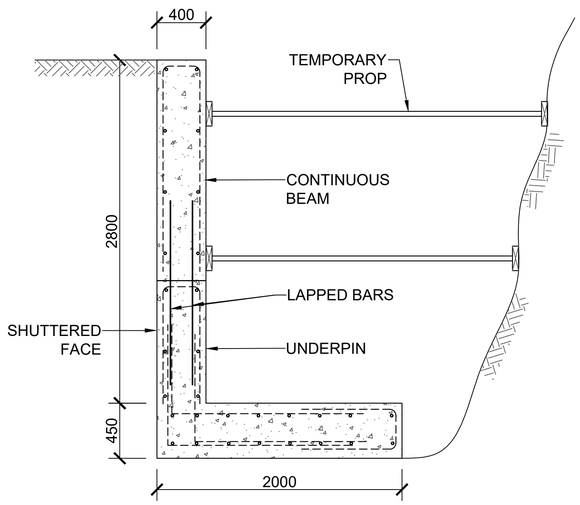


STAGE 3 - UNDERPIN TO EXISTING INTERNAL BASEMENT WALL 1:25@A1



STAGE 4 1:25@A1
* CAST SLAB / KICKER
* REMOVE PROPS
* CAST WALL TO U/S OF SLAB

TYPE 2 UNDERPIN



STAGE 3 - UNDERPIN RING BEAM (TYPE 2) 1:25@A1

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NOTES:
1. FOR SEQUENCING PLANS REFER TO DRAWINGS NUMBER 24055/01-05

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project: NEHIR RESIDENCES

Title: BASEMENT CONSTRUCTION SECTIONS

Client:

Architect:

INFORMATION

Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	AS SHOWN
Drawing No:	06	Revision:	00

GENERAL NOTES:

1. NO DIMENSIONS ARE TO BE SCALED FROM THE DRAWINGS, ALL DIMENSIONS ARE TO BE ESTABLISHED ON SITE.
2. THE DRAWINGS ARE TO READ WITH ALL RELEVANT ARCHITECT'S AND SERVICES ENGINEERS DRAWINGS.
3. THE CONTRACTOR IS TO NOTIFY THE CONTRACT ADMINISTRATOR (C.A) OF ANY DISCREPANCIES BETWEEN THIS DRAWING AND SITE CONDITIONS BEFORE IMPLEMENTING THE WORK. DETAILS ON THE DRAWINGS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER SO THAT ADJUSTMENT MAY BE MADE TO THE STRUCTURAL SCHEME IF NECESSARY.
4. THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING AND CHECKING THE SETTING OUT OF ALL GRIDLINES, LEVELS AND DATUMS.

TEMPORARY WORKS:

1. THE CONTRACTOR IS ENTIRELY RESPONSIBLE FOR ALL THE TEMPORARY WORKS FROM POSSESSION OF THE SITE UNTIL PRACTICAL COMPLETION.
2. THE CONTRACTOR SHALL DESIGN, INSTALL AND MAINTAIN ALL NECESSARY TEMPORARY WORKS.
3. THE CONTRACTOR SHALL SUBMIT DETAILED PROPOSALS FOR THE TEMPORARY WORKS TO THE CONTRACT ADMINISTRATOR/ ARCHITECT AND PARMARBROOK URBAN AT LEAST 10 WORKING DAYS BEFORE COMMENCING THE WORKS. THE PROPOSALS SHALL INCLUDE TEMPORARY WORKS SUPPORTS AND A SEQUENCE OF CONSTRUCTION AND SHALL BE SUPPORTED BY CALCULATIONS THAT HAVE BEEN CARRIED OUT BY A SUITABLE STRUCTURAL ENGINEER.
4. ALL TEMPORARY WORKS TO THE SIDE OF EXCAVATIONS FOR NEW FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH BS 8000 PART 1: 1989 AND ANY OTHER APPROVED DOCUMENTS.
5. ALL SCAFFOLDING REQUIRED, WHETHER FOR ACCESS OR SUPPORT, SHALL BE DESIGNED FOR PURPOSE, IN ACCORDANCE WITH RELEVANT BRITISH STANDARDS (E.G. BS 5973), AND SHALL MEET ALL REQUIREMENTS OF THE CONSTRUCTION (H, S & W) REGULATIONS 1996.
6. THE CONTRACTOR SHALL PREPARE A DETAILED METHOD STATEMENT AND SEQUENCE OF CONSTRUCTION FOR THE BASEMENT WORKS, AT LEAST TEN WORKING DAYS BEFORE COMMENCING THE WORKS.
7. PARMARBROOK URBAN SHALL REVIEW CONTRACTOR'S TEMPORARY WORKS, METHOD STATEMENTS AND SEQUENCES OF CONSTRUCTION OF ALL WORKS ON SITE.

UNDERPINNING NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT HIS OPERATIONS DO NOT IN ANY WAY IMPAIR THE SAFETY OR CONDITION OF THE EXISTING STRUCTURE. HE SHALL PROVIDE ANY TEMPORARY SUPPORTS REQUIRED FOR THIS PURPOSES, AND SHALL CAREFULLY INSPECT THE CONDITION OF THE STRUCTURE BOTH BEFORE AND DURING EXECUTION OF THE WORK, AND IMMEDIATELY INFORM THE ENGINEER IF HE CONSIDERS THAT ANY MORE STRINGENT PROCEDURE THAN THAT SPECIFIED IS NECESSARY.
2. UNDERPINNING IS TO BE CARRIED OUT TO THE SATISFACTION OF THE ENGINEER AND LOCAL AUTHORITY IN SHORT SECTIONS, IN SUCH A MANNER THAT ADEQUATE SUPPORT IS AT ALL TIMES MAINTAINED TO THE UNDERSIDE OF THE WALL FOR AT LEAST THREE QUARTERS OF ITS LENGTH AND THAT SECTIONS OF WORK IN PROGRESS AT ANY ONE TIME ARE SEPARATED BY A DISTANCE OF AT LEAST 2m.
3. THE PROPOSED SEQUENCE OF UNDERPINNING IS INDICATED ON DRAWING NUMBER 1845/04. THE CONTRACTOR IS TO SUBMIT DETAILS OF ANY ALTERNATIVE PROPOSED SEQUENCE 7 DAYS PRIOR TO COMMENCING WORKS ON SITE.
4. CONCRETE GRADE: ON WORKS WHERE A FULL SPECIFICATION HAS NOT BEEN PROVIDED, A FND3 MIX SHOULD BE USED. THIS HAS A MIN. CHARACTERISTIC 28 DAY STRENGTH OF 20 N/mm².
5. THE BODY OF THE UNDERPINNING IS TO BE CONSTRUCTED IN MASS CONCRETE AND IS TO BE CAST TO THE WIDTHS AND DEPTHS SHOWN ON THE DRAWINGS. THE BOTTOMS OF EXCAVATIONS ARE TO BE PREPARED AS SPECIFIED FOR FOUNDATIONS GENERALLY, AS FAR AS PRACTICABLE EXCAVATION AND CONCRETING OF ANY SECTION OF UNDERPINNING SHALL BE CARRIED OUT ON THE SAME DAY.
6. THE CONCRETE IS TO BE STOPPED OFF APPROXIMATELY 75mm BELOW THE UNDERSIDE OF THE EXISTING FOOTING, AND THE FINAL DRY PACKING OVER THE WHOLE EXTENT OF THE LATER IS TO BE CARRIED OUT WITH A SEMI DRY FINE CONCRETE WELL RAMMED IN AS SOON AS POSSIBLE AFTER THE FOUNDATION HAS SET HARD. THE DRY PACKING MIX IS TO CONSIST OF 1 PART BY VOLUME OF PORTLAND CEMENT TO 3 PARTS OF SHARP SAND WITH ALLOW WATER/CEMENT RATIO AND FOSROC CEBEX100 EXPANDING ADMIXTURE IN ACCORDANCE WITH FOSROC INSTRUCTIONS.
7. EXCAVATION TO ANY SECTION OF UNDERPINNING SHALL NOT BE COMMENCED UNTIL AT LEAST 48 HOURS AFTER COMPLETION OF ANY ADJACENT SECTIONS OF THE WORKS.
8. EXCAVATIONS SHALL BE TO THE DEPTH AND WIDTH SHOWN ON THE DRAWINGS. HOWEVER, WHERE TREE ROOTS ARE ENCOUNTERED NEW UNDERPINS ARE TO EXTEND 600mm BELOW THE LAST TRACE OF ANY ROOT ACTIVITY. THE SIDES OF THE EXCAVATIONS SHALL BE ADEQUATELY SHORED AND PROPPED TO PREVENT SUBSIDENCE OR SLIP OF THE SOIL. SOIL FACES BEHIND THE PIN AND AT THE FORMATION LEVEL SHALL BE UNDISTURBED.
9. ANY SOIL FACES BEHIND THE UNDERPINNING THAT REQUIRE TO BE RETAINED SHALL BE BY PRE-CAST POLING BOARDS. THE BOARDS ARE TO HAVE HOLES TO ENABLE THE VOIDS BETWEEN THE BOARDS TO BE GROUTED UP. THE POLING BOARDS ARE TO BE MEASURED AS LEFT IN.
10. ALL EXCAVATIONS ARE TO BE INSPECTED BY THE ENGINEER AND/OR THE BUILDING CONTROL OFFICER. MINIMUM NOTICE OF 24 HOURS IS TO BE GIVEN WHEN EXCAVATIONS ARE READY FOR INSPECTION.
11. THE SIDES OF THE COMPLETED PIN ARE TO BE THOROUGHLY CLEANED AND SCRABBLED TO THE SATISFACTION OF THE ENGINEER.
12. THE SOFFIT OF THE EXISTING FOOTINGS IS TO BE LEVELLED OFF AND CLEANED OF ALL LOOSE OR DETRIMENTAL MATERIAL.
13. THE CONTRACTOR MUST PROVIDE SHEAR KEYS BETWEEN PINS IN THE FORM OF H20 REINFORCING BARS WITH 300mm EMBEDMENT INTO EACH PIN.
14. PLACING CONCRETE: THE CONCRETE FOR THE UNDERPINNING IS TO BE POURED CONTINUOUSLY TO 75mm BELOW THE SOFFIT OF THE EXISTING FOOTING. THE CONCRETE IS TO BE FULLY COMPACTED USING A MECHANICAL VIBRATOR.
15. THE CONTRACTOR WILL INCLUDE IN HIS PRICES ALLOWANCE FOR THE REMOVAL OF ALL SPOIL ARISING FROM THE WORKS WHICH IS NOT SUITABLE FOR BACKFILLING PURPOSES.
16. A FULL RECORD OF EACH SECTION UNDERPINNED IS TO BE KEPT ON SITE AND READILY AVAILABLE FOR INSPECTION BY THE ENGINEER OR BUILDING CONTROL OFFICER.

