Basement Impact Assessment

in connection with proposed development at

294 – 295 High Holborn
Camden
WC1V 7JG

for

Michael Barclay Partnership LLP

LBH4455bia Ver 1.0

May 2017

LBH WEMBLEY

ENGINEERING

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Contents

Foreword-Guidance Notes

GENERAL

This report has been prepared for a specific client and to meet a specific brief. The preparation of this report may have been affected by limitations of scope, resources or time scale required by the client. Should any part of this report be relied on by a third party, that party does so wholly at its own risk and LBH WEMBLEY disclaims any liability to such parties. .

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VALIDITY

Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances shall be at the client's sole and own risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should therefore not be relied upon in the future and any such reliance on the report in the future shall again be at the client's own and sole risk. LBH WEMBLEY should in all such altered circumstances be commissioned to review and update this report accordingly.

THIRD PARTY INFORMATION

The report may present an opinion on the disposition, configuration and composition of soils, strata and any contamination within or near the site based upon information received from third parties. However, no liability can be accepted for any inaccuracies or omissions in that information.

DRAWINGS

Any plans or drawings provided in this report are not meant to be an accurate base plan, but are used to present the general relative locations of features on, and surrounding, the site.

1. Introduction

1.1 Background

A planning application (ref: 2017/1827/P) has been submitted to London Borough of Camden in May 2017 for the following development:

"Erection of a 9 storey building comprising retail use (Classes A1-A3) at basement and ground floor levels, office use (Class B1) at first and second floor levels and 10 residential units (2 x -bed and 8 x 2-bed) (use class C3) above including plant and associated works."

1.2 Brief

LBH Wembley have been appointed to complete a Basement Impact Assessment (BIA) for subsequent submission to London Borough of Camden in order to satisfy the specific requirements of Camden Planning Policy DP27 on Basements and Lightwells and Supplementary Planning Guidance CPG4 on Basements and Lightwells.

1.3 Planning Policy

The CPG4 Planning Guidance on Basements and Lightwells refers primarily to Planning Policy DP27 on Basements and Lightwells.

The DP27 Policy reads as follows:

In determining proposals for basement and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability, where appropriate. The Council will only permit basement and other underground development that does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability. We will require developers to demonstrate by methodologies appropriate to the site that schemes:

a) maintain the structural stability of the building and neighbouring properties;
b) avoid adversely affecting drainage and run-off or causing other damage to the water environment;
c) avoid cumulative impacts upon structural stability or the water environment in the local area;

and we will consider whether schemes:

d) harm the amenity of neighbours;
e) lead to the loss of open space or trees of townscape or amenity value;
f) provide satisfactory landscaping, including adequate soil depth;
g) harm the appearance or setting of the property or the established character of the surrounding area; and
h) protect important archaeological remains.

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding. In determining applications for lightwells, the Council will consider whether:

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

In addition to DP27, the CPG4 Guidance on Basements and Lightwells also supports the following Local Development Framework policies:

Core Strategies:

- CS5 Managing the impact of growth and development
- CS14 Promoting high quality places and conserving our heritage
- CS15 Protecting and improving our parks and open spaces & encouraging biodiversity
- CS17 Making Camden a safer place
- CS18 Dealing with our waste and encouraging recycling

Development Policies:

- DP23 Water
- DP24 Securing high quality design
- DP25 Conserving Camden's heritage
- DP26 Managing the impact of development on occupiers and neighbours

1.4 Report Structure

The report commences with a comprehensive desk study and characterisation of the site, before progressing to BIA screening and scoping assessments, whereby consideration is given to identifying the potential hydrogeological, hydrological and stability impacts to be associated with the proposed development. Following this the findings of an intrusive ground investigation are reported and a ground model is developed. Finally, an Impact Assessment is presented.

1.5 Documents Consulted

The following documents have been consulted during the preparation of this document:

- Structural Engineer's Report for Planning, by Michael Barclay Partnership LLP, dated March 2017. Ref: 6940
- Ground Movement Report, by CGL, dated March 2017, Ref: CGL/09162. Rev. 1
- Desk Study & Ground Investigation Report by Geotechnical & Environmental Associates, dated Aug 2007 ref: J07148.
- Trial Pit Diagrams, by Michael Barclay Partnership LLP, Not Dated
- Design & Access Statement, by Independent Architects, dated March 2017
- Existing and Proposed Structural Drawings, by Michael Barclay Partnership LLP, dated March 2017. Refs: 6940 / 300, 6940 / 301, 6940 / 302, 6940 / 303, 6940 / 310, 6940 / 313, 6940 / 320, 6940 / 321, 6940 / 322, 6940 / 323, 6940 / 324, 6940 / 325, 6940 / 326 (Sheet 1), 6940 / 326 (Sheet 2), 6940 / 330, 6940 / 331.
- Existing Architectural Plans and Photos, by Independent Architects, dated March 2017, refs: 151-10-PL-0010, 151-10-PL-0001, 151-10-PL-0100, 151-10-PL-0200, 151-10-PL-1004, 151-10-PL-0250, 151-10-PL-0251, 151-10-PL-0252, 151-10-PL-0400, 151-10-PL-0401, 151-10-PL-0402
- Proposed Architectural Plans and Photos, by Independent Architects, dated March 2017, refs: 151-10-PL-1000, 151-10-PL-1001, 151-10-PL-1002, 151-10-PL-1003, 151-10-PL-1004, 151-10-PL-2000, 151-10-PL-2100, 151-10-PL-2101, 151-10-PL-2102, 151-10-PL-2103.
- Camden Planning Guidance 4, Basements and Lightwells, 2015
- Camden Development Policies DP27 – Basements and Lightwells, 2010

