COCHRANE CONSTRUCTION CONSULTANTS

# 161 ARLINGTON ROAD, LONDON NW1 7ET

Basement Impact Assessment
Screening & Scoping Report

| | |
|---|---|
| **Project Ref:** | **S 2930** |
| **Rev:** | **02** |
| **Issue Date:** | **November 2024** |

## REVISION HISTORY

| Revision | Date | Purpose /Status | Author | Reviewed |
|---|---|---|---|---|
| 00 | 08/04/2024 | Initial Issue | BC | |
| 01 | 11/08/2024 | General revisions to suit revised Planning Application | BC | |
| 02 | 25/11/2024 | Groundwater comments revised, Question 4.1 / 1b carried forward.<br>Review bof reports by suitably accredited professionals to meet Camden's BIA requirements. Note added to author section and letters included as Appendix J. | BC | |

## AUTHOR

This report has been prepared by:

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**Cochrane Construction Consultants Limited**
November 2024

To meet the qualification requirements set out in the Camden Basement SPD **s**urface water, groundwater and geological aspects of the following reports have been reviewed by suitably qualified professionals.

See letters confirming reports and conclusions are accurate are included as Appendix J.

**Reports Submitted to Review:**

S 2930. DSR. 161 Arlington Road NW1 - Desk Study Report - Rev 02

S 2930. SSR. BIA Stage 1 - Screening+Scoping Report - Rev 02

S 2930. BIA. 161 Arlington Road NW1 - Basement Impact Assessment - Rev 02 (this report)

**Reviewers:**

Geological & groundwater - Joe Gomme (CGeol, FGS) Associate Director H Frasier Consulting

Surface Water - Henry Kelly (MSc, C.WEM) Director HK Hydrology Ltd

# NON-TECHNICAL SUMMARY

Cochrane Construction Consultants (CCC) have been appointed by Asli and Taylan Karagul to advise on the structural implications of proposed structural refurbishment of 161 Arlington Road NW1 7ET.

This report should be read in conjunction with the separate Desk Study Report reviews the information available on the existing site, including historical development, the nature of the existing building and the buildings adjacent, geological, and hydrological nature of the site, infrastructure, and services.

This screening report sets out the scope of works that will be required to address the requirements of Camden's Local Plan (2017) and CPG on Basements (January 2021) and is based on the flowcharts given in the Camden geological, hydrogeological and hydrological study / CPG – Basements.

The following questions returned a 'Yes' or 'Unknown' response:

| | |
|---|---|
| ***Subterranean (Groundwater) Flow*** | ***Question 1b***<br>*Will the proposed basement extend beneath the water table surface?*<br><br>Unknown. Nearby BGS borehole records indicate a groundwater level of c.10 m bgl, within the London Clay. This is well below the proposed foundation level of 2.6 m bgl. However the current site groundwater level is unknown. Site investigation to be carried out.<br>(DSR Fig 10 to 15) |
| ***Slope Stability*** | ***Question 5***<br>*Is the London Clay the shallowest strata at the site?*<br><br>Yes, ground conditions on the site and local area comprise a thin layer of made ground/topsoil (400mm thick) over London Clay to depth.<br>(DTS Fig 12-17)<br><br>***Question 12***<br>*Is the site within 5m of a highway or pedestrian right of way?*<br><br>Yes, the pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell. |
| ***Surface Water and Flooding*** | None |

An assessment of the above issues confirmed that they would not have any impact on the adjacent properties or public highways and therefore would not need any further action beyond normal construction procedures for the proposed basement.

A site investigation is required to confirm ground and groundwater conditions on site.

# CONTENTS

# 1 INTRODUCTION

Cochrane Construction Consultants (CCC) have been appointed by Asli and Taylan Karagul to advise on the structural implications of proposed structural refurbishment of 161 Arlington Road NW1 7ET.

This screening report sets out the scope of works that will be required to address the requirements of Camden's Local Plan (2017) and CPG on Basements (January 2021).

A separate Desk Study Report reviews the information available on the existing site, including historical development, the nature of the existing building and the buildings adjacent, geological, and hydrological nature of the site, infrastructure, and services.