STEELWORK NOTES

1. ALL MATERIALS, FABRICATION, WORKMANSHIP AND ERECTION OF STEELWORK SHALL BE IN ACCORDANCE WITH THE NATIONAL STEELWORK SPECIFICATION FOR BUILDING CONSTRUCTION, 5th EDITION AS PUBLISHED BY THE BRITISH CONSTRUCTIONAL STEELWORK ASSOCIATION. STEELWORK TO BE MINIMUM GRADE S275 JR.
2. STEEL BEAMS SHALL AT LEAST HAVE THE MINIMUM BEARINGS ON MASONRY WALLS AS SHOWN ON THE DRAWINGS.
3. WHERE NO DETAILS OF BEARINGS ARE SHOWN PROVIDE BEARINGS OT THE FULL WIDTH OF THE SUPPORTING LEAF OR 150mm WHICHEVER IS GREATER.
4. SITE MODIFICATIONS TO STRUCTURAL STEELWORK SHALL NOT BE CARRIED OUT UNLESS PRIOR APPROVAL HAS BEEN OBTAINED FROM THE ENGINEER.
5. ALL STRUCTURAL STEELWORK SHALL BE BLAST CLEANED TO B.S. 7079:PART A1, PREPARATION GRADE Sa21/2 AND, EXCEPT WJERE SPECIFIED AS GALVANISED, SHALL BE PAINTED WITH A SUITABLE GOOD QUALITY HIGH BUILD EPOXY ZINC PHOSPHATE PRIMER TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 75 MICRONS. A PRE-FABRICATED PRIMER MAY BE USED AT THE FABRICATORS DISCRETION. THE CONTRACTOR SHALL ENSURE THAT THE PRIMER USED IS COMPATIBLE WITH SUBSEQUENT COATINGS SEPCIFIED BY OTHERS. (E.G. INTUMESCENT PAINT).
6. STEELWORK SPECIFIED AS GALVANISED SHALL BE BLAST CLEANED AS ABOVE & HOT DIP GALVANISED TO B.S. 729 MINIMUM COATING THICKNESS 85 MICRONS.
7. ALL STEELWORK BELOW DPC LEVEL OR BUILT WITHIN THE MASONRY WALL CAVITY SHALL BE SITE PAINTED WITH A COMPATIBLE HIGH BUILD EPOXY ZINC PHOSPHATE PRIMER TO PROVIDE A DRY FILM THICKNESS OF NOT LESS THAN 125 MICRONS, TO ACHIEVE AN OVERALL PRIMER COATING OF 200 MICRONS. i.e. LEIGHS PAINTS EPIGRIP C400 ZINC PHOSPHATE PRIMER/BUILDCOAT OR EQUAL. STEELWORK BELOW DPC SHALL ALSO BE ENCASED IN NOT LESS THAN 100mm OF CONCRETE NOT WEAKER THAN SPECIFIED ON THE DRAWINGS.
8. THE ENGINEER IS NOT RESPONSIBLE FOR DIMENSIONAL INFORMATION EXCEPT WHERE ON HIS DRAWINGS. ALL SETTING OUT INFORMATION, DIMENSIONS etc. SHALL BE CALCULATED FROM THE ARCHITECTS DRAWINGS.
9. STEELWORK CONTRACTOR TO CO-ORDINATE WITH MAIN CONTRACTOR TO PROVIDE ADEQUATE TEMPORARY BRACING DURING THE SEQUENCE OF ERECTION.
10. ALL TEMPORARY SUPPORT STEELWORK IS TO BE DESIGNED BY THE CONTRACTOR
11. BOTTOM PLATES TO STEEL BEAMS ACTING AS LINTELS TO BE PAINTED WITH GALVAFROID OR EQUAL APPROVED ALL TO MANUFACTURERS SPECIFICATION.

TIMBER NOTES

1. ALL STRUCTURAL TIMBER TO BE MINIMUM STRENGTH GRADE C24 AND IS TO BE TREATED WITH PRESERVATIVE IN ACCORDANCE WITH BS 5268 PART 5 UNO.
2. STRUCTURAL DRAWINGS SHOW MAIN STRUCTURAL TIMBERS ONLY. FOR ALL SECONDARY TIMBER AND ALL SETTING OUT REFER TO ARCHITECTS DRAWINGS.
3. SOLID NOGGINS TO BE PROVIDED IN ALL NEW ROOF JOISTS. NOGGINS TO BE 50mm WIDE AND PROVIDED A LONG LINE OF SUPPORT AT MID SPAN FOR SPANS EXCEEDING 2.5m AND 1/3 AND 2/3 SPAN POSITIONS FOR SPANS EXCEEDING 4.5m.
4. NO NOTCHING OF TIMBER JOISTS PERMITTED UNLESS INDICATED ON STRUCTURAL DRAWINGS.
5. BLOCKING TO BE PROVIDED AT THIRD SPAN POINTS AND WITHIN WEBS OF ALL STEEL BEAMS.
6. ALL TIMBER TO TIMBER CONNECTORS TO BE IN ACCORDANCE WITH BS 5268
7. ALL SCREWS TO BE INSERTED INTO PRE-DRILLED HOLES.
8. ALL JOIST HANGERS TO BE FULLY NAILED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS UNO.