- London Borough of Camden Geological, Hydrogeological and Hydrological Study (CGHHS), by Ove Arup & Partners Limited, dated 18th November 2010, Issue 01

2. The Site

2.1 Site Location

The site is situated on the southern side of High Holborn, around 200m to the west of Chancery Lane Underground Station. The site may be located approximately by postcode WC1V 7JG or by National Grid Reference 530905, 181575.

2.2 Topographical Setting

The site lies in a relatively elevated position, at approximately +23m OD, to the north of the River Thames and to the West of the valley containing the River Fleet.

2.3 Site Description

The site is currently vacant following the demolition of the former buildings on site.

The site was previously wholly occupied by buildings. These appear to have comprised a four storey section at the front of the site with a mainly single storey section behind.

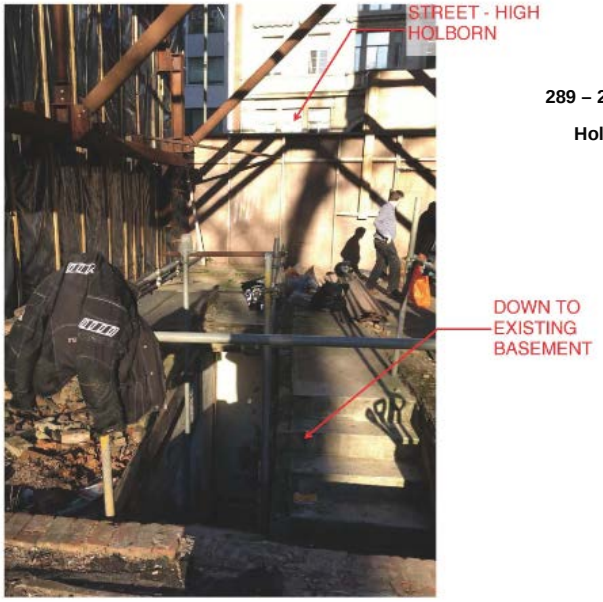
The front third of the site included a basement to approximately 3m below existing ground level (approx. +20m OD), which appears to remain intact and visible, but the rear two thirds of the site does not appear to have had a recent basement.

Terrace buildings at Nos. 289 – 293 High Holborn and Nos. 296 – 302 High Holborn (Lincoln House) border the site to the west and east respectively. Both properties are occupied by retail / commercial space on ground floor with office space above.

Both adjoining buildings are understood to have basements. The basement to 289 – 293 High Holborn is situated at approximately +19.7m OD. On the other hand, the basement to Lincoln House is situated at approximately +19m OD, although the rear lightwell appears to be situated at around +18.5m OD.

The London Underground Central Line runs beneath High Holborn to the north of the site with the tunnel crown estimated to be at approximately +5m OD. Beneath Chancery Lane Station, the westernmost end of the WW2 deep level Kingsway air raid shelter is present roughly 15m to the east of the site at around 0m OD.

In addition, the underground post office pneumatic railway line also runs beneath High Holborn and is suggested to lie above the LUL Central Line, although the depth is unknown.



Basement at front of site

Basement at rear of site

Site plan showing existing features

2.4 Proposed Development

It is proposed to construct a new nine storey building, including plant space provided at roof level.

