The Hoo
17 Lyndhurst Gardens

Structural Engineering
Basement Impact Assessment Screening Report

Prepared by: **David Lockett MEng CEng MIStructE**
Reviewed by: **John Helyer MIStructE FICE**
Job Number: **28224**

Date	Revision	Notes/Amendments/Issue Purpose
January 2020	1	Planning

Consulting Engineers
37 Alfred Place
London WC1E 7DP

020 7631 5128
mail@pricemyers.com
www.pricemyers.com

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1 Introduction

The Hoo is a large detached house designed by Architect Horace Field and built in 1888-1890. It is an early example of the Queen Anne style and is of traditional construction. It is principally over two floors, ground and first floor, but has a small basement serving as a boiler room. There is a second floor in the roof space over approximately one third of the building footprint. The external walls are constructed from solid loadbearing brickwork and the internal walls are a combination of masonry and timber stud construction. The floors generally consist of suspended timber joists and boards at all levels except to the floor of the basement boiler room, which is of concrete construction. The roof consists of propped timber rafters and clay tiles.

A two-storey extension, over the lower ground and ground floors was built to the west of the original building in the late 1980s when the property was converted to an NHS facility. This appears to have been formed with loadbearing masonry walls supporting a beam and block ground floor and a flat roof. The roof is anticipated to be of timber construction.

The building is Grade II listed.

The building is to be converted back to a family home. This involves a number of alterations including an extension at lower ground floor level with floors above and the construction of an external retaining wall, also at lower ground floor level to create a lightwell.

This Basement Impact Assessment (BIA) Screening report has been prepared to address the screening process required at the outset of a BIA as set out in Camden Planning Guidance - Basements and Lightwells 9CPG4), including Camden Development Policy DP27 - Basement and Lightwells, in respect of the proposals at The Hoo, 17 Lyndhurst Gardens as generally described in the introduction to this document.

2 Ground Conditions

From the data held by the British Geological Survey, the site is expected to be underlain by Claygate Member comprising of Clay, Sand, and Silt, which in turn is expected to be underlain by London Clay. From a review of the borehole logs in the vicinity of the site, we would not expect to encounter groundwater within the depth of the basement or within a significant depth beneath it.

A site specific geotechnical investigation has not been carried out at the time of writing.