# 2 EXISTING BUILDING

The property at 161 Arlington Road was originally built c 1830 as part of a terrace on the west side of the street behind the properties on Parkway to the north and including a public house at 163/165 Arlington Road. The northern end of the terrace, Nos 163-169, was demolished in the late 1920s to allow construction of The Lady of Hal Church and associated Presbytery. The island site behind No 161 was occupied by Park Chapel School from the 1870s until after WWII, when the site was occupied by Curry and Paxton's optical works. The site was redeveloped c1972 to the current office use.

No 161, along with Nos 157 and 159, are Grade II listed buildings. This relates only to the front elevations and attached railings of the streetscape as the interiors were not inspected. The internal finishes and much of the structure has been and have been largely replaced in the 1992 refurbishment.

The existing buildings on the west side of Arlington Road south of the church are typically three storey over basement, with front elevations of London stock brick with stucco features. The houses at No161-155 differ from those further south, having only a single window on each level while those to the south have two windows per floor. The original roof structure appears to have been a butterfly roof with a central valley running front to back behind the front parapet wall.

No 161 Arlington varies from the adjacent properties in that it has a projecting bay window to the left, the former shop entrance forming the entrance to the property and the former flat entrance changed to a window on the right-hand side, which agrees with the planning records which indicate the property was converted from a shop with flat over to a single residential property c1987. The records also show that in 1992 a rear extension and mansard level was added.

This generally agrees with the extent of the building today.

The existing structure is traditional in nature with the timber floors spanning front to back between the external walls and the central spine walls / isolated steel beams. The main stair and landing structure will span onto the frame enclosing the stairwell. Much of the original structure has been replaced or strengthened in the 1992 refurbishment.

The top floor and roof date from c1992 and are to be timber spanning onto isolated steel beams spanning across the building.

The existing foundations are corbelled brick footings bearing onto the London Clay, the underlying geology in this area. The party wall to the church has been previously underpinned when the church was built.

To the front of the building there are two arched brick vaults extending under the pavement/ road. These have limited headroom but appear generally sound.

There are two buildings adjacent No161, No 159 to the south and The Lady of Hal church to the north.

No 159 is a residential building similar to No161 except that no mansard has been added. A small rear extension at basement and ground floor was added c1976. The wall between Nos 159and 161 is a common party wall.

The church was built c1933 and comprises a front building, four storey over partial basement, with the main hall behind. The front building appears to have separate flank wall built adjacent the original wall to No161, at the rear the stairwell to first floor extends beyond the rear of the main building to No161 and has been enclosed on by the basement extension to No161 c1992.

The foundations to the front and link buildings of the church founds at a similar level to No161, and are assumed to have been built within the basement of the building previously on the site. The foundations to main hall are not known and are likely to be at a higher level than those at the front (depends on structures previously on site).

The existing site is approximately 150m2 (0.015 hectare) in area.

# 3 PROPOSED ALTERATIONS

The current proposals for alterations to 161 Arlington Road include:

i) General refurbishment of the property

ii) Demolishing the existing rear extension and rebuilding a new rear extension at basement and ground levels. The new extension is to be of similar scale to the existing with the basement increased to the footprint of the extension.

iii) Lowering the floor level in the main building by approximately 400mm which will require shallow underpinning to the existing load bearing walls except that to the church which was previously underpinned.

The new basement element of the rear extension requires a Basement Impact Assessment to be carried out in accordance with Camden's Planning Guidance on Basements.

The new basement is approximately 3.5m wide by 3.5m deep enclosing on the church wall and set 700mm from the garden wall to No159. The new basement is of similar width to the existing but approximately twice the depth (the original basement was built within the original lightwell). The new basement floor level is to be set approximately 400mm below the existing basement floor level.

# 4 BIA DETERMINATION – SCREENING ASSESSMENT

The following screening checklists take the questions from the flowcharts given in the Camden geological, hydrogeological and hydrological study / CPG - Basements with relevant responses for 161 Arlington Road. Questions requiring further consideration are summarised in Section 4.4 with further actions set out in Section 5.0.

Section 4.1 - Screening Checklist for Subterranean (Groundwater) Flow

Section 4.2 - Screening Checklist for Slope Stability

Section 4.3 - Screening Checklist for Surface Water and Flooding

Section 4.4 - Screening Summary

Reference to supporting documents is given under 'Response', with Figures within the separate Desk Study Report referenced as (DSR Fig xx).