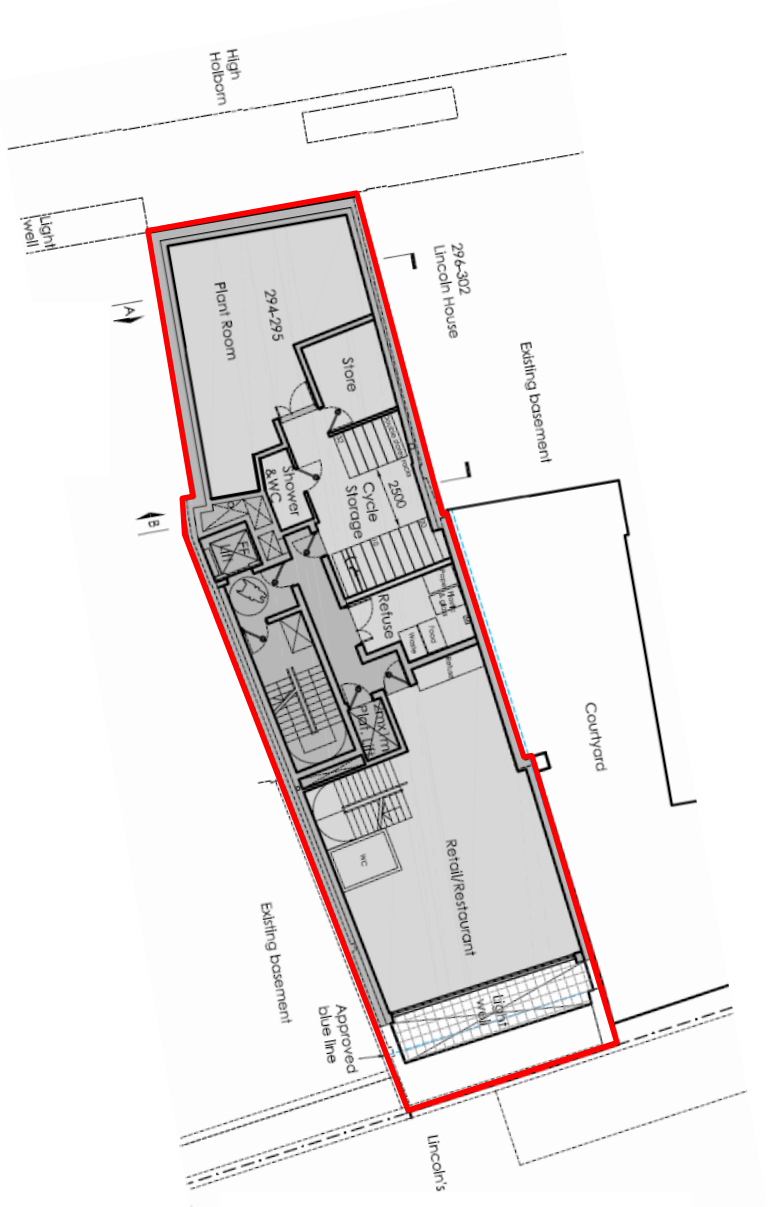
The development also includes a basement that will extend deeper than the existing basement at the front of the site and but will also extend laterally beneath the full length of the building.

The proposed finished floor level of the new basement is to be around +19.5m OD; with the formation level beneath the existing basement to be situated at around +18.1m OD. Elsewhere, the formation level will be situated at approximately +18.6m OD.

The basement will be supported by piled foundations, while underpinning of the party walls is also proposed.

Retail and restaurant space will occupy ground floor and basement, while a plant room will also be situated at basement level. Offices will be located at first and second floor, with flats situated above.

A small area of soft landscaping will be placed at the rear of the site



Proposed basement layout

2.4.1 Proposed Construction Methodology

In order to construct the proposed development with the minimal possible impact upon the neighbouring environment, the following construction methodology is to be adopted as per the Structural Engineers Report by MBP (Ref. 6940 Rev. 2):

- *Set up monitoring targets / Total Stations*
- *Create a batter to the east elevation, alongside the existing light well to Lincoln House, leaving a berm to maintain support to existing raking props to 289-293 High Holborn.*
- *Demolish existing brick wall on the east elevation, alongside the existing light well to Lincoln House.*
- *Install thrust blocks within the site along the south and east elevations, down at new basement formation level.*
- *Install temporary propping at existing ground floor level to party walls and the rear garden wall foundation.*
- *Commence basement dig over the entire site, demolishing existing internal basement walls as required.*
- *Underpin existing basement as illustrated on MBP Drawing 6940/301, using a traditional hit & miss sequence as illustrated.*
- *Install a piling mat at approximately existing basement slab level.*
- *Commence piling of new foundations.*
- *Install temporary propping to party walls above proposed basement slab level, if required, to ensure support to perimeter walls is maintained during the basement excavation down to formation level of the base slab and pile caps.*
- *Reduce dig level within the footprint of the basement to formation level.*
- *Form basement slab, pile caps and liner walls as noted on MBP drawing 6940/303.*
- *Remove low level temporary propping if required.*
- *Cast GF slab as illustrated on MBP drawing 302.*
- *Remove remaining temporary propping.*

