50-52 Monmouth Street

7930

BASEMENT IMPACT ASSESSMENT & STRUCTURAL METHODOLOGY STATEMENT

NOVEMBER 2023

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Revision	Date	Issue Status	Prepared by	Checked by
P01	29/11/23	For Information	EP	DMc
P02	29/02/24	For Information	EP	DMc

1 Contents

2 Introduction

The purpose of this assessment is to consider the effects of the proposed reduced level dig works at 50-52 Monmouth Street, London WC2H 9EP on the local hydrology, geology and hydrogeology, and potential impacts to neighbours and the wider environment. The site location is presented in Figure 1 below.

Figure 1 – Site Location Plan

2.1 Proposed Works

The proposed works involve lowering the existing basement by approximately 710-1110mm, to provide a head height within the basement of circa 3.2m. The vaults are also to be lowered by approximately 400-820mm to achieve a maximum head height of circa 2.2m. The existing traditionally constructed 4-storey building is to remain during these works. Refer to the FP Planning statement for further information in Appendix C of this report.

2.2 Sources of Information

The data sources and reference information used to complete the Basement Impact Assessment (BIA) are outlined below:

- Planning issue of architectural drawings by Child Graddon Lewis
- Camden Council's Planning Guidance for Basements, dated January 2021
- Environment Agency Flood Map for Planning
- Department for Environment, Food & Rural Affairs (Defra) Magic Map
- TfL Property Asset Register Public Web Map
- *The Lost Rivers of London,* N. Barton, Published 1962

3 Baseline Conditions

The following sections aims to provide a summary of the existing information pertaining to the site. This will include a review of the information detailed in Section 2.1, including any published data. Note, that due to current occupation of the site, we are unable to carry out the initial geotechnical investigations.

3.1 Existing Building

The existing structure is a traditionally constructed masonry building, with timber floors. The existing basement is constructed with masonry walls and a concrete ground slab. We understand that the building was refurbished in 1992 but there is limited record information available. We have assumed the existing wall footings are constructed in shallow corbelled brickwork, which will need to be underpinned.

3.2 Topography

The site is entirely covered by the existing four storey building, which is bounded by the pavements of Monmouth Street and Tower Street.

3.3 Site Environmental Setting

3.3.1 Landfilling and Waste Activities

We do not believe there to be any historical landfill sites at or within 500m of the site.

3.3.2 Radon

The site is within a lower probability radon area, due to less than 1% of homes being above the required action level. Therefore, no radon protective measures are required in any new structures.

3.3.3 Pollution Incidents

A Phase 1 Desk top study will need to be undertaken to determine whether any pollution incidents have been recorded within 500m of the site.

3.3.4 Unexploded Ordnance (UXO)

A preliminary unexploded ordnance risk assessment will need to be carried out as part of the ground investigation. During WWII the site is within an area which sustained a 'very high bombing density' according Home Office statistics.

The site is likely to be identified as having a high-risk rating and it is recommended that risk measures including the production of a detailed UXO Risk Assessment and Risk Management Plan is implemented for the works.

3.4 Geology

The British Geological Survey Geological Mapping indicates the site is underlain by Superficial Deposits of London Clay.

Superficial deposits of Lynch Hill Gravel Formation are located in relatively close proximity of the site, although these formations are not anticipated to be present on site.

From the British Geological Survey Geological borehole records we have found a borehole in close proximity to the site, see Appendix B. This confirms brown silty sand/gravel to a depth of approximately 3.45m and then stiff London clay to depth.

3.5 Hydrology and Drainage

3.5.1 Nearby Water Features

The site is located approximately 0.5m north of the River Thames which is not anticipated to have any potential impact on the site.

A review of Barton's *The Lost Rivers of London* confirms there are no rivers in the vicinity of the site.

3.5.2 Flood Risk – Fluvial and Tidal Flooding

The EA's *Flood Map for Planning* (extract shown in Figure 2) shows that the site is located within Flood Zone 1. This is the lowest risk level, and indicates a 0.1% (1 in 1000) annual probability of flooding.

Figure 2 – Extract from Environment Agency *Flood Map for Planning*, showing low flood risk

3.5.3 Flood Risk – Artificial Sources

Artificial flood sources include raised channels such as canals, or storage features such as ponds and reservoirs. The site lies within an area of low risk of reservoir or canal flooding

3.6 Hydrogeology

The ground beneath the site is classified by the Environment Agency's Groundwater Protection Policy to reflect the importance of various strata as aquifers that store groundwater as a resource as well as in supporting surface water flows.

The site is not underlain by a superficial aquifer. The bedrock aquifer underlying the site (within the London Clay Formation) is unproductive, defined as having "low permeability [and] negligible significance for water supply or river base flow".

The site is not within a groundwater source protection zone (SPZ).

3.7 Groundwater

There may be perched groundwater in the made ground over the impermeable London Clay, but the extents are unknown.

The water table level will be monitored in trial pits which are proposed to be dug within the property.

4 Proposed Development

Refer to the architectural drawings in Appendix A and the FP structural planning statement in Appendix C.

The existing basement is proposed to be deepened by approximately 1.1m in order to increase headroom. The existing foundations of the facades and party walls are proposed to be underpinned in a hit-and-miss sequencing with mass concrete.

The proposed usage will be commercial at ground and basement levels.

5 Neighbouring Basement Structures

We have not been into the adjoining properties, but we understand that they have similar basements to 50-52 Monmouth Street.

6 Basement Impact Assessment Screening

A screening process has been undertaken, with the findings described below.