## 4.1 Screening Checklist For Subterranean (groundwater) Flow

| Question | Response | |
|---|---|---|
| 1a. Is the site located directly above an aquifer? | **No** | The site is underlain by London Clay (classified as unproductive stratum).<br>(*DSR Fig 10, 20-22)* |
| 1b. Will the proposed basement extend beneath the water table surface? | **Unknown** | Unknown. Nearby BGS borehole records indicate a groundwater level of c.10 m bgl, within the London Clay (DSR Fig 10 to 15). This is well below the proposed foundation level of 2.6 m bgl.<br>However the current site groundwater level is unknown.<br>(*DSR Fig 10 to 15*) |
| 2. Is the site within 100mof a watercourse, well (used / disused) or potential spring line? | **No** | No water features within 100m.<br>Nearest spring lines are Hampstead / Highgate some 2.35km to the north.<br>The closest watercourses are:<br>• The River Fleet, 365m to north-east of the site (now culverted).<br>• The Regents Canal, 370m to the north of the site.<br>• The Tyburn, 2.25km west of the site.<br>(*DTS Fig 10, 17 & 18*) |
| 3. Is the site within the catchment of the pond chains on Hampstead Heath? | **No** | Hampstead Ponds catchment area is 2.55km from site based on CGHHS Fig 14<br>(*DSR Fig 19*) |

| Question | Response | |
|---|---|---|
| 4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas? | **No** | Proposed basement is approximately 14 $m^2$ larger than the existing, but this replaces existing paving bedded on concrete and therefore will result in no change in impermeable area which remains as existing.<br>(*See existing and proposed drawings*) |
| 5. As part of site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)? | **No** | Surface water runoff will be discharged to the sewer system as existing.<br>The existing site is largely impermeable, less than 10% of the site is planting, and the underlying ground is London Clay.<br>The new rear extension will occupy any area which is currently hard standing, the remaining garden and planting is retained as existing.<br>*(See drawings)* |
| 6. 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 (not just the pond chains on Hampstead Heath) or spring line? | **No** | No ponds in vicinity of the site. Nearest ponds are:<br>• Hampstead Ponds (2.25km north)<br>• Parliament Hill Fields Lido (2.12km north)<br>• London Zoo (500m west-southwest)<br>• Regent's Park (1km southwest)<br>(*DTS Fig 22)* |

## 4.2 Screening Checklist For Slope Stability

| Question | Response | |
|---|---|---|
| 1. Does the existing site include slopes, natural or man-made greater than 7 degrees (approximately 1 in 8)? | **No** | Site locality has a very gentle fall to the northeast of approximately 1.4deg<br>The only features in the locality exceeding this are lightwells to the houses and the railway cutting 210m to the west of the site. These have engineering support solutions.<br>(*DTS Fig 19)* |
| 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** | Garden levels to remain generally as existing.<br>*(See drawings)* |
| 3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)? | **No** | Nearest railway cutting is 210m to the west of the site.<br>(*DTS Fig 47-50)* |
| 4. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately1 in 8)? | **No** | Local area has a very gentle fall to the northeast of 1.4 degree.<br>(*DTS Fig 7-11, 19, 47-50)* |

| Question | Response | |
|---|---|---|
| 5. Is the London Clay the shallowest strata at the site? | **Yes** | Ground conditions on the site and local area comprise a thin layer of made ground/topsoil (400mm thick) over London Clay to depth.<br>(*DTS Fig 12-17 & Site investigation)* |
| 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** | There are no trees in, or in front of, the site. Planting in the garden is largely shrubs and smaller plants which may be altered. |
| 7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site? | **No** | While site is on London Clay with a medium-high shrinkage potential there is, based on visual inspection, no evidence of subsidence or other ground movement in the property or others nearby. |
| 8. Is the site within 100m of a watercourse or a potential spring line? | **No** | The closest watercourses are:<br>• The River Fleet, 365m to north-east of the site (now culverted).<br>• The Regents Canal, 370m to the north of the site.<br>• The Tyburn, 2.25km west of the site.<br>The site sits on London Clay, therefore the nearest springs would be on the boundary of the Bagshot & Claygate strata forming Hampstead Heath some 2.35km to the north.<br>(*DTS Fig 10, 17 & 18*) |
| 9. Is the site within an area of previously worked ground? | **No** | The house was the first building on the site with the nearest areas of made ground are over 200m to the south (former Cumberland Basin) and 200m to the east (WW2 bomb damage and subsequent clearances).<br>(*DTS Fig 12)* |
| 10. Is the site within an aquifer. If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction? | **No** | Site sits on London Clay, described as an unproductive stratum.<br>Local boreholes have not found any water table to a depth of 10m below ground level – the proposed alterations will only extend 2.5m below ground level.<br>(*DTS Fig 23-25)* |
| 11. Is the site within 50m of the Hampstead Heath Ponds? | **No** | The ponds are over 2km from the site.<br>(*DTS Fig 22)* |