3. Desk Study

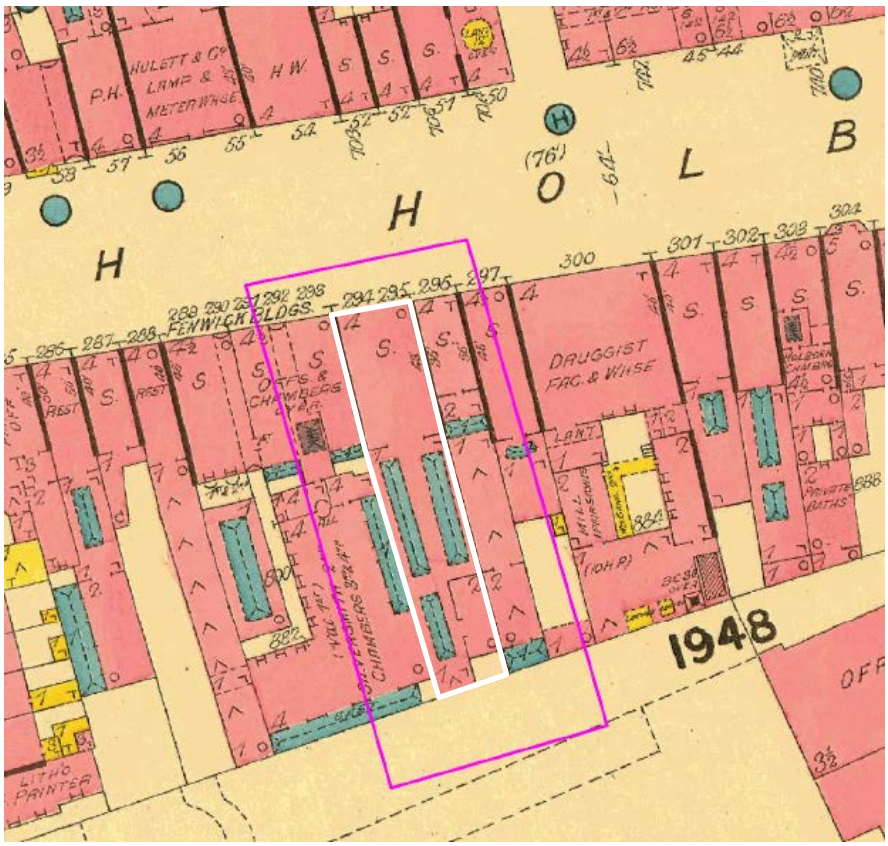
3.1 Site History

Holborn has been established and urbanised since early times. By the 19th Century, the area was occupied by four to five storey buildings, which generally would have comprised a mixture of shops and offices.

The site would have originally comprised a pair of four storey buildings, but appear to have been combined at various stages. In the mid nineteenth century both buildings were occupied by Lyon, Hotson & Company, upholsterers. By the end of the century the premises were occupied by Lacey Bros. and Marchant a tailors. By the early 20th Century however, the tailors had given up No. 295 to the Express Dairy Co., which was followed by a restaurant.

The neighbouring buildings to the west of the site at Nos. 289 – 293 High Holborn were known as the Fenwick Buildings and were occupied by shops at ground floor with offices and chambers above. A silversmith was also situated to the rear of the Fenwick Buildings. A basement is understood to have been situated beneath the Fenwick Buildings.

Directly to the east of the site was a shop, beyond which were a pharmacist, factory and warehouse.



1888 – White line denotes site boundary

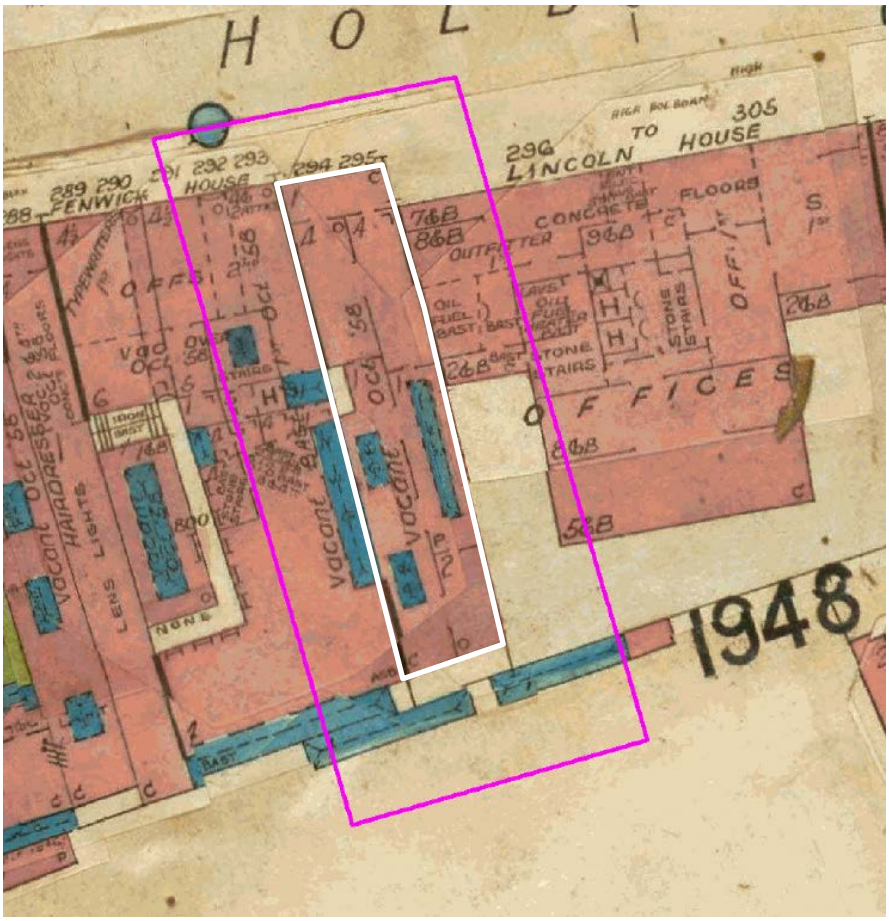
A tailors and a hardware shop were located at The Fenwick Buildings, while the neighbouring buildings to the east of the site were demolished and replaced by a seven storey building at Nos. 296 – 302 High Holborn, including a basement. A bank, a hat shop and a tailors occupied these buildings at ground floor level.

The area suffered severe bomb damage during the Second World War and a V2 long range rocket is recorded to have fallen close to High Holborn, which appears to have destroyed or severely damaged the neighbouring buildings to the east of the site, including Lincoln House. A UXO Assessment is presented in Chapter 6.

Following the War, the site was cleared and replaced by a four storey building, known as Lawson House, at the front of the site, with a part one, part two storey extension covering the remainder of the site. It is understood that the existing basement was present beneath the four storey section only.