6.1 Subterranean (Groundwater) Flow

Question	Response	Details
1a. Is the site located directly above an aquifer?	No	The bedrock London Clay Formation underlying the site is classified as Unproductive Strata.
1b. Will the proposed basement extend beneath the water table?	Unknown	There may possibly be groundwater perched in the made ground over the impermeable London Clay, but the extents are unknown.
2. Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	The nearest watercourse is greater than 500m from the site
3. Will the proposed basement development result in an	No	The scheme will not result in an increase in impermeable area.

increase in the proportion of hard surfaced/paved areas?		
4. As part of site drainage, will more surface water (e.g. rainfall and run-off) than present be discharged to the ground (e.g. via soakaways and/or SuDS)?	No	The site Is currently fully impermeable area, and this is remaining the same.

6.2 Slope Stability

Question	Response	Details
1. Does the existing site include slopes (natural or man-made) greater than 7 degrees (approximately 1 in 8)?	No	The site does fall towards Upper St Martins lane but is deemed to be relatively level in this instance.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)?	No	The existing site levels will be retained/restored as part of the works.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?	No	The surrounding area is approximately level.
4. Is the site within a wider setting in which the general slope is greater than 7 degrees (approximately 1 in 8)?	No	The wider setting is sloped shallower than 7 degrees.
5. Is the London Clay the shallowest strata at the site?	Yes	Below a layer of Made Ground, and 3.5m of sand/gravel, the stratum below the existing basement is London Clay.
6. Will any trees be felled as part of the development and/or are any works proposed within any tree protection zones where trees are to be retained?	No	The site contains no trees.
7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site?	Unknown	There are no known major subsidence issues in the local area, or evidence of such effects at the site. However, the London Clay Formation is a high plasticity soil, and is prone to shrinking and swelling. There will undoubtedly be some subsidence related

		issues in the traditionally constructed buildings in the local area.
8. Is the site within 100m of a watercourse or a potential spring line?	No	The nearest watercourse is greater than 500m from the site.
9. Is the site within an area of previously worked ground?	No	According to the desk study report the site is not in the vicinity of any recorded areas of worked ground.
10. Is the site within an aquifer? If so, will the proposed basement extent beneath the water table such that dewatering may be required during construction?	No	The bedrock London Clay Formation underlying the site is classified as Unproductive Strata.
11. Is the site within 5m of a highway or pedestrian right of way?	Yes	The existing basement abuts Monmouth Street and Tower Street.
12. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No	Lowering the basement and underpinning the existing footings by a metre will not significantly increase any differential depth. The underpin will still bear in London Clay, which will be of a similar level of consolidation.
13. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No	No underground assets are indicated nearby on the *TfL Property Asset Register Public Web Map*

6.2.1 Surface Water and Flooding

Question	Response	Details
1. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No	The proposed development will route surface water flows similarly to the existing condition, with rainwater runoff collected in a surface water drainage system and discharged to a sewer. Any groundwater flows will not be impeded by the basement. Sustainable Drainage Systems (SuDS) will be considered to reduce the peak discharge rate to the sewers.
2. Will the proposed basement development result in an increase in the proportion of hard surfaced/paved external areas?	No	The proposed scheme will, as in the existing development, consist entirely of hard surfaced areas.
3. Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by	No	All surface water on the site will be contained within the site and collected in a surface water drainage system and discharged to a sewer, as in the existing condition.

adjacent properties or downstream water courses?		Sustainable Drainage Systems (SuDS) will be considered to reduce the peak discharge rate to the sewers.
4. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream water courses?	No	The surface water quality will not be affected by the development as collected surface water will be from roofs or hard landscaping, as in the existing condition.
5. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of nearby surface water features?	No	Despite this, the lowered basement will be fitted with a pumped device and non-return valve to ensure it is protected from sewer flooding. This is in line with the draft SFRA (Strategic Flood Risk Assessment)

7 Scoping Phase

The purpose of the scoping phase is to assess in more detail the factors to be investigated in the impact assessment. Potential impacts are assessed for each of the identified impact factors and recommendations are stated.

7.1 Subterranean (Groundwater) Flow

Screening Question		Potential Impacts and Actions
1b.	Will the proposed basement extend beneath the water table surface?	**Potential Impact:** Water ingress to the site, both during the works and during the use of the property. **Action:** For any water ingress during the works, the contractor will include a method statement for, and undertake any, dewatering whether of a consistent ingress or more likely perched water. Water ingress during the life of the basement will be actioned via the installation of waterproofing to the new basement slab and the existing and new walls. This may be mitigation with a Type C system or prevention with Types A or B, or a combination. The waterproofing solution will be developed during the design stages of the project. The water table level will be confirmed when trail holes are dug as part of further ground investigation.

7.2 Slope Stability

Screening Question		Potential Impacts and Actions
5.	Is the London Clay the shallowest strata at the site?	**Potential Impact:** After the removal of the existing basement slab and the circa 1m of soil below it, to lower the basement, the clay ground could expand slightly (heave) upwards. **Action:** The slab will be designed with anti-heave measures in place.
7.	Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site?	**Potential Impact:** Subsidence or shrink-swell could cause differential movement of the foundations. **Action:** There are no trees nearby to the site which could cause large seasonal shrink-swell, and the basement is deep enough to be below any impact from this.
11.	Is the site within 5m of a highway or pedestrian right of way?	**Potential Impact:** Loss of access along highway or right of way during works. Damage to highway or right of way due to excavation works. Damage to buried services below highway. **Action:** Ensure adequate temporary retaining structures along the edge of the highway during excavation works, to ensure no movement or damage. Dialogue will be required with Camden Council Highways in order to maintain a suitable level of access around the works for vehicles and pedestrians, and a detailed logistics plan and Highway license will be developed and obtained as the project progresses.