| Question | Response | |
|---|---|---|
| 12. Is the site within 5m of a highway or pedestrian right of way? | **Yes** | The pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell and vaults. The front vaults extend under the pavement.<br><br>The rear of the pavement is approx 2m from the front wall of the house and the kerb line 3900mm form the front wall.<br><br>The underpinning to the front wall extends to approx 800mm below the existing lightwell level. The proposed underpinning will not affect the the stability of the existing vaults, pavement or highway.<br><br>(*Refer to drawings S2930/S001, S002, S005 and S010*)<br><br>The rear extension (basement extension) is approximately 8.5m from the back of the pavement and the proposed works will not affect the pavement or public highway based on 45deg line of influence.<br><br>(*Refer to drawing S 2930 S002*) |
| 13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties? | **No** | The difference in formation level for the proposed basement in relation to the adjacent foundations will only be extended an additional 500mm, such that the increase in depth is not considered structurally significant.<br><br>(*Refer to Site Investigation*) |
| 14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines? | **No** | The nearest tunnel exclusion zones to the site are:<br>• the Northern Line under Camden High Street – approximately 100m to the east.<br>• HS2/Overground – 200m south west<br><br>(*DTS Fig 47-50)* |

## 4.3 Screening Checklist For Surface Water And Flooding

| Question | Response | |
|---|---|---|
| 1. Is the site within the catchment of the ponds chains on Hampstead Heath? | **No** | Hampstead Ponds catchment area is 2.55km from site based on CGHHS Fig 14<br><br>(*DSR Fig 19*) |
| 2. 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** | Proposed basement is approximately 14 m2 larger than the existing, but this replaces existing paving bedded on concrete and therefore will result in no change in impermeable area which remains as existing.<br><br>The surface water flow regime unchanged.<br><br>*(See existing and proposed drawings)* |

| Question | Response | |
|---|---|---|
| 3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas? | **No** | Proposed basement is approximately 14 $m^2$ larger than the existing, but this replaces existing paving bedded on concrete and therefore will result in no change in impermeable area which remains as existing.<br>(*See existing and proposed drawings*) |
| 4. 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** | Impermeability of site unchanged and proposed surface water runoff dealt with as existing.<br>(*See existing and proposed drawings*) |
| 5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses? | **No** | Impermeability of site unchanged and proposed surface water runoff dealt with as existing.<br>(*See existing and proposed drawings*) |
| 6. 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 from flooding, for example because the proposed basement is below the static water level of nearby surface water feature. | **No** | Refer DSR Section 9, site is:<br>• In Flood Zone 1,<br>• Does not lie within any 'Critical Drainage Areas' or 'Local Flood Risk Zone',<br>• Has no history of flooding (TWA records and Camden Flooded Street List).<br>*(DSR Fig 52-57)* |

# 5 SCREENING SUMMARY

The following questions in the screening flowcharts returned a 'Yes' or 'Unknown' response.

***Screening Checklist for Subterranean (Groundwater) Flow***

***Question 1b*** *Will the proposed basement extend beneath the water table surface*?

Unknown. Nearby BGS borehole records indicate a groundwater level of c.10 m bgl, within the London Clay ((DSR Fig 10 to 15). This is well below the proposed foundation level of 2.6 m bgl.
However, the current site groundwater level is unknown.

***Screening Checklist for Slope Stability***

***Question 5*** I*s the London Clay the shallowest strata at the site?*

Yes, ground conditions on the site, and local area, comprise a thin layer of made ground/topsoil (400mm thick) over London Clay to depth.