It appears that the building remained vacant until the 1960s, following which it was occupied by a restaurant at ground and basement level with offices above.

During a similar time, the existing Lincoln House was also built to the east of the site, which was an eight storey building predominantly occupied by offices and included a basement across the footprint. It appears that the basement was used for plant space, which included oil fuel heater(s) and an electrical sub-station.



1958 – White line denotes site boundary

By the 1970s, an electrical workshop also occupied part of the Fenwick Buildings, although soon after, the Fenwick Buildings were demolished and replaced by the existing building at 289 – 293 High Holborn, which is a ten storey building with a basement across the full footprint.

At the turn of the 21st Century, the building on site was occupied by retail units at ground floor with offices above. Storage and plant room were located in the existing basement.

By 2010, the building was demolished and the site became vacant, although the basement remains intact.

3.2 Geological Information

The British Geological Survey (BGS) records indicate that the site is underlain by the Lynch Hill Gravel Member, which is subsequently underlain by the London Clay Formation.

3.3 Hydrogeological / Hydrological Information

The Environment Agency (EA) classifies the Lynch Hill Gravel Member as a Secondary A Aquifer, while the underlying London Clay Formation is classified as Unproductive Strata.

The site is not located in the vicinity of a Groundwater Source Protection Zone.

The site is not indicated to be at risk of flooding from rivers or sea. In addition, the site is also identified as being at a very low risk of surface water flooding.

3.4 Other Environmental Information

Information provided by the BGS and National Geoscience Information Service (NGIS), indicates that the property is located in a lower probability radon area with less than 1% of homes expected to be above the action level. It is further reported that no radon protective measures are necessary in the construction of new dwellings or extensions in this area.

4. Screening & Scoping Assessments

The Screening & Scoping Assessments have been undertaken with reference to Appendices E and F of the CGHSS, which is a process for determining whether or not a BIA is usually required.

4.1 Screening Assessment

The Screening Assessment consists of a series of checklists that identifies any matters of concern relating to the following:

- Subterranean (groundwater) flow
- Surface flow and flooding
- Slope stability

4.1.1 Screening Checklist for Subterranean (Groundwater) Flow

Question	Response	Justification
Is the site is located directly above an aquifer?	**YES**	The BGS records and previous investigation that the site is underlain by Lynch Hill Gravel Member, which the Environment Agency (EA) classifies as a Secondary A Aquifer.
Will the proposed basement extend beneath the water table surface?	**NO**	Based on the 2007 ground investigation and 2017 trial pit investigation, the water table is expected to be present at approximately +17.8m OD, which is just beneath proposed formation level.
Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	**NO**	The nearest watercourse is the River Fleet, located roughly 650 m to the east of the site.
Is the site within the catchment of the pond chains on Hampstead Heath?	**NO**	
Will the proposed development result in a change in the area of hard-surfaced/paved areas?	**YES**	The proposed development will introduce a small amount of soft landscaping at the rear of the site.
Will more surface water (e.g. rainfall and run-off) than at present will be discharged to the ground (e.g. via soakaways and/or SUDS)?	**NO**	Surface water flows are proposed to be discharged to the main combined sewer beneath High Holborn by gravity.
Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than the mean water level in any local pond?	**NO**	

4.1.2 Screening Checklist for Surface Flow and Flooding

Question	Response	Justification
Is the site within the catchment area of the pond chains on Hampstead Heath?	**NO**	
As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing route?	**NO**	Surface water flows are proposed to be discharged to the main combined sewer beneath High Holborn by gravity.
Will the proposed basement development result in a change in the proportion of hard-surfaced/paved areas?	**YES**	The proposed development will introduce a small amount of soft landscaping at the rear of the site.
Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface-water being received by adjacent properties or downstream watercourses?	**NO**	Surface water flows are proposed to be discharged to the main combined sewer beneath High Holborn by gravity.
Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	**NO**	
Is the site in an area known to be at risk from surface water flooding, or is it at risk from flooding for example because the proposed basement is below the static water level of a nearby surface water feature?	**NO**	The EA Flood Maps indicate that the site is also identified as being at a very low risk of surface water flooding.

4.1.3 Screening Checklist for Stability

Question	Response	Justification
Does the existing site include slopes, natural or manmade, greater than 7 degrees?	**NO**	There are no slopes greater than 7 degrees within the site.
Does the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees?	**NO**	No re-profiling of the site is planned.
Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees?	**NO**	The neighbouring land slopes at less than 7 degrees.
Is the site within a wider hillside setting in which the general slope is greater than 7 degrees?	**NO**	The general slope of the wider hillside is less than 7 degrees.
Is London Clay the shallowest strata at the site?	**NO**	The BGS records and previous investigation indicate that the Lynch Hill Gravel Member is underlain by the London Clay Formation.
Will trees be felled as part of the proposed development and/or	**NO**	There are no trees within the site.