7.3 Surface Water and Flooding

No potential impacts identified in the screening phase, refer to FP FRA.

8 Structural Methodology Statement (SMS)

The project involves lowering the existing basement floor level by approximately 1.1m, and this is proposed to be undertaken by mass concrete underpinning. The mass concrete underpins will allow the vertical load of the walls to be transferred to the London Clay at the new lower level, and toes will be provided in the underpins below the new basement slab to ensure there is no increase in ground pressure.

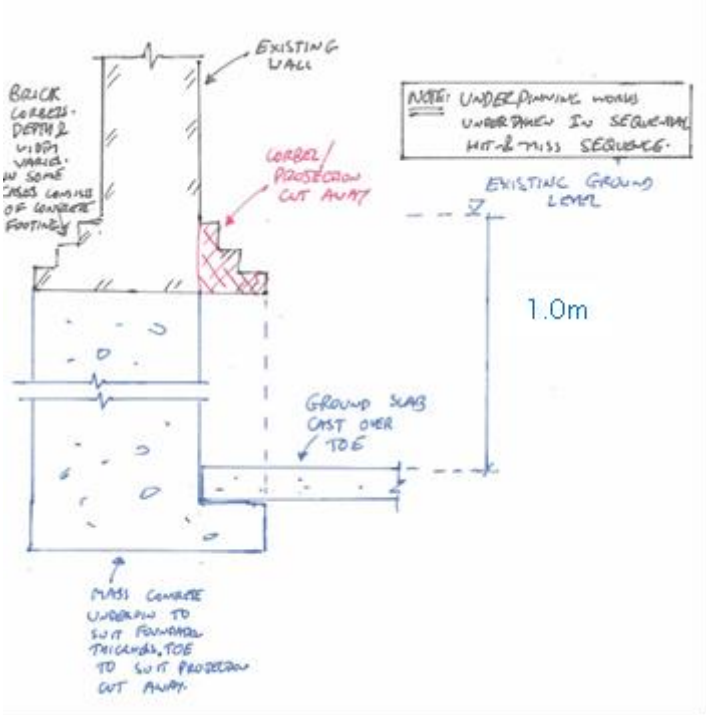


Figure 3 – Proposed Typical Underpinning Detail

The underpins will be dug in maximum lengths of 1.0m, to allow the wall above to span over the excavated section temporarily. This will be in a hit-and-miss sequence to allow the adjacent concrete pins time to cure and strengthen. Although excavations in London Clay are typically stable in the short term, shoring will be provided within excavations to ensure safe access.

1	**4**	**2**	**5**	**3**	

Figure 4 – Typical hit-and-miss sequence

Permanent restraint at ground floor to the perimeter and party walls will be provided by the ground floor.

The water table is not anticipated to be encountered, but if any perched water is found in the made ground to be excavated, it will be pumped out prior to excavation.

9 Ground Movement and Damage Assessment

In connection with the proposed basement construction a qualitative ground movement and damage assessment has been undertaken at the site. The predicted ground movements have been estimated based on practice experience. The scope of the assessment is limited to movements associated with the proposed underpinning of party walls and retained facades.

Experience suggests that shallow underpinning of relatively lightly loaded walls when carried out with good workmanship and in the dry can induce negligible horizontal movements and localised settlements of the underpinned wall only. There is no available data that can provide an estimate of the settlement, but assuming that the works will be carried out with good workmanship, the settlements of this underpinning are expected to be less than 10mm. The horizontal movements are expected to be negligible provided that the back face of the pits is shored.

Based on a maximum differential settlement of 10mm, the predicted damage to adjoining properties (both of which are newer concrete frames, and likely piled) is deemed unlikely to exceed Category 1 (Very Slight) as specified in the 'Burland Scale' within BRE Digest 251 'Assessment of damage in low-rise building'.

10 Control of Construction Works

The underpinning and construction works will be closely controlled in accordance with the relevant NBS specifications and the Institution of Civil Engineers *ICE Manual of Geotechnical Engineering*.

Movement monitoring of the existing walls and foundations will take place during construction, with the final strategy and layout developed to the agreement of adjoining owners' surveyors and engineers, any nearby underground asset owners, and the relevant highways authority.

The final strategy will likely consist of installing monitoring targets on the relevant walls and foundations, and agreeing a 'traffic light' system of trigger levels to monitor the movements. If thresholds of movements within this are breached the works will either be reviewed or ceased.

11 Further Information Required

- Site investigations and trial holes will be necessary. This will allow the ground conditions to be confirmed, the depth of the water table to be measured, and the depth and profile of the existing footings confirmed.
- Confirmation of existence, and if so depth & extent, of basement to both sides of the site.

12 Summary

12.1 Existing and Proposed Development

- There is an existing basement below the property, which is approximately 2.2m below ground level. The proposal is to lower this basement by approximately 1.1m in order to provide a basement space with suitable head height.
- The superstructure of the property will remain.

12.2 Geology

- The ground below the basement consists of London Clay, on which the foundations currently bear. The underpins will also bear on the clay stratum.
- There are no trees or similar on the site.

12.3 Hydrogeology

- The water table is not anticipated to be met due to the impermeability of the clay. Perched water over the clay may be encountered during the excavation.
- There is no superficial aquifer below the site. The bedrock aquifer is classed as unproductive. The site is not within a groundwater source protection zone (SPZ).