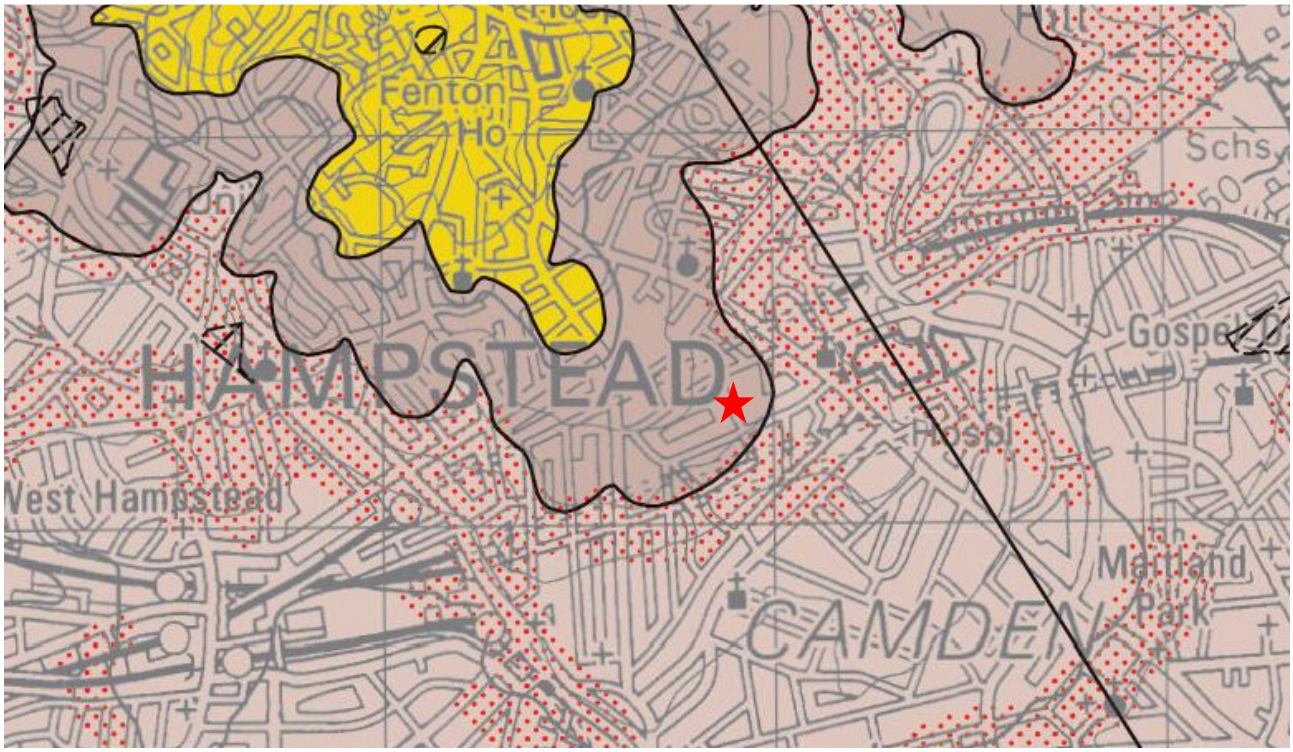

Figure 1: British Geological Survey map, North London sheet 256 shows the site to be underlain by Claygate Member, which comprises of Clay, Sand and Silt

3 Basement Impact Assessment: Screening

Subterranean (Groundwater) Flow Screening

Q 1a: Is the site located directly above an aquifer?	Yes	See figures 2, 3, & 4
Q 1b: Will the proposed basement extend beneath the water table surface?	No	
Q 2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	See figure 5
Q 3: Is the site within the catchment of the pond Chains on Hampstead Heath?	No	
Q 4: Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	No	The existing area is paved
Q 5: As part of the 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	The new basement will be built on an area that's mostly hardstanding. The landscape proposals will aim to offset any new hardstanding with removal of existing hardstanding.
Q6: 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 ponds chains on Hampstead Heath) or spring line.	No	

Figure 2: Extract of Environment Agency Aquifer Designation Map indicating that the site underlain by a Bedrock Secondary (A) aquifer