are works proposed within tree protection zones where trees are to be retained?		
Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	**NO**	The BGS records and previous investigation indicates that the site is underlain by granular sand and gravel, which does is not susceptible to shrink-swell.
Is the site within 100m of a watercourse of a potential spring line?	**NO**	The nearest watercourse is the River Fleet, located roughly 650 m to the east of the site.
Is the site within an area of previously worked ground?	**NO**	No. Figure 3 of the CGHHS shows the site not to be in an area of worked ground.
Is the site within an aquifer?	**YES**	The Lynch Hill Gravel Member is classified as a Secondary A Aquifer.
Will the proposed basement extend beneath the water table such that dewatering may be required during construction?	**NO**	Based on the 2007 ground investigation and 2017 trial pit investigation, the water table is expected to be present at approximately +17.8m OD, which is just beneath proposed formation level.
Is the site within 50m of the Hampstead Heath ponds?	**NO**	
Is the site within 5m of a highway or pedestrian right of way?	**YES**	High Holborn is situated within 5m of the site.
Will the proposed basement significantly increase the differential depth of foundations relative to the neighbouring properties?	**YES**	
Is the site over (or within the exclusion zone of) tunnels, e.g. railway lines?	**YES**	The LUL Central Line and the underground London Post Office Railway run beneath High Holborn to the north of the site. The Kingsway Telephone Exchange Bunker is also located beneath High Holborn and lies beneath the LUL Central Line, roughly 50m to the northeast of the site.

4.2 Scoping Assessment

Where the checklist is answered with a “yes” or “unknown” to any of the questions posed in the flowcharts, these matters are carried forward to the scoping stage of the BIA process.

The scoping produces a statement which defines further the matters of concern identified in the screening stage. This defining should be in terms of ground processes, in order that a site specific BIA can be designed and executed (Section 6.3 of the CGHHS).

4.2.1 Scoping for Subterranean (Groundwater) Flow

- **The site is located directly above an aquifer**

The guidance advises that the basement may extend into the underlying aquifer and thus affect the groundwater flow regime.

- **The proposed development may result in a change in the area of hard-surfaced/paved areas**

The guidance advises that in areas underlain by an aquifer, changes in the proportion of hard surfaced or paved areas may impact upon the groundwater flow or levels. In areas of non-aquifer (i.e. on the London Clay), this may mean changes in the degree of wetness which in turn may affect stability.

4.2.2 Scoping for Surface Flow and Flooding

- **The proposed basement development may result in a change in the proportion of hard-surfaced/paved areas**

The guidance advises that a change in the proportion of hard surfaced or paved areas of will affect the way in which rainfall and surface water are transmitted away from a property. This includes changes to the surface water received by the underlying aquifers, adjacent properties and nearby watercourses. Changes could result in decreased flow, which may affect ecosystems or reduce amenity, or increased flow which may additionally increase the risk of flooding.

4.2.3 Scoping for Stability

- **Aquifer**

The guidance advised that an increase in water levels can have a detrimental effect on stability.

- **The site is within 5m of a highway or pedestrian right of way**

The guidance advises that excavation for a basement may result in damage to the road, pathway or any underground services buried in trenches beneath the road or pathway.

- **The proposed basement significantly increases the differential depth of foundations relative to the neighbouring properties?**

The guidance advises that excavation for a basement may result in structural damage to neighbouring properties if there is a significant differential depth between adjacent foundations.

- **The site may be over (or within the exclusion zone of) tunnels, e.g. railway lines**

The guidance advises that excavation for a basement may result in damage to the tunnel.

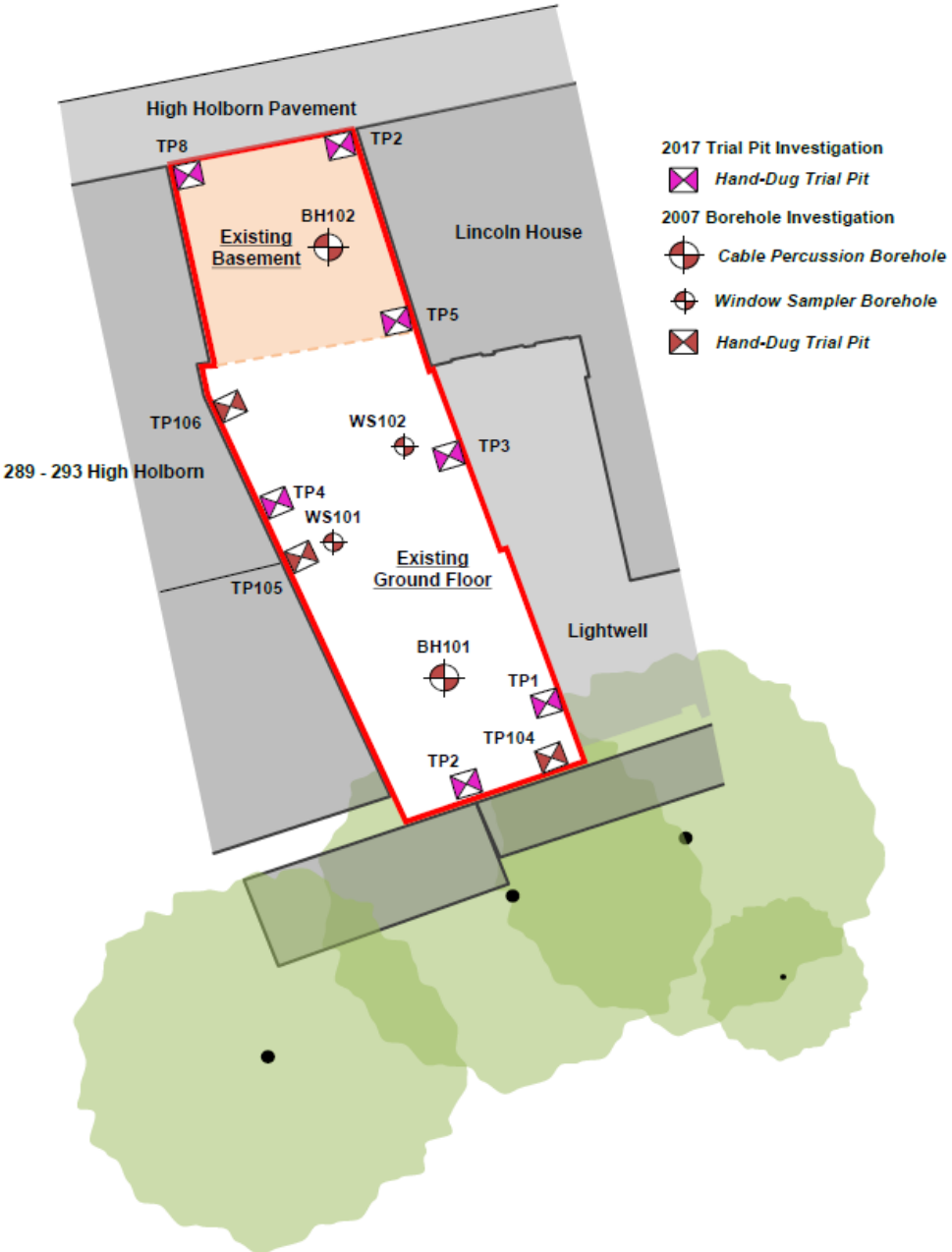
The assessment of potential impacts needs to be informed by the findings of intrusive ground investigation and all the above issues are to be carried forward to the Impact Assessment.