12.4 Hydrology

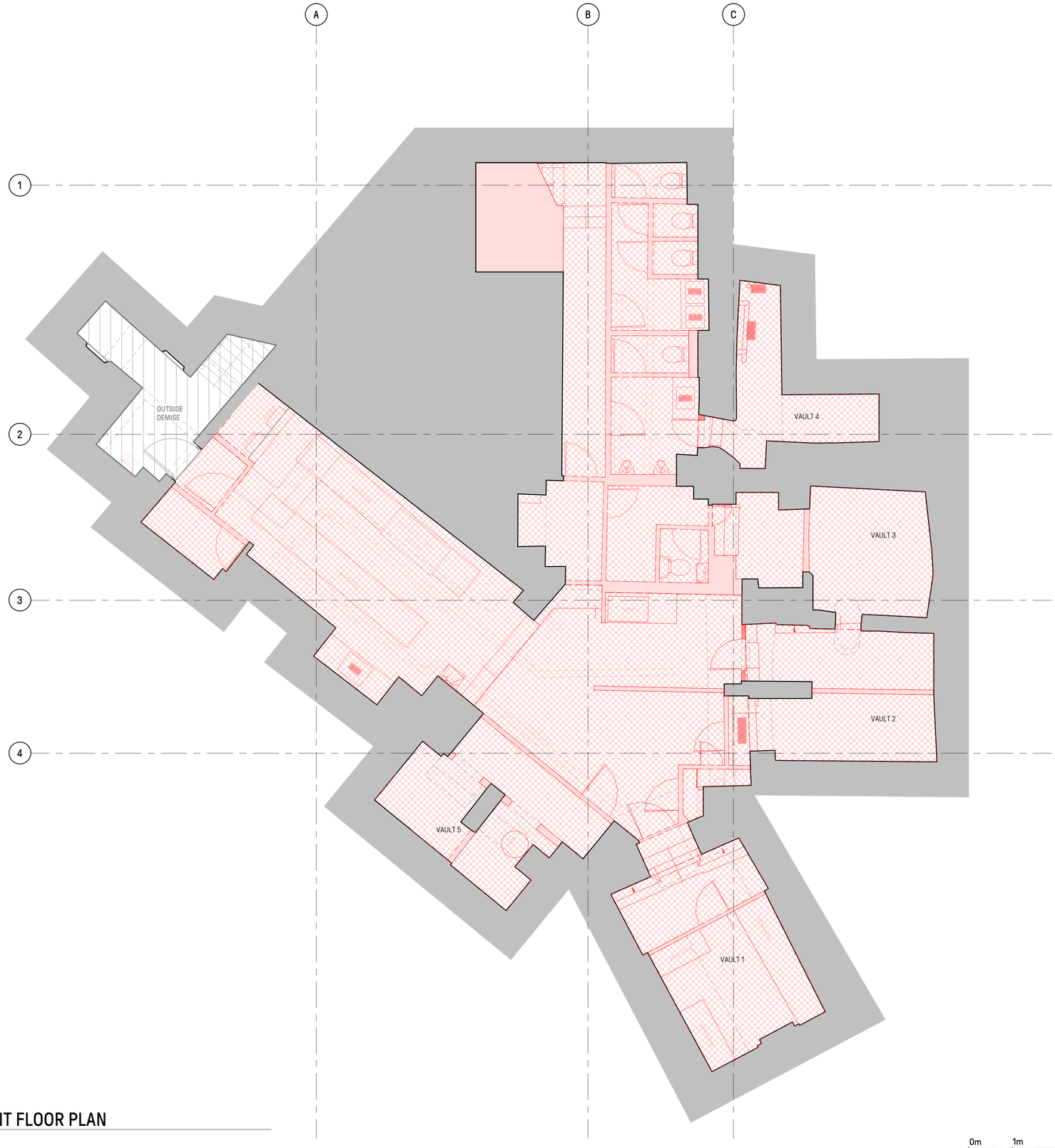
- The site is currently completely impermeable and will remain so upon development.
- The site is not located nearby to water courses or features, either above ground or subterranean.

12.5 Ground Movement

- A maximum differential settlement of 10mm is expected. The predicted damage to adjoining properties is deemed unlikely to exceed Category 1 (Very Slight).

Prepared by: Edward Pellow MEng (Hons) CEng MIStructE	Date: 29/11/23
Reviewed by: Duncan McAlpine BEng (Hons) CEng MIStructE	Date: 29/11/23

A. Appendix A – Architectural Planning Drawings by Child Graddon Lewis



1 DEMOLITION BASEMENT FLOOR PLAN
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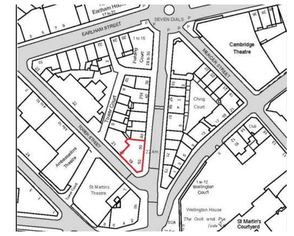

Key Plan

Notes:

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Existing partitioning, linings, suspended ceilings and doors to be removed where shown in red

Remove all redundant fixings, fixtures, pipeworks, services, floor finishes and substrates

Flooring works
Remove existing floor finishes, remove any cement/adhesive residue, fixings, redundant services/pipework and apply levelling screed - if required - to give clean, level, consistent finish.