CONCRETE NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL ENGINEERING DRAWINGS, THE PROJECT SPECIFICATION AND DRAWINGS PRODUCED BY THE ARCHITECTS, SERVICES ENGINEERS & LANDSCAPE ARCHITECTS.
2. THE CONTRACTOR SHALL VERIFY ALL SITE AND SETTING OUT DIMENSIONS BEFORE PUTTING WORK IN HAND. WHERE DIMENSIONS ARE SHOWN ON THE ENGINEERS DRAWINGS, ANY DISCREPANCIES SHALL BE REPORTED TO HIM.
3. FORMATION LEVELS OF ALL FOUNDATION EXCAVATIONS TO RECEIVE REINFORCED CONCRETE, SHALL BE TRIMMED, LEVELLED AND BLINDED WITH NOT LESS THAN 50MM OF DESIGNATED CONCRETE GRADE GEN1 TO BSEN206-1, BS8500-1 AND BS8500-2.
4. EXCAVATIONS SHALL BE KEPT DRY AND MUST BE PROTECTED FROM WEATHERING. ANY EXCAVATIONS AFFECTED BY RAINWATER TO BE RE-DUG AND BLINDED IMMEDIATELY.
5. THE CONTRACTOR IS RESPONSIBLE AND LIABLE FOR ENSURING THE STABILITY OF THE WORKS AND SERVICES AT ALL STAGES OF CONSTRUCTION.
6. REINFORCED CONCRETE SHALL BE COMPACTED BY MEANS OF A MECHANICAL VIBRATING POKER AND THE WORKABILITY SHALL BE SUCH THAT, WHEN COMPACTED, A DENSE CONCRETE, FREE FROM VOIDS SHALL BE PRODUCED.
7. ALL CONSTRUCTION JOINTS IN-OR PENETRATIONS THROUGH WATERPROOF CONCRETE ARE TO BE IN ACCORDANCE WITH STANDARD DETAILS AND APPROVED BY MANUFACTURERS.
8. REINFORCED CONCRETE TO BE FND3 MIX DESIGN TO BS 5328 AND TO OBTAIN A COMPRESSIVE STRENGTH OF 40 N/mm².

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NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS NUMBER 24055/01-06

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

Project: NEHIR RESIDENCES

Title: NOTES

Client:

Architect:

INFORMATION

Designed:	AH	Drawn:	DBM
Checked:	AH	Date:	01.10.24
Project No:	24055	Scale @ A1:	NTS
Drawing No:	07	Revision:	00

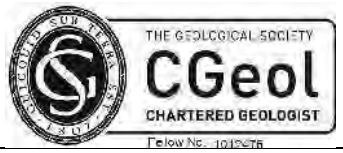
LMB GEOSOLUTIONS LTD

GROUND INVESTIGATION & ASSESSMENT

83 MAYES ROAD, LONDON N22

February 2020

DOCUMENT RECORD

Document Title	Ground Investigation & Assessment
Site	83 Mayes Road, London N22 6UP
Document Date	7th February 2020
Document Version	Issue 1
Document Authorisation	Philip Lewis BSc (Hons), MSc, CGeol, FGS
	 

Company No. 8303397
LMB Home

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EXECUTIVE SUMMARY

Executive Summary

Site Details	83 Mayes Road, London N22 6UP
Proposed Development	The development proposals comprise a comprise a five to six storey (including basement) mixed commercial and residential development. The proposals include a public house and restaurant on the ground and basement levels with residential dwellings above.
Ground & Groundwater Conditions	Made Ground overlying possible River Terrace Deposits and London Clay Formation. Groundwater was recorded at depth of 2.80m during monitoring but is not considered to form a laterally continuous aquifer unit.
Preliminary Risk Assessment	Very low to Moderate/Low risk rating.
Geotechnical Advice	For traditional strip foundations and pad foundations placed on the competent London Clay at a depth of c. 3.00m net safe bearing pressures of 120kN/m^2 and 160kN/m^2 respectively should be available. The above advice assumes that the proposed basement development and in particular foundations would not be within the influence of any trees or tree routes. For a piled foundation preliminary safe working loads of 90kN and 150kN are suggested for 300mm and 450mm diameter piles respectively. This should be confirmed and/or amended by a competent piling contractor. Given the nearby structures, it is considered likely that temporary or permanent support will be needed for construction. Coefficient of active earth pressure: Made Ground: 0.35. Possible River Terrace Deposits: 0.30. London Clay: 0.40. Coefficient of passive earth resistance: Made Ground: 3.5. Possible River Terrace Deposits: 3.5. London Clay: 2.7. Buried concrete: Made Ground; DS-1, AC-1. London Clay Formation; DS-3, AC-3.
Recommendations	The full set of recommendations should be reviewed, but in summary the following are provided: • It is recommended that maintenance and construction workers involved in below ground works adopt appropriate management procedures to mitigate potential risks. • It is recommended that movement monitoring is undertaken as part of basement construction. • It is recommended that the potential for heave and uplift due to groundwater pressure are considered within basement design.
This executive summary is not a stand alone document and should be read in conjunction with the full report text, including conclusions and recommendations.	

INTRODUCTION

Introduction

AUTHORISATION

LMB Geosolutions Ltd (LMB) was instructed by Symmetrys Ltd (Consultant Engineers) on behalf of Mr Mehmet Kocakerim (the Client) in January 2020 to undertake ground investigation and assessment works in relation to the proposed development at 83 Mayes Road, London, N22 6UP (the Site).

PROJECT AND SITE DETAILS

Site Address	83 Mayes Road, London, N22 6UP (the Site). A Site Location Plan is provided as **Figure 1**.
Proposed Development	The site currently comprises a three-storey semi-detached building with disused public house on the ground floor and cellar levels with residential dwellings on the first and second floors. It is understood that the client wishes to redevelop the site to comprise a five to six storey (including basement) mixed commercial and residential development. The proposals include a public house and restaurant on the ground and basement levels with residential dwellings above. A development schematic is provided in **Appendix A**.
Background	The scope of works and requirements of this report were based on the information provided by Symmetrys (Consultant Engineers) within the following documents: • Email specification from Denis O'Dell (Symmetrys) to Philip Lewis (LMB) 5th December 2019; & • Site Investigation Plan.

AIMS & OBJECTIVES

This report aims to provide information sufficient to meet the requirements of the email specification provided by the Consultant Engineers.

SCOPE OF WORKS

The following scope of works has been completed:

Desk Study (Preliminary Risk Assessment)

- Completion of a site reconnaissance survey to make a preliminary assessment of the site and immediately surrounding area;

INTRODUCTION

- Review of information on the planning portal for records pertaining to development on the site and in the neighbouring area;
- Acquisition of a Groundsure enviro insight report and review of data for the area to assess historical land uses on and immediately surrounding the site;
- Assessment of the 'sensitivity' of the site location as determined by factors such as hydrogeology, proximity of watercourses, neighbouring land use, ecologically sensitive uses and geology detailed on British Geological Survey (BGS) maps; and
- Completion of an interpretive report (included within the main ground investigation report) that includes:
    - Details of current site conditions based on the reconnaissance survey;
    - Production of a preliminary conceptual site model; and
    - Provision of a Preliminary Risk Assessment outlining potential land contamination issues associated with the proposed development.

Ground Investigation & Assessment

- Site set up including liaison with Consultant Engineers, Client and appointment of sub-contractors;
- Mobilisation to site and transport of the rig to the proposed location;
- Completion of 1No. dynamic (windowless) sampler boreholes to a depth of 10.0m below ground level (bgl) with insitu testing and collection of disturbed samples for laboratory testing;
- Completion of 2no. hand excavated trial pits to depths of between 0.45m and 0.50m bgl to expose and inspect existing building foundations;
- Supervision and geological logging of the soil arisings in accordance with BS5930 by an appropriately experienced geo-environmental engineer;
- Installation of 1no. monitoring well to depths of 5.0m bgl and return monitoring of groundwater levels on 1no. occasion;
- Geotechnical laboratory testing of the soil samples for an appropriate suite of determinands (including pH, sulphate, atterberg limits, and moisture content);
- Chemical analysis of 2no. samples of the shallow soils, including Waste Acceptance Criteria (WAC);
- Completion of a factual and interpretive report that includes;
    - Details of the ground and groundwater conditions encountered;
    - Schematic sections of exposed foundations;
    - Presentation of chemical analytical results;
    - Geotechnical laboratory testing and provision of advice on the material properties of the shallow soil horizon including parameters to aid in retaining wall design and foundation options; &
    - Conclusions and recommendations.