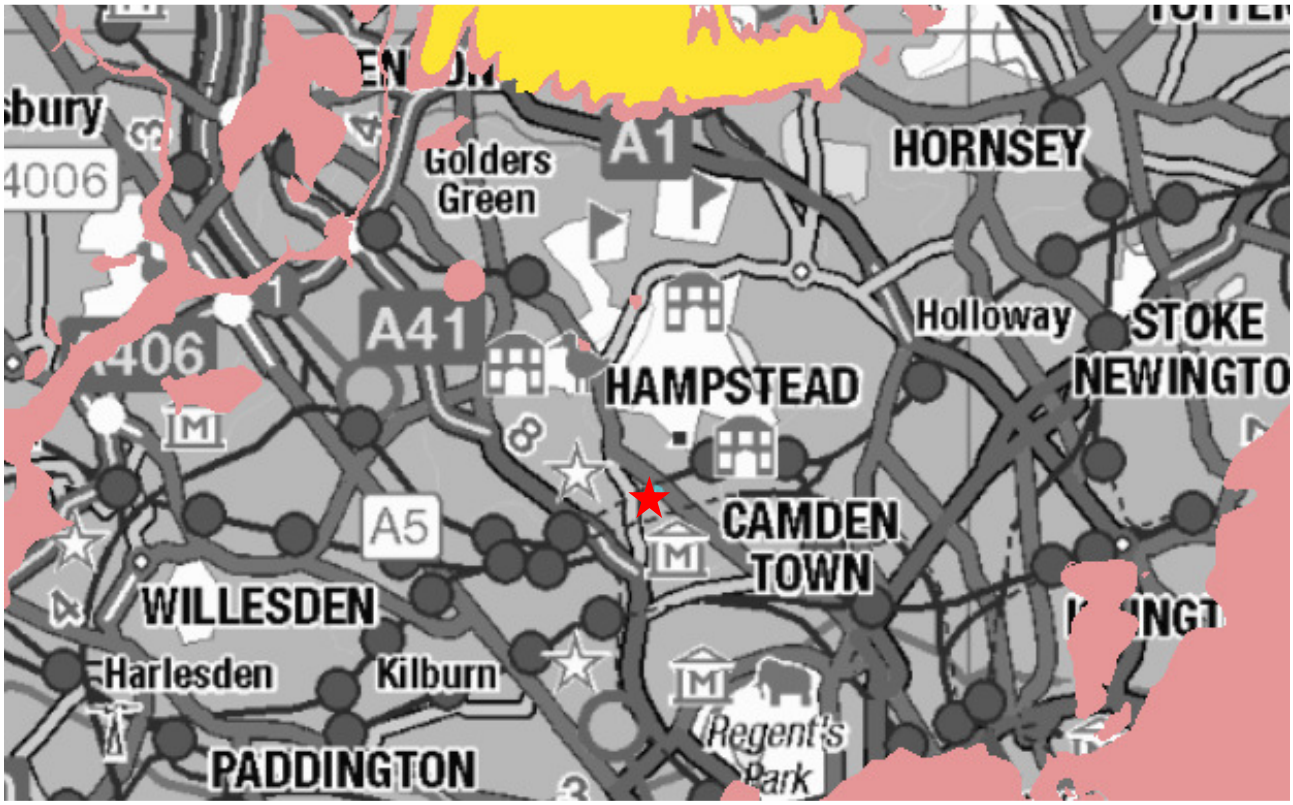

Figure 3: Extract of Environment Agency Aquifer Designation Map indicating that Superficial Drift Aquifers are not present in the vicinity of the site