Basement
Excavation of vaults to maximise their clear height (2.2m)
Levelling of the main basement area with partial excavation where required

Ground Floor
Partial demolition of GF slab to provide threshold access from Monmouth St Entrance

VAULT SCHEDULE

Name	Area	Existing Height	Required Excavation	Required Steps	New FFL
VAULT 1	15 m²	1.80m	400/460mm	4	+15.710
VAULT 2	12 m²	1.59m	610mm	3	+15.980
VAULT 3	11 m²	1.73m	500mm	1	+16.220
VAULT 4	7 m²	1.38m	820mm	3	+16.220
VAULT 5	4 m²	2.02m	700mm to be level with main basement area	0	+16.390
VAULT 5	3 m²	2.02m	700mm to be level with main basement area	0	+16.390

BASEMENT AREA SCHEDULE

Name	Area	Existing Height	Required Excavation	New FFL
SEATING AREA	51 m²	2.48m	710-940-1100mm	+16.390
STAIR	17 m²	2.35m	710-940-1100mm	+16.390
KITCHEN/BOH	30 m²	2.10m	710-940-1100mm	+16.390

*Required excavation to achieve 2.2m height

Rev Date By Description

Project
50-52 MONMOUTH STREET
COVENT GARDEN
LONDON

Drawing Title
DEMOLITION BASEMENT FLOOR PLAN

Project Status
PRELIMINARY

Client Logo

SHAFTESBURY CAPITAL

Client
SHAFTESBURY CAPITAL

Contract Number
n/a

Project Number
P23-065

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1 : 50

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MI

Checked By
GD

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PL1020

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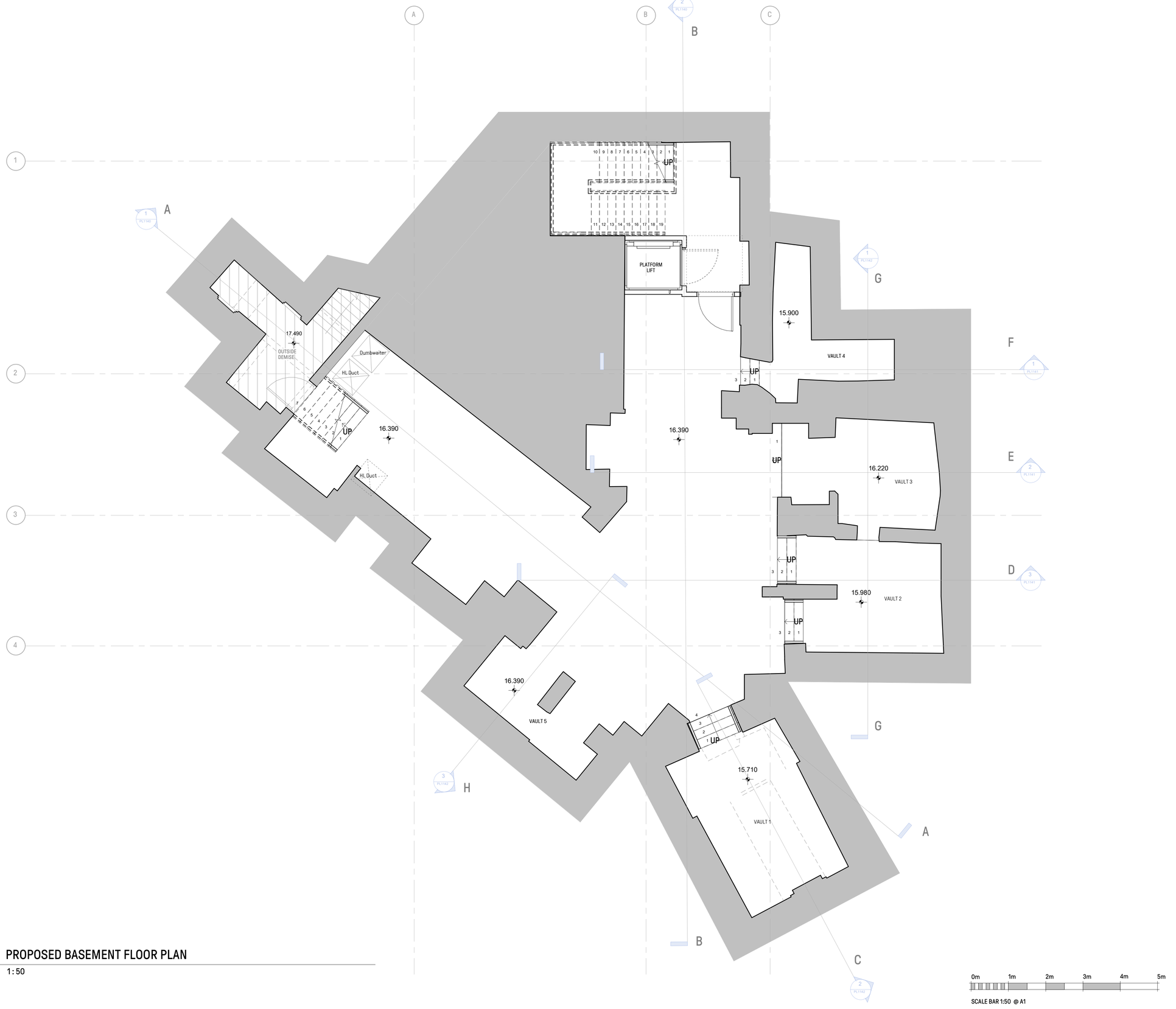
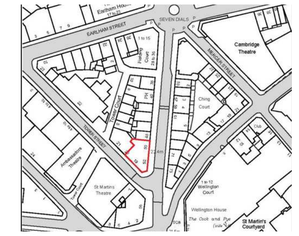