INTRODUCTION

LIMITATIONS

LMB has prepared this report solely for the use of the named Client and those parties with whom a warranty agreement and/or assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from LMB and the Client.

LMB accepts no responsibility or liability for:

a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and

b) issue of this document to any third party with whom an agreement has not been executed.

The risk assessment and opinions provided, among other things, take in to consideration currently available guidance and best available techniques relating to acceptable contamination concentrations and interpretation of these values. No liability can be accepted for the retrospective effects of any future changes or amendments to these value.

Preliminary Risk Assessment

A Preliminary Risk Assessment (PRA) has been undertaken and is presented in this section in order to provide further background and context for the ground investigation and assessment presented in the later sections of this report.

DATA SOURCES

The following data sources have been used to inform the PRA:

- British Geological Survey – 1:50,000 Geological Sheet 256, North London (Solid & Drift);
- British Geological Survey borehole archive records;
- Environment Agency Groundwater Vulnerability Mapping (1:100,000 series) Sheet 40, Thames;
- Information contained on the gov.uk website (https://flood-warning-information.service.gov.uk/long-term-flood-risk/map);
- NERC (2008). UK Hydrometric Register;
- River Basin Management Plan (RBMP). Thames River Basin District (2009); and
- Groundsure Enviro Insight Report (ref. GS-6550616, 13th January 2020).

SITE DESCRIPTION

A representative of LMB completed a site walkover survey on Wednesday 8th January 2020 that included external areas. A photographic record is provided as **Appendix B**.

The site currently comprises a disused public house on the ground floor, with associated front terrace, covered beer garden to the rear and cellar present beneath the front area (see Photos 1 to 4 inclusive). Residential dwellings are present on the first and second floors.

The site is located on the corner of Mayes Road and Coburg Road in an area occupied by primarily residential terrace housing (see Photos 5 & 6). The terrace property of 85 Mayes Road adjoins the rear of the site building (see Photo 7).

The main access to the property is via the front door accessed from Mayes Road, with a side entrance off Coburg Road.

The property is located in a relatively flat lying area with a gentle slope to the east.

ENVIRONMENTAL SETTING

Published Geology & Aquifer Designations	Reference to British Geological Survey (BGS) Digital Map (1:50,000) and within the Groundsure report (ref. GS-6550616) indicates the site is directly underlain by

	the London Clay Formation. No superficial deposits are anticipated at the site based on available sources of information. The London Clay Formation is designated 'Unproductive Strata.'
Local Hydrology	According to Groundsure report (ref. GS-6550616) there are no surface water features within 250m of the site. However, a culverted inland river (Moselle) is located approximately 110m east of the site. Information relating to the Thames region within the UK Hydrometric Register indicates that the average annual rainfall in the region is 710mm. Information contained in the Groundsure report (ref. GS-6550616) and on the gov.uk website indicates that the site is located in an area at Very Low risk of flooding from rivers and sea. The site is partially located in an area at Low to Medium risk from surface water flooding. Information in the Groundsure report (ref. GS-6550616) indicates that the site is located in an area 'not prone' to groundwater flooding.
Resource Potential & Ecological Quality	**Surface Water**: There are no surface water features within 250m of the site.
	Groundwater: The groundwater in the London Clay Formation is designated Unproductive Strata and as such is not characterised as a groundwater body within the relevant RBMP. The site is located within the inner catchment (Zone 1) of an EA designated Source Protection Zone (SPZ). However, this relates to a potable abstraction from the deeper aquifer beneath the London Clay Formation.
Surrounding Land Use	The immediate surrounding land uses are predominantly residential with associated amenities. Wood Green shopping centre is located approximately 120m east of the site.
Local Designations	Reference to information contained in the Groundsure Report (ref. GS-6550616) indicates that the Alexandra Palace and Park Local Nature Reserve (LNR) is located approximately 490m west of the site. No other sensitive land uses (e.g. SSSI) have been identified within 500m of the site.

BELOW GROUND ASSETS

As part of the assessment the following organisations were contacted to ascertain if they held any below ground assets below or in close proximity to the site:

- Network Rail;
- Crossrail;

- London Underground Ltd / Transport for London.

Responses have been received from all organisations confirming they do not hold any below ground assets in the vicinity of the site. However, Crossrail have stated within their response that part of the site falls within Crossrail 2 safeguard limits.

Copies of correspondence are included in **Appendix C**.

POTENTIALLY CONTAMINATIVE HISTORICAL LAND USE

A review of historical data within the Groundsure Report (GS-6550616) has been completed to identify pertinent potentially contaminative previous land uses on site and within 250m of the site.

Date	On Site Features	Off Site Features
1894	-	Gasworks approximately 220m south. Railway station approximately 230m east. Gasometer approximately 235m south.
1911	-	Gasworks approximately 140m south. Railway station approximately 220m east. Gasometer approximately 230m south.
1920	-	Unspecified commercial/industrial works approximately 20m west. Gasworks approximately 130m south. Unspecified tanks approximately 165m and 175m west. Railway sidings approximately 230m south west. Railway station approximately 235m east. Gasometer approximately 240m south.
1938	-	Unspecified commercial/industrial works approximately 120m south. Unspecified tank approximately 140m south. Unspecified tank approximately 230m south. Railway sidings approximately 230m south west. Railway station approximately 235m east.

PRELIMINARY RISK ASSESSMENT

Date	On Site Features	Off Site Features
1951	-	Unspecified tank approximately 180m west Railway building approximately 190m north east. Railway sidings approximately 220m south west. Refuse destructor approximately 245m west.
1962	-	Unspecified factory approximately 90m south. Unspecified works approximately 125m south. Unspecified tank approximately 140m south. Railway sidings approximately 220m south west. Unspecified tanks approximately 230m and 240m south.
1966-1991	Unspecified Works	Garage approximately 60m east, 100m south east, 125m east and 140m east. Unspecified factory approximately 90m south. Electricity sub-stations approximately 100m west, 140m south, 170m west, 200m south west, 225m north east and 230m west. Unspecified commercial/industrial works approximately 100m south west. Gas holder station approximately 100m south east. Gas works approximately 130m south. Gasometer approximately 140m south. Unspecified depot approximately 190m south west. Railway sidings approximately 220m south west. Unspecified commercial/industrial works approximately 230m west. Gasometer approximately 230m south. Railway sidings approximately 240m south west.

PRELIMINARY RISK ASSESSMENT

REVIEW OF PLANNING HISTORY

A search of planning applications on the Haringey Council website has been completed to review any existing and proposed development in the vicinity of the site. The most recent granted permissions relating to building/structure development are as follows:

- Flat E 85 Mayes Road N22 6UP (ref HGY/2015/2060, 03/09/2015). Erection of Rear Dormer.
- 101-103 Mayes Road N22 6UP (ref. HGY/2013/0377, 24/04/2013). Construction of additional floor including the erection of rear dormer, 2 side dormers and insertion of 2 x rooflights to the front elevation to provide 2 x 2 bedroom flats.
- 107 Mayes Road N22 (ref. HGY/2011/0970, 18/07/2011). Change of use of the upper parts of the building from B1 (Office) to Residential (C3) involving the conversion of the first and second floors and the roofspace to provide six self-contained flats, together with enhancement of the ground floor B1 Employment space. Alterations and landscaping of the front car parking area

No proposed basement applications were noted.

ENVIRONMENTAL & PERMITTING DATA

The table below provides a summary of the environmental and permitting data for the site and surrounding area:

Item	On Site	0 – 250m	Description
Part A (2) and Part B Activities & Enforcements	0	2	These relate to unloading of petrol into a service station approximately 110m south and dry cleaning approximately 220m north east.
Discharge Consents	0	0	-
Pollution Incidents	0	2	These both relate to inert construction and demolition waste with Category 4 (no impact) recorded.
Current Industrial Data	0	35	The nearest current industrial land use relates to clearance and salvage dealers located approximately 8m north west. Other pertinent activities within 100m include clothing components and accessories, wood products, electrical equipment repair and servicing, tool hire and vehicle repair, testing and servicing.
Local Authority Pollution Prevention Controls	0	0	-

PRELIMINARY RISK ASSESSMENT

Item	On Site	0 – 250m	Description
Registered Radioactive Substances	0	0	-
IPC & IPPC Authorisations	0	0	-
Historical & Registered Landfills	0	0	-
Waste Sites	0	3	These relate to an incinerator and destructor located approximately 230m west.