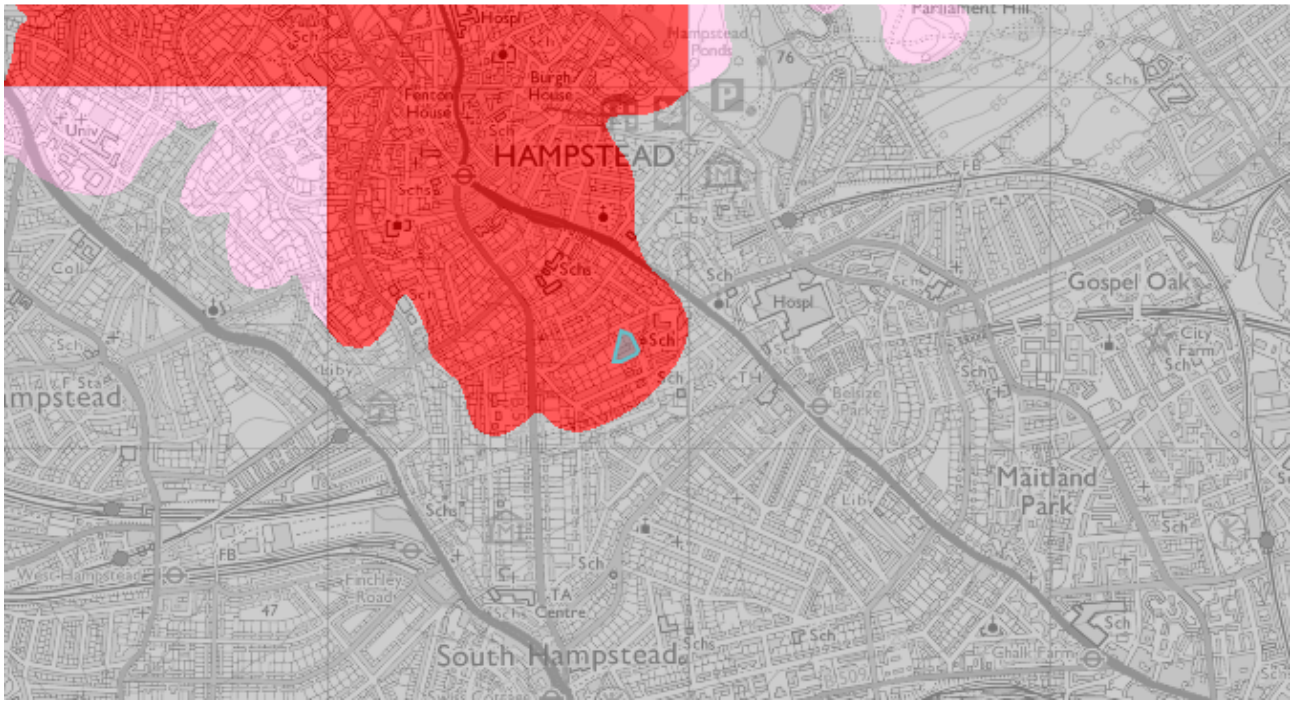

Figure 4: Extract of Environment Agency Groundwater Vulnerability Map indicating that the area is classified as 'High' vulnerability