1 PROPOSED BASEMENT FLOOR PLAN

1 : 50



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BASEMENT FLOOR PROPOSED

TOTAL GIA: 145sqm

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PLANNING

Client Logo

SHAFTESBURY CAPITAL

Client
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1 : 50

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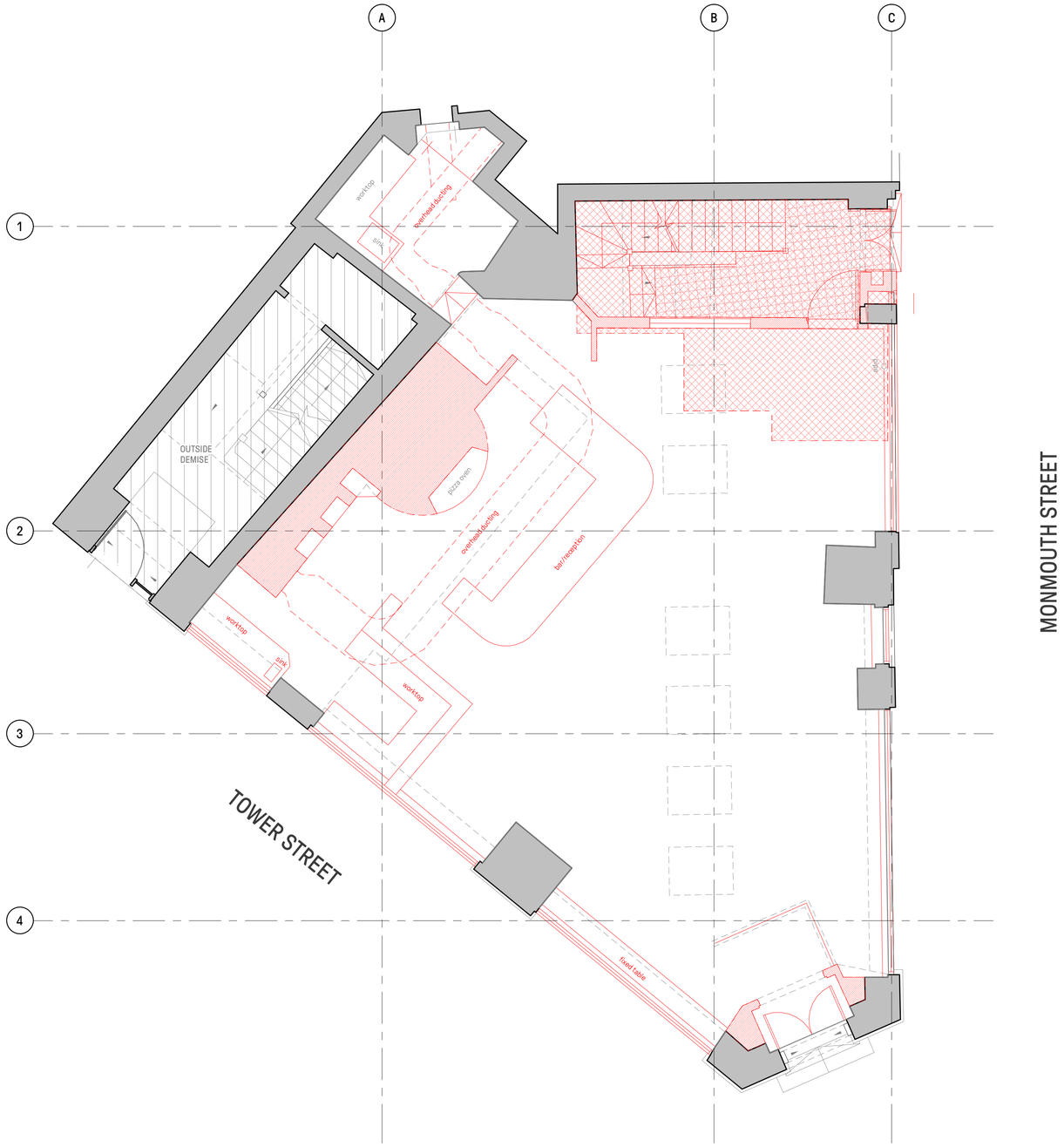

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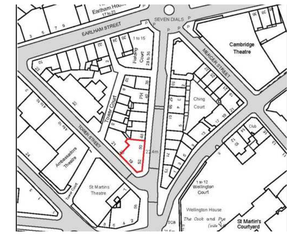

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SHAFTESBURY CAPITAL

Client
SHAFTESBURY CAPITAL

Contract Number
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Project Number
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1 : 50