ENVIRONMENTAL SENSITIVITY

Overall, the site setting is considered to be of **low** environmental sensitivity, for the following reasons:

- The site is located in a predominantly residential area;
- The site is underlain by the London Clay Formation, which is designated as Unproductive Strata;
- The site is located within the inner catchment (Zone 1) of an EA designated Source Protection Zone (SPZ). However, this relates to a potable abstraction from the deeper aquifer beneath the London Clay Formation.
- The site is located within an area with Very Low risk of flooding (rivers and sea);
- The site is partially located within an area with Low to Medium risk of surface water flooding;
- The site is located within an area 'not prone' to groundwater flooding;
- There are no surface water features within 250m of the site. However, a culverted inland river (Moselle) is located approximately 110m east of the site.; and
- The Alexandra Palace and Park Local Nature Reserve (LNR) is located approximately 490m west of the site.

PRELIMINARY CONCEPTUAL SITE MODEL

The information presented in the previous sections of this report and within the former Environment Agency/DEFRA document; Priority Contaminants for the Assessment of Land (CLR8)[1] have been used to

[1] This document has been withdrawn but is considered to remain useful in proving technical background for identifying potential sources of contamination and designing ground investigation works.

complete a Preliminary Conceptual Site Model (PCSM) that details the potential contaminant sources, pathways and receptors.

The PCSM is presented in the table below:

Potential Contaminant Sources	On-site	• Unspecified works
	Off-site	• Garages within 100m. • Unspecified tanks within 150m. • Electricity substations within 200m. • Gasworks & Railway station/sidings within 250m.
Associated Contaminant	On-site	• Unknown, possible contaminants associated with Made Ground including heavy metals, asbestos and organic contaminants.
	Off-site	• Heavy metals and inorganic contaminants. • Organic contaminants (including petroleum hydrocarbons). • Bulk ground gases & volatile vapours.
Receptors		• Future Site Users. • Neighbouring residents. • Maintenance and construction workers (acute risk only). • New built development.
Pathways to Receptors		• Direct contact, inhalation and ingestion of contaminants within any shallow soils (Acute risk during below ground construction and maintenance). • Migration of ground gas & volatile vapours.

POLLUTANT LINKAGE ASSESSMENT

The likelihood of pollutant linkages being present between the potential contaminant sources, pathways and receptors identified in the PCSM are outlined in the table below:

Pathway Linkage	Likelihood of Pollutant Linkage	Consequences	Risk Rating	Reasoning
Future Site Users (Direct exposure pathway)				

PRELIMINARY RISK ASSESSMENT

Pathway Linkage	Likelihood of Pollutant Linkage	Consequences	Risk Rating	Reasoning
Ingestion/Dermal Contact/Inhalation (Site Users).	Unlikely	Medium	Low	Potential on site sources of contamination have been identified but the basement excavation is likely to remove a large proportion of Made Ground. Potential exposure for maintenance and construction workers will be acute and it is assumed they will adopt appropriate management procedures to mitigate potential risks.
Ingestion/Dermal Contact/Inhalation (Maintenance and Construction Workers).	Unlikely	Medium	Low	
Future Site Users (Indirect exposure pathway)				
Enclosed space accumulation of ground gas.	Unlikely	Severe	Moderate/Low	Potential sources of ground gas and volatile vapours are present on and off-site. However, potential on-site sources are likely to be removed to facilitate basement development. Potential off-site sources are separated from the site by a significant thickness of low permeability London Clay as well as buildings and below ground structures such as existing basements and utility infrastructure. As such there is limited potential for ground
Outdoor volatile vapour exposure	Unlikely	Medium	Low	

Pathway Linkage	Likelihood of Pollutant Linkage	Consequences	Risk Rating	Reasoning
				gas / volatile vapour migration to the site.
Ingress into potable water supply pipes	Unlikely	Medium	Low	No on site potential contaminant sources have been identified. Confirmation with the statutory undertaker is recommended.
Risks to Buildings via accumulation of ground gas in enclosed spaces and sub-floor voids.	Unlikely	Severe	Moderate/Low	Potential sources of ground gas and volatile vapours are present on and off-site. However, potential on-site sources are likely to be removed to facilitate basement development. Potential off-site sources are separated from the site by a significant thickness of low permeability London Clay as well as buildings and below ground structures such as existing basements and utility infrastructure. As such there is limited potential for ground gas / volatile vapour migration to the site.
Water Environment				
Contaminant migration on to neighbouring land.	Unlikely	Medium	Low	Potential on site sources of contamination have been identified but the

Pathway Linkage	Likelihood of Pollutant Linkage	Consequences	Risk Rating	Reasoning
Contaminant migration from neighbouring land.	Unlikely	Medium	Low	development will result in the removal of a large proportion of Made Ground. In addition, the site is directly underlain by the London Clay Formation and is considered unlikely to support a groundwater unit capable of significant contaminant migration.
Contamination of groundwater	Unlikely	Medium	Low	
Contamination of surface water	Unlikely	Medium	Low	The nearest water feature is a culverted river located approximately 110m east of the site. Given the distance from the site and that the London Clay Formation is not considered to be capable of supporting a groundwater unit, surface waters have been discounted as a potential receptor.
Foundation Piling				
Creation of a pathway between any near surface contaminants and the underlying aquifers.	Unlikely	Mild	Very Low	Potential on site sources of contamination have been identified but the development will result in the removal of a large proportion of Made Ground. If a piled foundation solution is adopted there is a substantial thickness of low permeability London Clay Formation between potential

PRELIMINARY RISK ASSESSMENT

Pathway Linkage	Likelihood of Pollutant Linkage	Consequences	Risk Rating	Reasoning
				contaminants and sensitive aquifers (e.g. Principal Chalk Aquifer).
Overall Risk Rating			**Very Low to Moderate/Low**	

Ground Investigation & Findings

INTRODUCTION

The ground investigation works were undertaken on 10th January 2020 and comprised the progression of 1no. dynamic (windowless) sampler borehole to 10.0m below lower ground level (bgl) and 2no. hand excavated trial pits to depths of between 0.45m and 0.50m bgl, with insitu testing and sampling of soils for laboratory testing (see **Figure 2**).

Groundwater monitoring was undertaken following completion of the fieldworks on 16th January 2020.

Details of the ground investigation completed, along with the findings of the investigation, are provided in the following sections. The exploratory hole logs and laboratory results are presented in **Appendix D, E** and **F** respectively.

Guidance Documents

Details of the best practice guidance documents and reference information used in undertaking the ground investigation and assessment are provided at the end of this report (see REFERENCES & GUIDANCE).

INVESTIGATION STRATEGY

The ground investigation was designed based on the requirements of the Consultant Engineers set out in the email specification from Denis O'Dell (Symmetrys) to Philip Lewis (LMB) 5th December 2019 and associated Site Investigation Plan.

Soil Chemical Analysis & Laboratory Testing

Soil samples were submitted to the UKAS and MCERTS accredited laboratories of i2 Analytical for chemical analysis and geotechnical testing.

The results of the geotechnical and chemical analysis (including waste acceptance criteria testing) are presented in **Appendix E** and **F** respectively.

GROUND & GROUNDWATER CONDITIONS

Ground Conditions

The table below provides a summary of ground conditions encountered with full descriptions provided in the associated exploratory hole logs provided in **Appendix D**:

GROUND INVESTIGATION & FINDINGS

Strata	Depth Range to Top (m bgl)	Depth to Base (m bgl)	Summary Description
Made Ground	Ground Level	0.30 – 1.00	The Made Ground soils typically comprise slightly gravelly clay. The gravel comprises brick and flint.
Possible River Terrace Deposits (1)	0.30 – 1.00	0.45 – 2.45	The soils interpreted as possible River Terrace Deposits were found to comprise an upper horizon of clay overlying slightly sandy gravelly clay and clayey sandy gravel.
London Clay Formation (2)	2.45	10.00	The London Clay Formation was found to comprise a sequence of firm becoming stiff fissured clays with occasional silty fine sand partings.