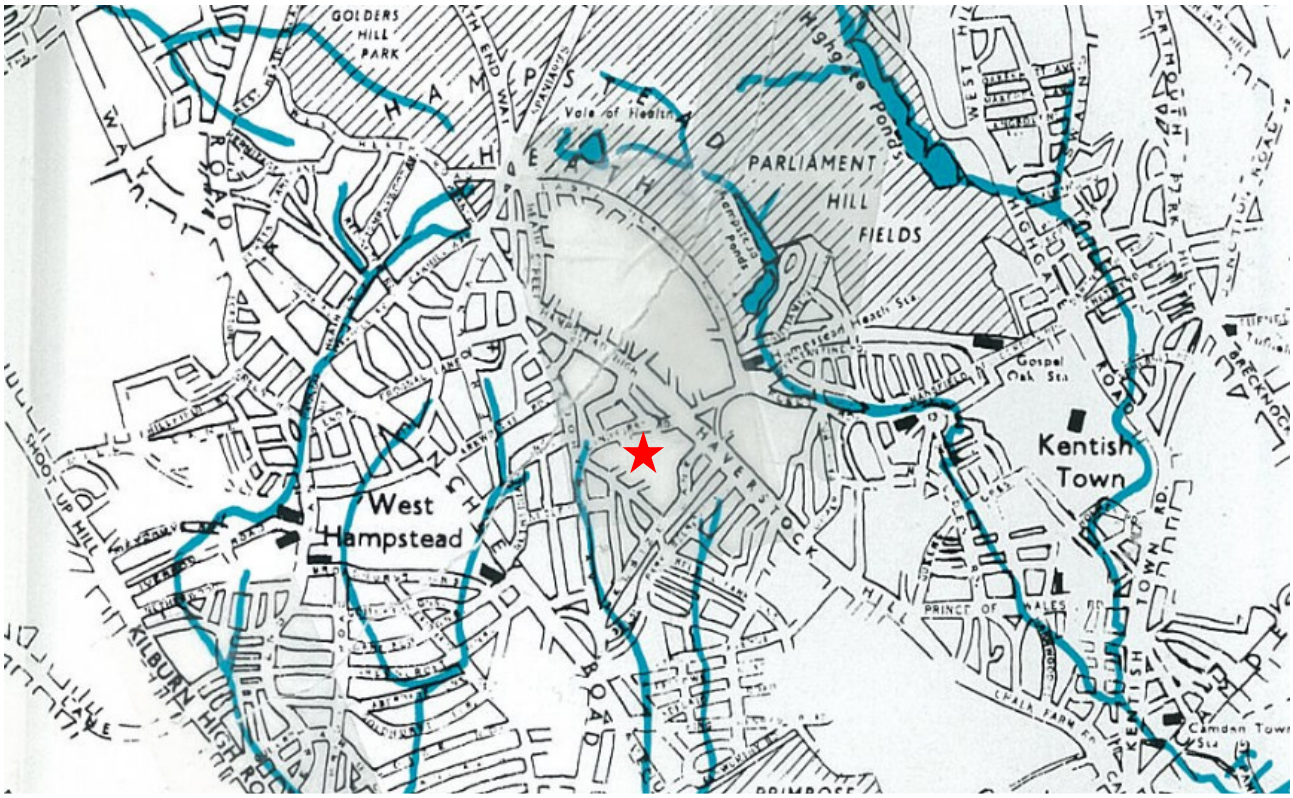

Figure 5: Extract of Lost Rivers of London

Slope Stability Screening

Q 1: Does the existing site include slopes, natural or manmade, greater than 7° ? (approximately 1 in 8)	No	Generally, site slope is from North to South $\left(\frac{87.59-85.20}{30.91}\right) \rightarrow$ 1 in 13
	Yes	Local slope between building and Northern boundary $\left(\frac{89.33-87.46}{2.92}\right) \rightarrow$ 1 in 1.6 Refer to figure 6
Q 2: Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7° ? (approximately 1 in 8)	No	
Q 3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7° ? (approximately 1 in 8)	Unknown	Levels not available for neighbouring land
Q 4: Is the site within a wider hillside setting in which the general slope is greater than 7° ? (approximately 1 in 8)	No	Lyndhurst Gardens slopes North to South $\left(\frac{88.07-83.53}{58.52}\right) \rightarrow$ 1 in 12.9
Q 5: Is the London Clay the shallowest strata at the site?	No	The site is expected to be underlain by Claygate member consisting of Clay, Sand, and Silt. Refer to figure 1
Q 6: Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree zones where trees are to be retained?	Yes	There are several groups of trees being removed, refer to Bowles & Wyer "Landscape Proposals for Planning" report, which details the new trees that offset this.
Q 7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	No	See figure 5. Approximate distance is 250m
Q 8: Is the site within 100m of a watercourse or a potential spring line?	No	

Q 9: Is the site within an area of previously worked ground?	No	
Q 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?	Yes, No	Above aquifer but not below water table
Q 11: Is the site within 50m of the Hampstead Heath ponds?	No	
Q 12: Is the site within 5m of a highway or pedestrian right of way?	Yes	The site is within 5m of the highway, but the area of basement is 35m from the highway
Q 13: Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No	
Q 14: Is the site over (or within the exclusion zone of) any tunnels e.g. railway lines?	No	The Hampstead Heath Tunnel is believed to be approximately 100m to the North, and the Belsize Tunnels approximately 170m to the South