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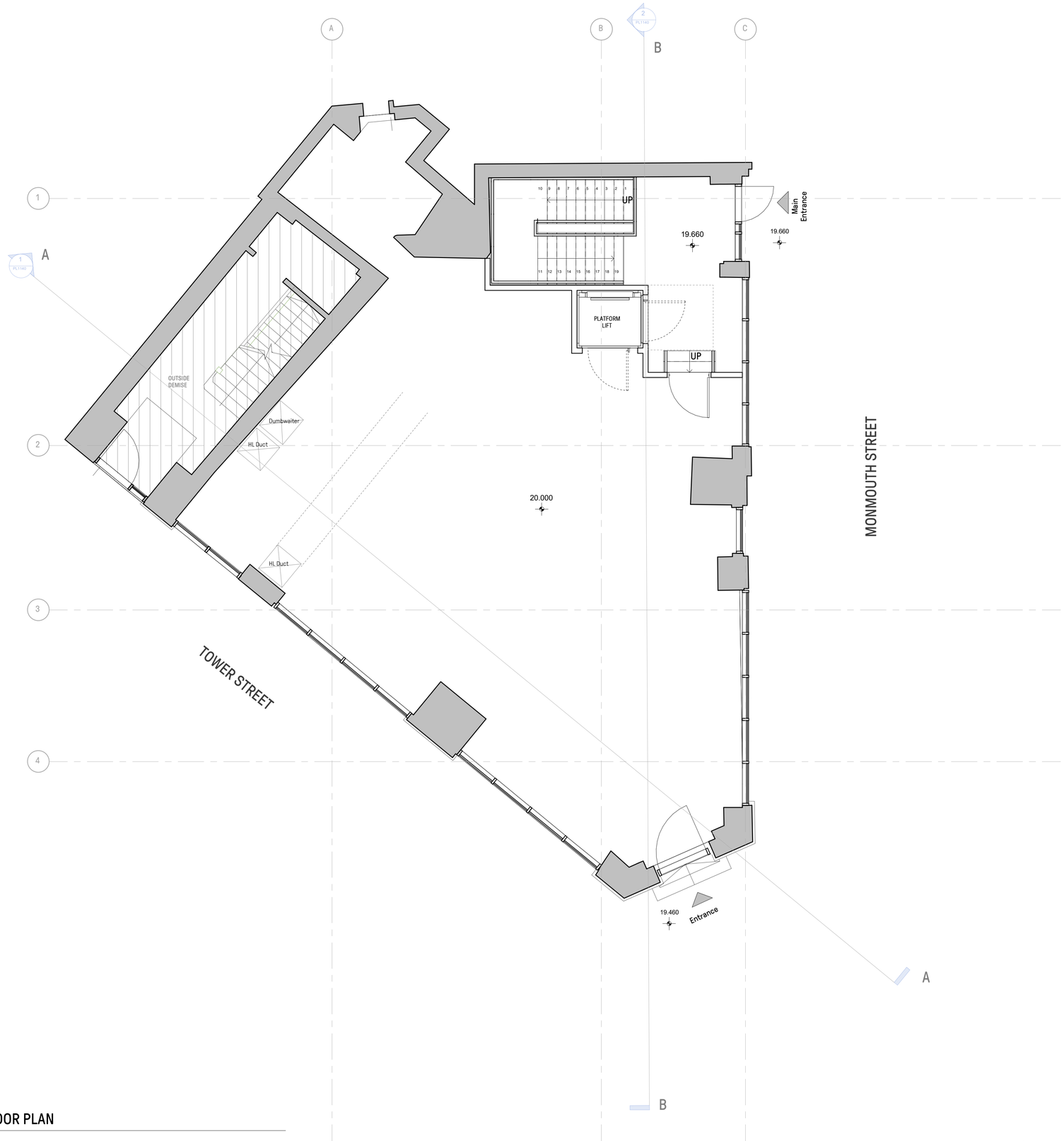

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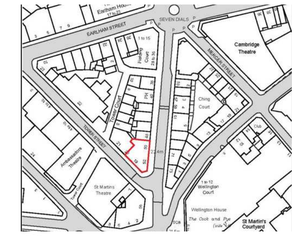

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GROUND FLOOR PROPOSED

TOTAL GIA: 143sqm

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n/a

Project Number
P23-065

Scale @ A1
1 : 50

Date
09/02/24

Drawn By
MI

Checked By
GD

Drawing Number Identifier
PL1102

Revision

Drawing Number
CGL-Z1-00-DR-A-PL1102

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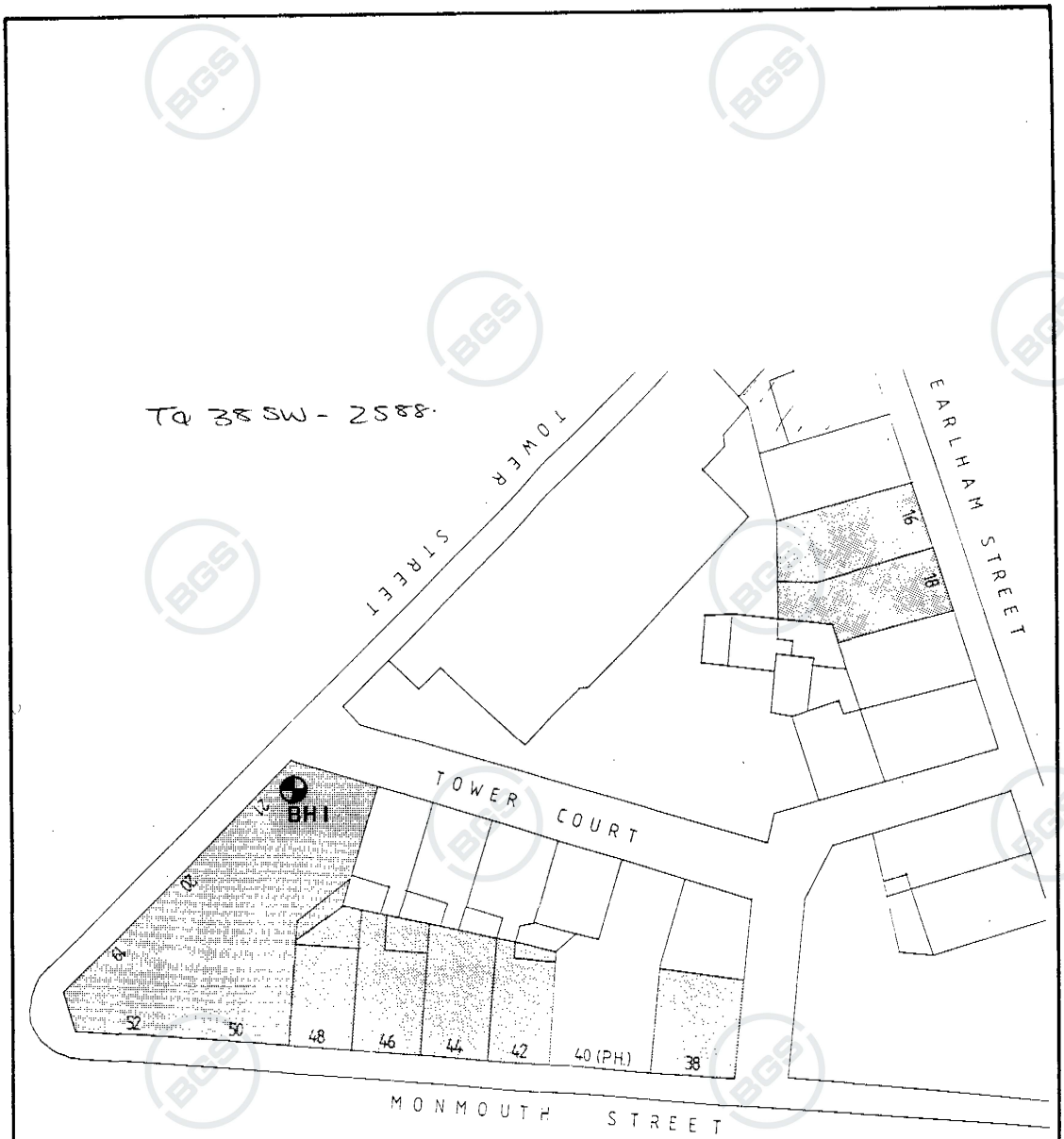
Child Graddon Lewis