(1) Base not determined in all locations and depth range takes into account trial pits completed from existing cellar level.

(2) Base not determined.

Visual and Olfactory Observations

Potential visual and olfactory evidence of contamination was limited to a grey/black mottling observed in the possible River Terrace Deposits in BH1 at 1.20-1.70m bgl. However, Made Ground soils were encountered and can be indicative of the presence of contaminants.

Groundwater Conditions

No groundwater strikes were recorded in the borehole location during the ground investigation works but a seepage was recorded in trial pit TP2 at approximately 0.20m below cellar ground level.

During return monitoring, groundwater was recorded at a depth of approximately 2.80m bgl in the monitoring well installed in BH1.

The water recorded in BH1 may be reflective of groundwater in the possible River Terrace Deposits, but this is not interpreted to be representative of an aquifer unit.

It could also be representative of groundwater in the London Clay Formation and groundwater is commonly recorded within the London Clay Formation during monitoring. However, rather than being representative of a permanent and laterally continuous aquifer unit, the groundwater is present as discrete units within (for example) micro fissures and local mudstone horizons and the recorded groundwater level will most likely be reflective of the pore water pressures within these discrete features.

GROUND INVESTIGATION & FINDINGS

Characteristic Values of Soil Parameters

A summary of the geotechnical properties of the strata based on the field and laboratory testing is provided in the table below.

Soil Property	**Stratum**		
	Made Ground	Possible River Terrace Deposits	London Clay Formation
Insitu SPT 'N' Value	-	8 – 12	15 – 47
Undrained shear strength (kN/m^2) – hand shear vane	-	50	65 – 120
Sieve Analysis (BH1, 1.90-2.45m)	-	Very coarse (0.00%), Gravel (64.30%), Sand (12.70%), Fines (22.90%).	-
Plasticity Index (%)	-	-	37 – 46
Moisture Content (%)	13	-	29 – 32
pH	8.3	-	7.8
Water Soluble Sulphate (g/l)	0.15	-	3.0

Geotechnical Advice

INTRODUCTION

The site currently comprises a three-storey semi-detached building with disused public house on the ground floor and cellar levels with residential dwellings on the first and second floors. It is understood that the client wishes to redevelop the site to comprise a five to six storey (including basement) mixed commercial and residential development.

Based on information provided, the following assumptions have been made:

- The formation level for the proposed basement will be at approximately 3.00m bgl.
- The load from the existing three storey structure will be in the region of 35-40KN/m^2.
- The load from the proposed developed structure will be in the region of 65-75KN/m^2.
- There will be no significant changes in elevation over the proposed development.
- Foundations will not be eccentrically loaded.

GROUND CONDITIONS SUMMARY

The ground conditions encountered in the exploratory hole comprise Made Ground overlying a sequence of possible River Terrace Deposits, which in turn overlie firm to stiff clays.

During return monitoring, groundwater was recorded at a depth of approximately 2.80m bgl in the monitoring well installed in BH1.

The water recorded in BH1 may be reflective of groundwater in the possible River Terrace Deposits, but this is not interpreted to be representative of an aquifer unit. It could also be representative of groundwater in the London Clay Formation and groundwater is commonly recorded within the London Clay Formation during monitoring. However, rather than being representative of a permanent and laterally continuous aquifer unit, the groundwater is present as discrete units within (for example) micro fissures and local mudstone horizons and the recorded groundwater level will most likely be reflective of the pore water pressures within these discrete features.

FOUNDATION OPTIONS

Based on the information supplied and ground investigation works completed the Made Ground soils the formation level for the basement will be on the firm London Clay Formation soils.

Shallow Foundations

Based on the findings of the ground investigation and the subsequent laboratory testing and information presented in the previous sections the following shallow foundation options may be considered:

SYMMETRYS
STRUCTURAL / CIVIL ENGINEERS

FLOOD RISK ASSESSMENT

83 Mayes Road,
Haringey,
London,
N22 6UP

19367-SYM-XX-XX-RPT-C-0005
11th June Rev. P1

SYMMETRYS.COM

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REVISION HISTORY

Revision	Description	Date	By	Checked
P1	Initial Issue	10/06/2021	SPB	DO

1.0 Executive Summary

1.1 Symmetrys have been appointed as the civil and structural engineers to produce a Flood Risk Assessment (FRA) in support of the refurbishment of the existing pub located at 83 Mayers Road, London, which is to have a new 3 storey extension over plus a new 5 storey block to the rear. Refer to Lipton Plant Architects drawings for reference.

1.2 The existing building contains a basement which is currently a cellar for the Duke of Edinburgh pub. It is intended to be extended back away from Mayes Road to house a pub/kitchen and commercial area.

1.3 Based on the information available the proposed development should not increase the risk of flooding at the site or elsewhere.

1.4 As a result of undertaking the Flood Risk Assessment, the key conclusions are:

1.4.1 The site is classified as being within Flood Risk Zone 1, low risk. The proposed development is considered to be fully appropriate for its location as it will not be subject to any significant flood risks i.e., tidal, fluvial, pluvial, groundwater or reservoirs.

1.4.2 The surface water drainage strategy will be to discharge surface water runoff to below ground attenuation. This is in accordance with current SUDS guidance and storm water drainage from the site will be managed in a sustainable manner.

1.4.3 During the detailed design stage flow rates, that comply with the requirements of the London Plan 2021, the Lead Local Flood Authority and Thames Water will be determined and agreed.

1.4.4 The surface water drainage system will be designed to cater for a 1 in 100 year + 40% storm.

1.4.5 The foul water drainage for the site will discharge to the local sewer.

1.4.6 Therefore, it can be concluded that the development is in accordance with NPPF and other regional and local planning policy guidance with regards to flood risk.

2.0 Introduction

2.1 Symmetrys have been appointed as the civil and structural engineers to produce a Flood Risk Assessment (FRA) in support of the refurbishment of the existing pub located at 83 Mayers Road, London, which is to have a new 3 storey extension over plus a new 5 storey block to the rear. Refer to Lipton Plant Architects drawings for reference.

2.2 The existing building contains a basement which is currently a cellar for the Duke of Edinburgh pub. It is intended to be extended back away from Mayes Road to house a pub/kitchen and commercial area.

3.0 Site Description

3.1 The proposed development is sited on land which measures approximately 0.5 ha (499m^2) and is located at the National Grid reference of E 530828, N 190118, refer to Figures 1 and 2 for site locations and aerial image.

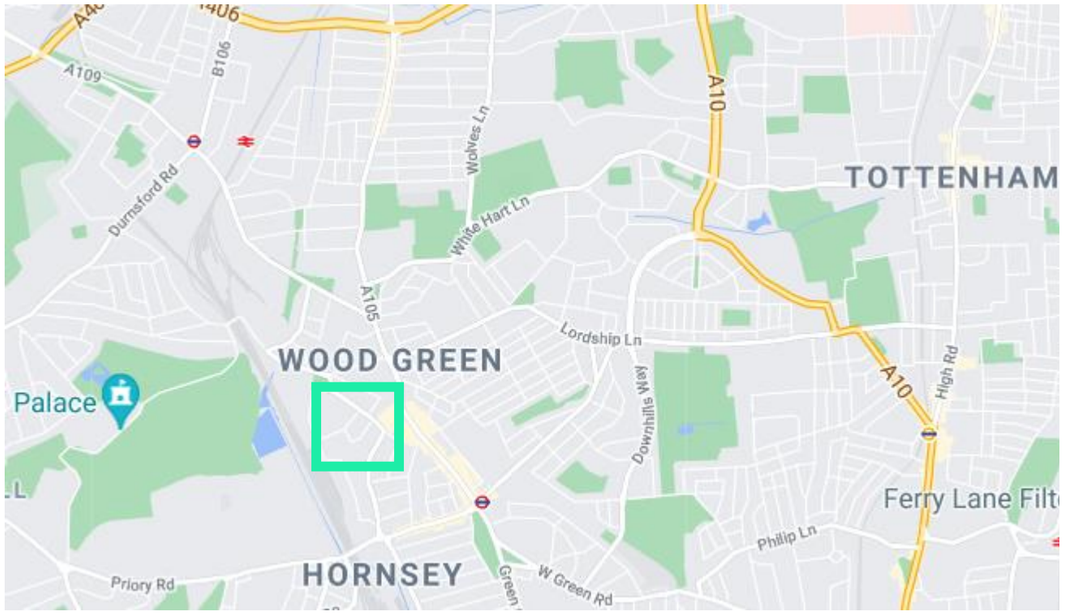

Figure 1 Site location plan (www.google.co.uk/maps) (10/06/2021)

Figure 2 Aerial Image and Site Boundary (www.google.co.uk/maps) (10/06/2021)

3.2 The topography of the site is flat, with much of the site currently built upon.

3.3 British Geological Survey (BGS) maps indicate that the site is underlain by the London Clay Formation, as illustrated in Figure 3 below.