(DTS Fig 12-17 & Site investigation)

***Question 12*** *Is the site within 5m of a highway or pedestrian right of way?*

The pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell and vaults. The front

vaults extend under the pavement.
The rear of the pavement is approx 2m from the front wall of the house and the kerb line 3900mm from the front wall.
The underpinning to the front wall extends to approx 800mm below the existing lightwell level. The proposed underpinning will not affect the the stability of the existing vaults, pavement or highway based on 45deg line of influence.
(*Refer to drawings S2930/S001, S002, S005 and S010*)
The rear extension (basement extension) is approximately 8.5m from the back of the pavement and the proposed works will not affect the pavement or public highway.
(*Refer to drawing S 2930 S002*)

***Screening Checklist for Surface Water and Flooding***

***None***

# 6 SCOPING ASSESSMENT

The Screening Assessment above identified the following items relating to subterranean flow and slope stability which require further discussion and more detailed response:

***Subterranean (Groundwater) Flow***

***Question 1b*** *Will the proposed basement extend beneath the water table surface*?

Unknown. Nearby BGS borehole records indicate a groundwater level of c.10 m bgl, within the London Clay ((DSR Fig 10 to 15). This is well below the proposed foundation level of 2.6 m bgl.
However, the current site groundwater level is unknown.

**Response**

*The proposed basement formation level may be below groundwater level. A site investigation is planned to confirm the ground conditions and groundwater level, if close to surface.*

Existing boreholes indicate that the groundwater was generally not encountered to 10m below ground level so unlikely to be an issue but needs to be confirmed for site.

***Screening Checklist for Slope Stability***

***Question 5*** I*s the London Clay the shallowest strata at the site?*

Yes, ground conditions on the site, and local area, comprise a thin layer of made ground/topsoil (400mm thick) over London Clay to depth.

(DTS Fig 12-17 & Site investigation)

**Response**

*Yes, ground conditions on the site and local area comprise a thin layer of*

*made ground/topsoil (400mm thick) over London Clay to depth.*

*(DTS Fig 12-17 & Site investigation)*

This question relates to fact that London Clay has a high shrinkage potential and is prone to seasonal shrink-swell movement because of changes in the moisture content of the clay. Consequently, buildings which found in London Clay can suffer from structural movement due to subsidence and heave.

We have inspected the property at No161, and visually inspected the buildings adjacent and no indications of ground movement is evident. The front and back facades show no visible distortion in the brickwork indicating structural movement.

The basement to the rear extension is outside the existing building and will found at a similar level to exiting (the formation will be approximately 500mm lower than the formation levels to the main house) and bear onto the same ground strata.

Therefore, whilst there will be some interaction between the new basement and the existing foundations to No161 and adjacent properties this will be minimal and dealt with by shallow underpinning to avoid ground loss.

Considering the above, this matter will not be considered further as the solution is in line with standard procedures for foundations in clay.

***Question 12*** *Is the site within 5m of a highway or pedestrian right of way?*

The pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell and vaults. The front vaults extend under the pavement.
The rear of the pavement is approx 2m from the front wall of the house and the kerb line 3900mm from the front wall.
The underpinning to the front wall extends to approx 800mm below the existing lightwell level. The proposed underpinning will not affect the the stability of the existing vaults, pavement or highway based on 45deg line of influence.
(*Refer to drawings S2930/S001, S002, S005 and S010*)
The rear extension (basement extension) is approximately 8.5m from the back of the pavement and the proposed works will not affect the pavement or public highway.
(*Refer to drawing S 2930 S002*)

***Response***

*Yes, the pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell.*

The underpinning to the front walls will found at approximately 900mm below lighwell slab level, and as the lightwell is approximately 1950mm wide this will be outside the zone of influence for the foundations of the vault walls and will have no effect. (*Refer to drawings S2930/S001, S002, S005 and S010*)

*The rear extension (basement extension) is approximately 8.5m from the back of the pavement and the proposed works will not affect the pavement or public highway. (Refer to drawing S 2930 S002)*

# APPENDIX A: SITE PHOTOGRAPHS

*Photograph 1: Arlington Road Elevation Looking North (No161 is white painted building)*


*Photograph 2: Arlington Road Elevation Showing 155-161 (No 161 is white painted building)*


*Photograph 3: Shopfront & Lightwell*

*Photograph 4: Rear Elevation*

*Photograph 5: Existing Rear Garden*

*Photograph 6: Existing Rear Garden*