Notes - Do not scale from this drawing,except for planning purposes. Check all dimensions on site. Subject to survey. Subject to site inspection. Site boundary lines are indicative only.

B. Appendix B – Borehole Information



SITEPLAN

Terresearch Limited	Report No. S39/664	Figure No. 1

Contract: Monmouth Street
Client: P & O Properties Ltd TQ 38 SW - 2588

Borehole No. 1
Sheet No. 1 Of 2.
Depth 0 to 10 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation Vertical

Ground Level : m.O.D.

Coordinates :
3004 8102

Job Number : S39/664

Location :

Dates : 14/10/89
16/10/89

Daily Prog.	Water Levels	Remarks	In Situ Tests	Samples Taken	Depth (Thick)	Reduced Level	Description	Legend
					0.00			
					0.20		MADE GROUND (concrete and bricks)	
				J 0	0.40		MADE GROUND (brown clayey silt with traces of brick)	
					(0.90)		MADE GROUND (black silt, ash, glass and traces of chalk)	
				J 1	1.30			
				U 2			Firm dark grey and black very silty sandy organic CLAY with scattered fine to medium flint gravel	
				J 3	(1.40)			
				B 4	2.70			
	▽ 16/10			W 30			Brown grey silty coarse to fine SAND with rounded fine to medium flint GRAVEL	
14/10				J 5	(0.75)			
14/10				U 6				
					3.45			
15/10				J 7			Stiff fissured brown silty CLAY	
				U 8				
				J 9	(4.30)			
				U 10				
				J 11				
				U 12	7.75			
				J 13			Stiff fissured greyish brown silty CLAY	
					(3.00)			
				U 14				
					10.00			
							Continued	

Operator
MC

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
1

Contract: Monmouth Street TQ38SW-2588
Client: P & O Properties Ltd

Borehole No. 1
Sheet No. 2 Of 2.
Depth 10 to 20 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S39/664

Location :

Dates : 14/10/89
16/10/89

Daily Prog.	Water Levels	Remarks	In Situ Tests	Samples Taken	Depth (Thick)	Reduced Level	Description	Legend
				J 15	10.00		Stiff fissured greyish brown silty CLAY	
					(3.00)			
				U 16	10.75		Stiff to very stiff fissured brownish grey silty CLAY with occasional iron pyrites crystals	
				J 17				
				U 18	(3.00)			
				J 19				
				U 20	13.75		Very stiff fissured brownish grey silty CLAY	
				J 21				
15/10								
				U 22	(3.00)			
				J 23				
				U 24	16.75		Very stiff fissured brownish grey silty CLAY with sand partings and occasional iron pyrites crystals	
				J 25				
				U 26	(2.75)			
				J 27				
				U 28	19.50		Very stiff fissured brownish grey silty CLAY with sand partings	
				J 29	(0.50)			
					20.00		End of Borehole	

Operator MC

General Remarks

Appendix 1

Scale 10m/sheet

Sheet No. 2

C. Appendix C – FP Structural Planning Statement

50-52 Monmouth Street – Structural Design Statement

The proposed refurbishment works consist of structural works being undertaken to the basement, ground floor and 1st floor at 50-52 Monmouth Street.

There has been limited access to the building at this stage due to the building being occupied. Therefore, several assumptions have needed to be made during the initial feasibility stage and will need to be confirmed following access and further intrusive structural investigations.

The headroom within the basement level is limited, so the proposal is to reduce the level of the basement slab to achieve the necessary headroom throughout the basement and vaults. The existing brick corbelled foundations are likely to have limited depth, so the current proposal is that all the existing walls will need to be underpinned using conventional mass concrete underpins in an agreed sequence to attain the desired levels. A new insulated, reinforced concrete slab will also be cast throughout the basement, with the appropriate water proofing system applied to the walls and slab to achieve the required water tightness.

Any non-structural walls within the basement will be removed. These will need to be checked and assessed by the structural engineer prior to any demolition works.

The ground floor level is currently raised and there is no level access from street level. We are proposing to locally lower the ground floor slab level, so that we can achieve level street access on the Monmouth Street elevation. This will entail the removal of part of the existing ground floor construction. The new lowered ground floor construction will be formed using similar construction techniques of steel beams and timber joists.

A new platform lift and stair are proposed to provide improved access to the basement level. This will require new trimming and framing at ground floor level. This will provide enhanced access and allow the basement to be used for restaurant use.

There are minimal structural intervention works proposed on the 1st floor. The existing staircase will be removed and infilled with a timber floor and all non-structural partitions will be removed.

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