5. Site Investigation

An investigation was undertaken in 2007 by Geotechnical & Environmental Associates (ref: J07148), prior to the demolition of the former building. The investigation comprised cable percussion boreholes, window sampler boreholes and hand-dug trial pits in order to investigate the ground conditions and allow the recovery of samples for laboratory testing. A standpipe was installed to allow subsequent groundwater monitoring.

This information is supplement by an additional trial pit investigation undertaken in 2017 by Michael Barclay Partnership LLP (MBP), in order to further investigate the foundations to the party walls.

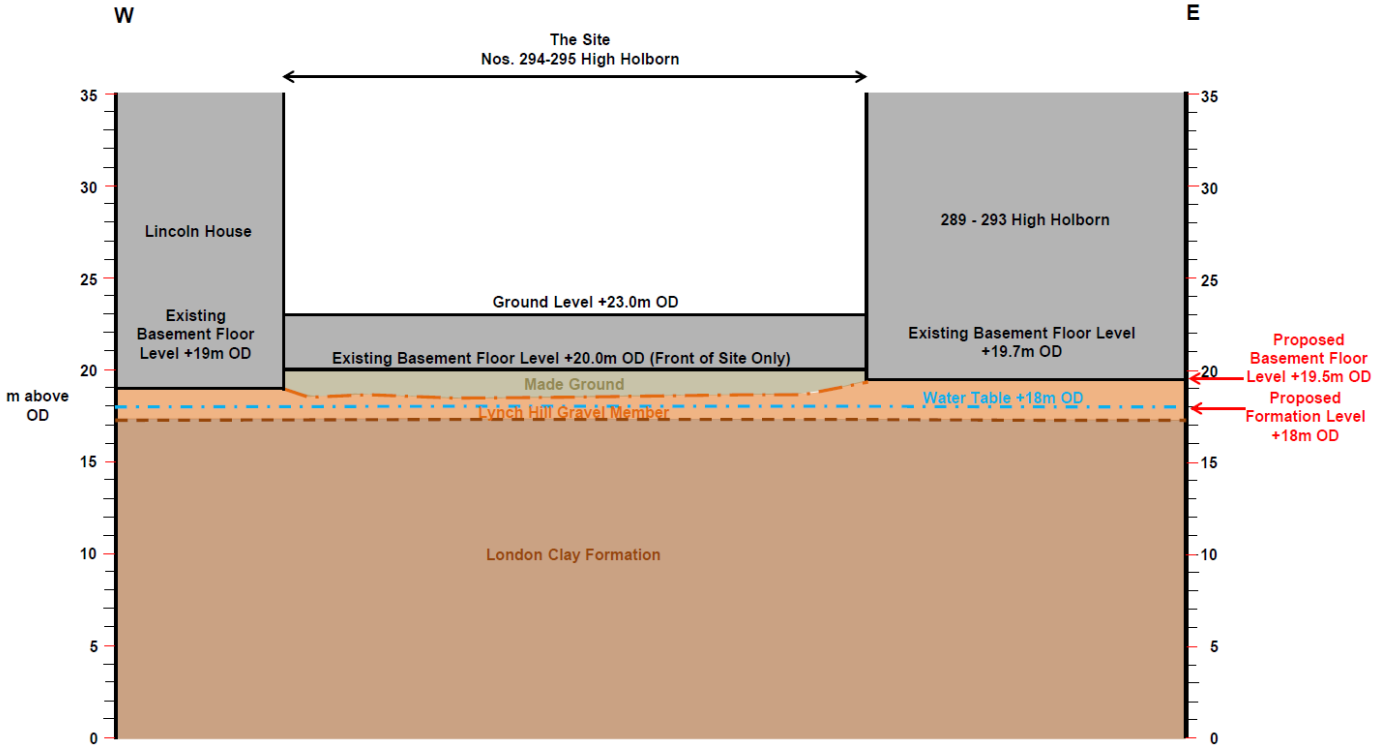
The following site plan shows the approximate exploratory locations.