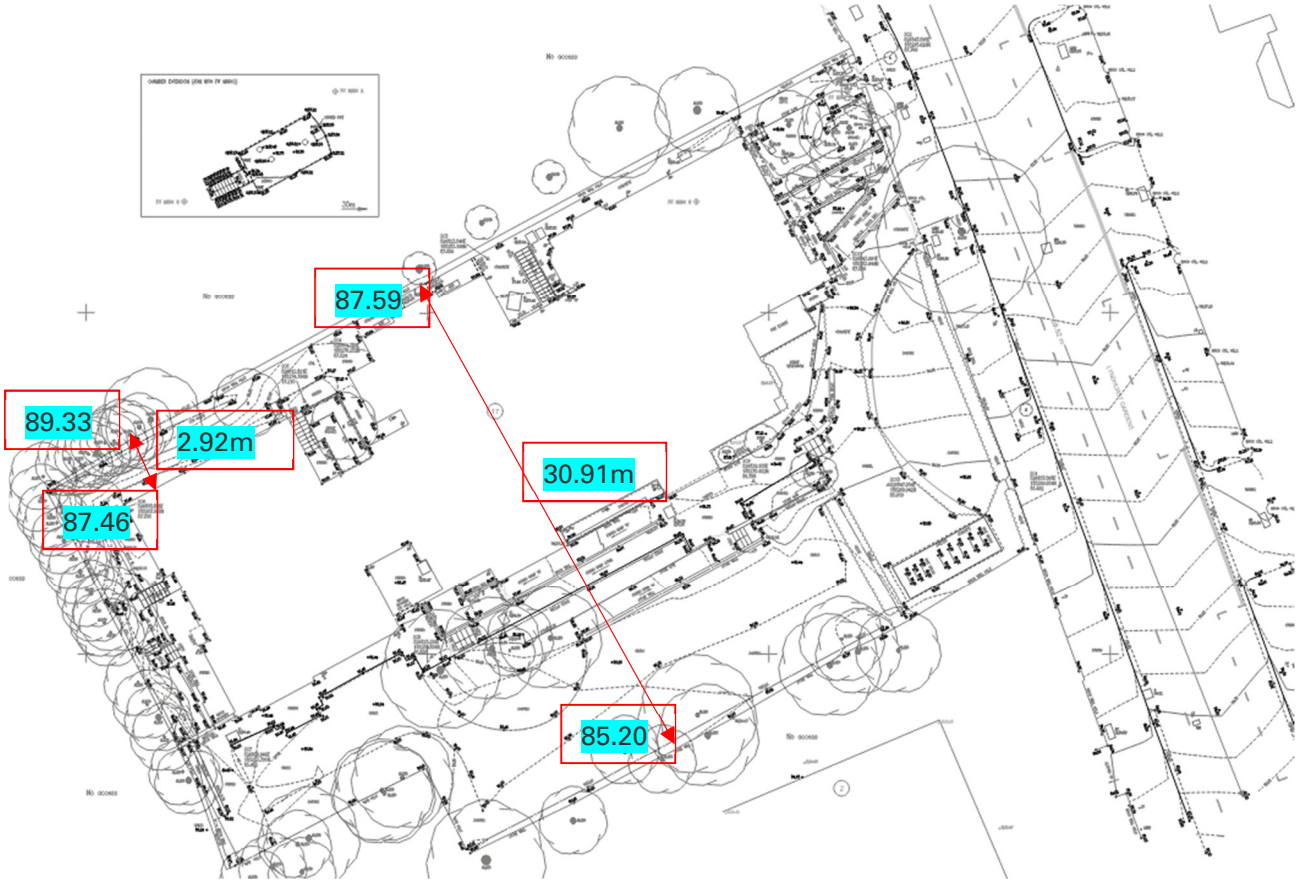

Figure 6: Topographical Survey indicating critical slope

Surface Flow and Flooding Screening

Q 1: Is the site within the catchment of the ponds on Hampstead Heath	No	
Q 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	
Q 3: Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No	The new basement will be built on an area that's mostly hardstanding. The landscape proposals will aim to offset any new hardstanding with removal of existing hardstanding.
Q 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	
Q 5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	
Q 6: Is the site in an area known to be at risk from Surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, 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	Refer to figure 7