A ground investigation undertaken in February 2020 confirmed that the substrata is made ground to circa 1.9m and clay to a depth greater than 10m.

The ground investigation confirmed the following with regards to groundwater:

"During return monitoring, groundwater was recorded at a depth of approximately 2.80m bgl in the monitoring well installed in BH1.

The water recorded in BH1 may be reflective of groundwater in the possible River Terrace Deposits, but this is not interpreted to be representative of an aquifer unit. It could also be representative of groundwater in the London Clay Formation and groundwater is commonly recorded within the London Clay Formation during monitoring. However, rather than being representative of a permanent and laterally continuous aquifer unit, the groundwater is present as discrete units within (for example) micro fissures and local mudstone horizons and the recorded groundwater level will most likely be reflective of the pore water pressures within these discrete features".

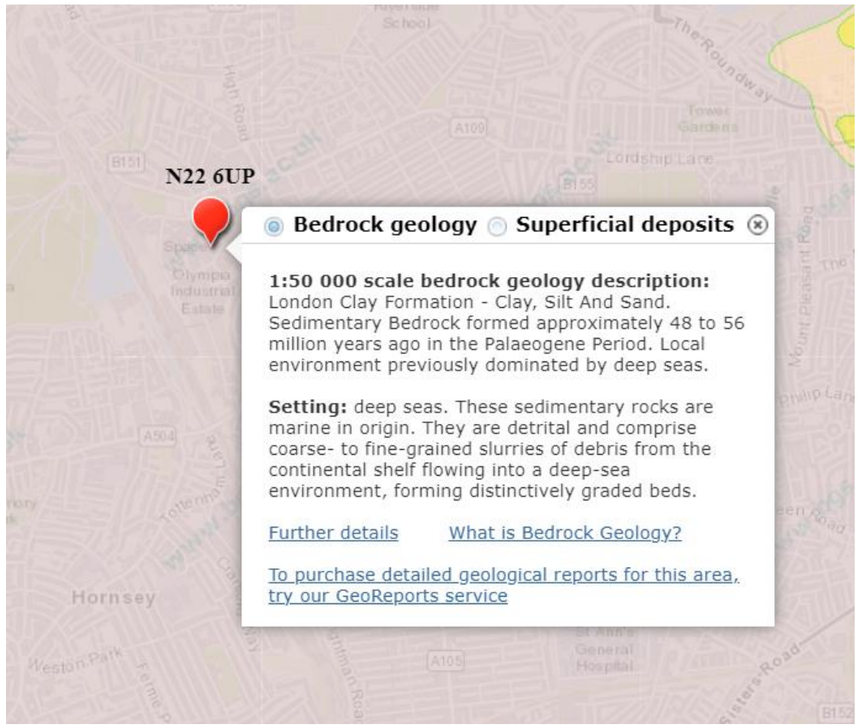

Figure 3 – Extract of British Geological Survey Map Record (Downloaded on 10/06/2021) (http://mapapps.bgs.ac.uk/geologyofbritain)

4.0 Existing & Proposed Flood Risk Associated with the Proposed Development

4.1 Tidal

The site is located 10km north of the tidal section of the River Thames and is therefore not at risk of tidal flooding.

4.2 Fluvial (Rivers

The EA produces floodplain maps for the UK, which show the areas at risk of fluvial and tidal flooding. The magnitudes of the flooding events considered are defined in terms of their return period. Generally, when determining the impact of any development within the floodplain of a fluvial reach, the design standard against which the EA will consider the feasibility of any scheme is typically the 1% annual probability flood (1 in 100 year return period flood) for sites within the floodplain, or the effects of a 1 in 100 year storm if outside the floodplain.

The EA flood zone maps identify undefended floodplain, giving the horizontal extent of low (Zone 1), medium (Zone 2) and high risk flood zones (Zones 3a and 3b) depending on the severity of the flood event.

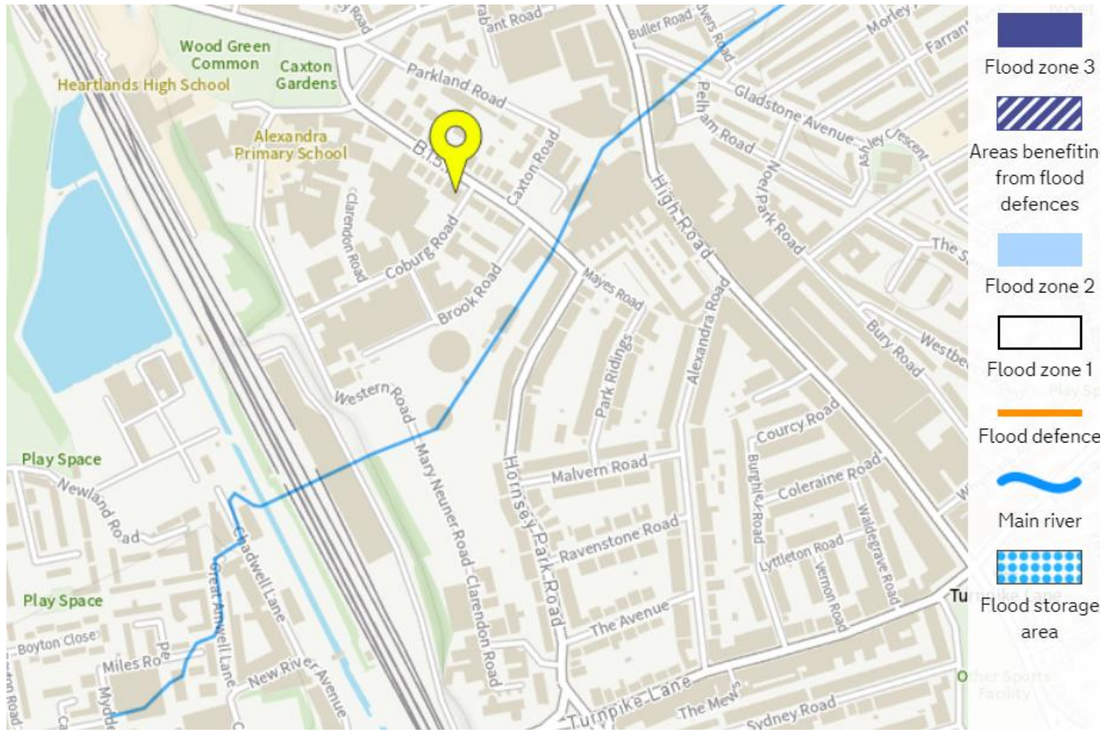

Figure 4 Risk of Flooding from Rivers & Sea Map (flood-map-for-planning.service.gov.uk) (10/06/2021)

The site falls within Flood Zone 1 as indicated on the Environment Agency's Risk of Flooding from Rivers & Sea Map (Figure 4) and therefore has a very low risk (Flood Zone 1) of fluvial flooding.

4.3 Pluvial – Surface Water Inundation Map

The Environment Agency also produce maps which highlight the risk of flooding from surface water flows illustrating when the capacity of existing surface water drainage networks and channels are exceeded in extreme rainfall events.

Figure 5 Surface Water inundation map (flood-map-for-planning.service.gov.uk) (10/06/2021)

It can be seen from the surface water inundation map (Figure 5) that the site is at low to medium risk of Pluvial Flooding.

This flooding will be reviewed and addressed by the alterations to the site boundaries at the detailed design stage.