Site plan showing exploratory positions

5.1 Ground Conditions

The investigations indicate that the site is underlain by a variable thickness of made ground, which is subsequently underlain by the Lynch Hill Gravel Member and the London Clay Formation.



Simplified ground model showing inferred ground conditions at the front of the site in a W-E direction and the approximate configuration of neighbouring structures

5.2 Made Ground

Made ground is present to around 1.5m beneath the existing basement at the front of the site. However, it appears that there is an increased thickness of made ground of less than 3m, present to the rear of the basement.

The made ground is suggested to comprise brick rubble over dark brown clay fill with brick and coal.

It is likely that the brick rubble represents the demolition material from the pre-war building that stood on site. The lowermost levels of underlying clayey fill are possibly of considerably greater age and may represent “night soil” which would have been deposited here outside the city walls in medieval times.

5.3 Lynch Hill Gravel Member

Beneath the made ground, an initial firm sandy gravelly clay layer was found to be underlain by sandy gravel. The base of these deposits is expected to lie at around 5-6m depth (+17m OD to +18m OD).

5.4 London Clay Formation

The London Clay Formation underlies the Lynch Hill Gravel Member and consists of firm becoming stiff grey fissured clay with scattered selenite crystals and occasional partings of sand; weathered to a brown colouration in the uppermost levels.

5.5 Groundwater

A water table is expected to be present within the Lynch Hill Gravel Member at around +17.8m OD.

6. Impact Assessment

The screening and scoping stages have identified potential effects of the development on those attributes or features of the geological, hydrogeological and hydrological environment. This stage is concerned with evaluating the direct and indirect implications of each of these potential impacts.

6.1 Potential Hydrogeological Impacts

The proposed basement will extend into the Lynch Hill Gravel Member and approximately 0.3m above the groundwater table at the front third of the site.

The new basement will include a shallower section at the rear two thirds of the site. This section is expected to be some 0.8m above the groundwater table.

It is therefore envisaged that, on the basis of the previous groundwater monitoring, the development is not expected to have any impact upon groundwater flow and there is expected to be no significant cumulative impact.

6.2 Potential Hydrological Impacts

The new development is expected to result in at most a minimal increase in the amount of soft landscaping at the rear of the site.

It is therefore envisaged that the new development will not adversely affect the amount of infiltration and amount of surface water run-off leaving the site.

6.3 Potential Stability Impacts

6.3.1 Aquifer

Although the piled foundations will penetrate the underlying aquifer, the piles are to be spaced wide enough to allow groundwater to flow around and also not significantly increase the water level, hence the piles are not expected to have a detrimental impact on stability.

6.3.2 Pedestrian Right of Way

The existing basement lies some 3m beneath the adjacent pavement. It is proposed to underpin this side of the retaining wall by some 1.5m in order to deepen the existing basement.

Appropriate propping will be installed at a high level in the temporary condition, in order to limit lateral deflections of the existing wall and maintain support to the pedestrian right of way.

6.3.3 LUL / Royal Mail Tunnels

It is possible that there will be some impact upon both the adjacent LUL and the Royal Mail Tunnels, but this assessment cannot be progressed without further location information, which is awaited from both LUL and Royal Mail.

6.3.4 Neighbouring Properties

CPG4 guidance states that it is a major objective of design and construction to maintain a level of risk to buildings no higher than Burland Category 2 ‘slight’.

A ground movement assessment has prepared by CGL (Ref: CGL/09162. Rev. 1). In view of the potential movements that may occur due to underpinning the party walls to the neighbouring buildings, an assessment of the potential damage to the neighbouring structures has been made.

The potential degree of movement due to underpinning has been assessed as Burland Category 1 ‘very slight’ for both neighbouring structures, Lincoln House and 289 – 293 High Holborn.

6.3.5 Monitoring and Contingency Plan

Monitoring of the adjacent buildings is to be undertaken in order to confirm that no additional mitigation measures are warranted. A plan has been prepared by Michael Barclay (Ref: 6940)

7. Conclusion

This BIA has demonstrated that each of the potential impact and issues can be satisfactorily addressed through the use of appropriate engineering design and construction measures, and that the proposed construction can be successfully completed without detriment to the environment, flooding or ground instability.

Having reviewed the adequate design and construction methodology, it is envisaged that the basement construction will have no significant detrimental impact on the stability of the neighbouring structures and can be achieved without any cumulative impact.

Appendix

GEA Desk Study & Ground Investigation Report (separate file)

MBP Structural Engineer's Report for Planning (separate file)

CGL Ground Movement Report (separate file)