4.4 Reservoirs

The Environment Agency dataset 'Risk of Flooding from Reservoirs' identifies areas that could be flooded if a large reservoir were to fail and release the water it holds.

The site is indicated to be within a reservoir flood zone, refer to figure 6.

Reservoirs in the UK have an extremely good safety record. The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England and Wales. All large reservoirs must be inspected and supervised by reservoir panel engineers. It is assumed that these reservoirs are regularly inspected, and essential safety work is carried out. These reservoirs therefore present a minimal risk.

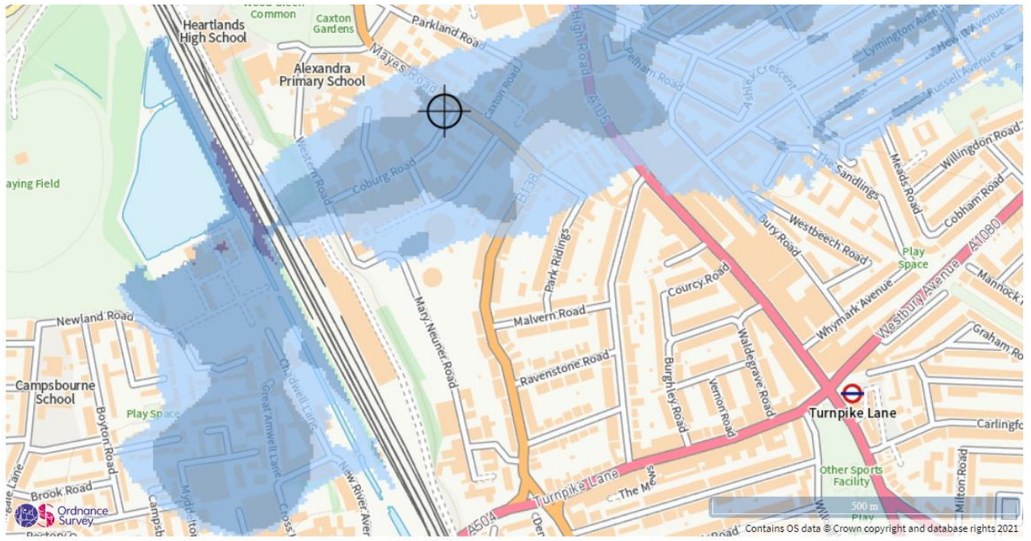

Figure 6 Reservoir Flood Map (flood-map-for-planning.service.gov.uk) (10/06/2021)

4.5 Foul/Surface Water Sewers

There have been no recorded incidents of sewer flooding within the vicinity of the site and therefore the risk of flooding from sewers is deemed as low.

4.6 Ground Water

A ground investigation undertaken in February 2020 confirmed that the substrata is made ground to circa 1.9m and clay to a depth greater than 10m.

The ground investigation confirmed the following with regards to groundwater:

"During return monitoring, groundwater was recorded at a depth of approximately 2.80m bgl in the monitoring well installed in BH1.

The water recorded in BH1 may be reflective of groundwater in the possible River Terrace Deposits, but this is not interpreted to be representative of an aquifer unit. It could also be representative of groundwater in the London Clay Formation and groundwater is commonly recorded within the London Clay Formation during monitoring. However, rather than being representative of a permanent and laterally continuous aquifer unit, the groundwater is present as discrete units within (for example) micro fissures and local mudstone horizons and the recorded groundwater level will most likely be reflective of the pore water pressures within these discrete features".

Based on the above data groundwater flooding above ground is considered as low risk. Groundwater recorded within the borehole appears to be seepage from water contained within the fissures of the clay rather than the groundwater table.

The existing building consists of a basement which is to be extended. To mitigate the risk of groundwater flooding at basement floor level, basement wall drainage and sump pumps will be installed.

5.0 Proposed Drainage Strategy

5.1 Proposed Surface Water Drainage

A ground investigation undertaken in February 2020 confirmed that the substrata is made ground to circa 1.9m and clay to a depth greater than 10m.

5.1.1 A SuDS hierarchy assessment has been carried out using a guidance set out in Building Regulations and by The Environment Agency.

5.1.2 Table 1 below presents the drainage hierarchy and details the feasibility of incorporating different SuDS into the development proposals.

Method	Feasibility	Explanation
Rainwater harvesting (including a combination of green and blue roofs)	×	Due to the nature of the development rainwater harvesting is not proposed.
Infiltration techniques and green roofs	×	Due to the clay substrata and compact nature of the site, infiltration is not feasible.
Rainwater attenuation in open water features for gradual release	×	Due to the compact nature of the site open water features are not feasible.
Rainwater discharge direct to a watercourse (unless not appropriate)	×	There are no watercourses within the vicinity of the site to enable a discharge to a watercourse.
Rainwater attenuation above ground (including blue roofs)	×	The proposed architectural roof layout does not provide effective storage.
Permeable Paving	✓	The building footprint covers the majority of the site. There are opportunities for small areas of permeable surfacing within the hard paved areas.
Rainwater attenuation below ground	✓	Below ground attenuation tanks are proposed.
Discharge rainwater to the combined sewer	✓/×	Agreement to discharge flows to the sewer network to be sought from Thames Water during the detailed design stage.

Table 1 – Proposed redevelopment surface water runoff SUDS technique hierarchy

5.1.3 After reviewing the feasibility of incorporating various SuDS techniques into the redevelopment proposal, it is concluded that the most viable techniques for this development is to discharge surface water runoff from the proposed development to attenuation tanks in the form of cellular storage and or permeable paving.

5.1.4 During the detailed design stage flow rates, that comply with the requirements of the London Plan 2021, the Lead Local Flood Authority and Thames Water, will be determined and agreed.

5.1.5 The surface water drainage system will be designed to prevent on and offsite flooding for any storm event, up to and including a 1 in 100-year event, plus an allowance for the potential effects of climate change (+40%). Similarly, by extension, the site will not flood for any events up to and including the peak 1 in 30-year event.

5.1.6 The overland surface conveyance of the exceedance flood pathways will be directed by design to effectively convey exceedance flow away from the buildings to areas in the development low spots where temporary storage can be incorporated.

5.1.7 Water quality management of surface water should be carried out in accordance with the SUDS Manual (Ciria C753, November 2015).

5.1.8 The proposed surface water drainage system will improve the water quality from the development proposals prior to it discharging to the sewer network. This will be done by using a treatment chain where each subsequent system within the proposed drainage network is treated to improve water quality.

5.1.9 In accordance with CIRIA C625 it is recommended that a private SuDS maintenance agreement is agreed as a simple contract between the property owner/ tenant (customer) and the maintenance provider (the maintainer). It is mainly to facilitate continuing maintenance of the SuDS within private ownership.

5.1.10 The maintenance requirements will be in accordance with the CIRIA C753 SuDS Manual 2015 and best practice.

5.2 Proposed Foul Water Discharge

5.2.1 It is proposed to discharge foul flows on an unrestricted bases into the existing sewer system.

5.2.2 The below ground drainage will be drained to a concrete sump proprietary foul pumping system and a concrete sump for proprietary cavity drainage system situated below the basement slab which will then be pumped via a rising drain to the nearest available inspection chamber on the existing gravity drainage system. This can then flow by gravity into the existing combined sewage system which will be separated until the last manhole leaving site. To mitigate the risk of back flow suitable measures such as non-return valves will be incorporated into the drainage design. This will prevent from sewer flooding and complies with policy CL7 (n).

5.2.3 The new foul water drainage system will be designed in accordance to Part H of the Building Regulations 2010, 2015 edition and BS EN 752:2017.

6.0 Conclusions

6.1 Based on the information available the proposed development should not increase the risk of flooding at the site or elsewhere.

6.2 As a result of undertaking the Flood Risk Assessment, the key conclusions are:

6.2.1 The site is classified as being within Flood Risk Zone 1, low risk. The proposed development is considered to be fully appropriate for its location as it will not be subject to any significant flood risks i.e., tidal, fluvial, pluvial, groundwater or reservoirs.

6.2.2 The surface water drainage strategy will be to discharge surface water runoff to below ground attenuation. This is in accordance with current SUDS guidance and storm water drainage from the site will be managed in a sustainable manner.

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