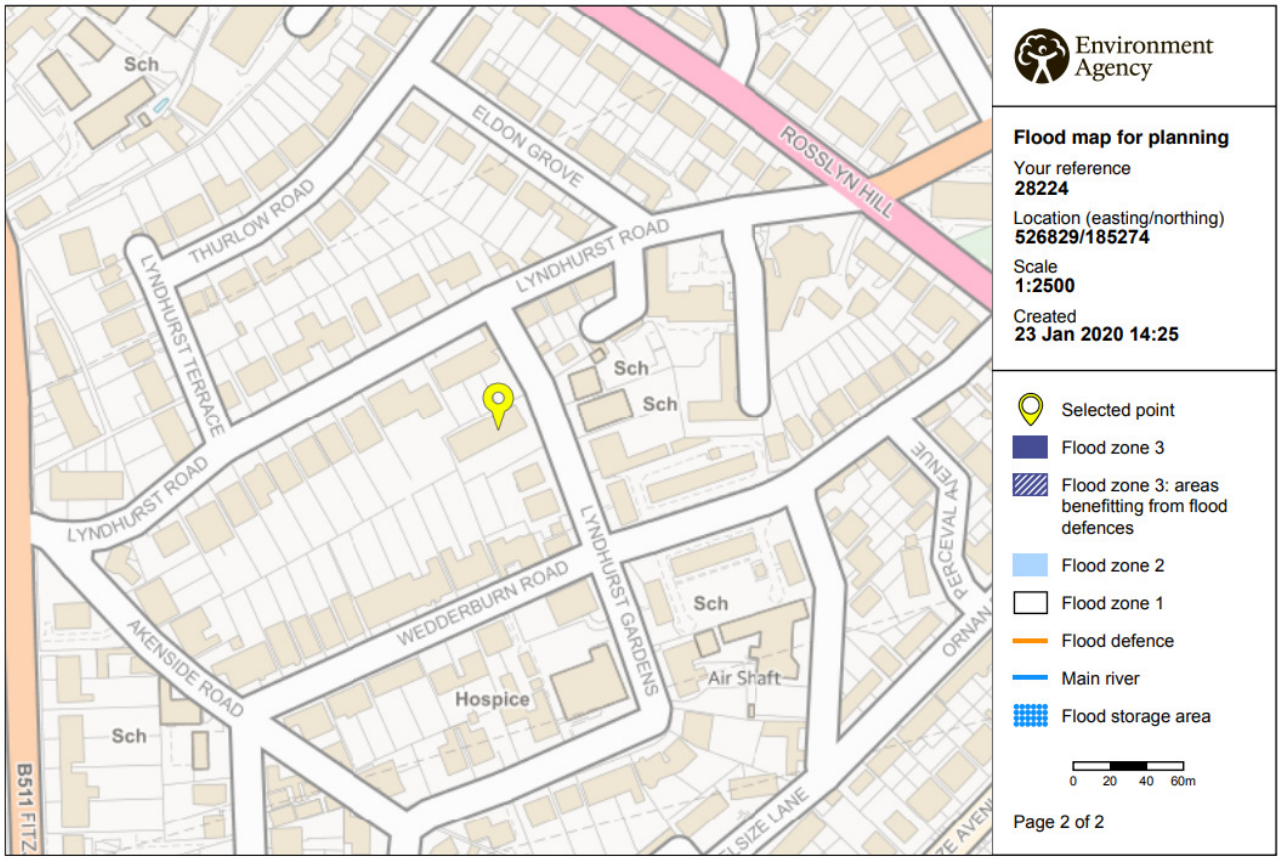

Figure 7: Environment Agency Floor Risk Map

4 Issues Brought Forward for Scoping and Further Study

Subterranean (Groundwater) Flow Screening

Q 1a: Is the site located directly above an aquifer? Yes

Impact Assessment
The site is located above the Upper aquifer, designated as Minor Aquifer with high vulnerability (see figure 2).

Figure 7 shows that the site is outside the flood risk zone identified by the Environment Agency.

The site in underlain by Claygate Member, which in turn is underlain by London Clay. The London Clay acts as a barrier to flow between the lower (Chalk) aquifer and superficial groundwater. Water infiltrating the London Clay will generally tend to flow vertically downwards at a very slow rate towards the lower aquifer (Chalk). The current policy, implemented by the Environment Agency, is to maintain water levels in the Chalk at about their present levels. Thus, the property is unlikely to be influenced directly by groundwater levels in the Chalk, even in the long-term. There are no known underground structures in the vicinity of the site that might indirectly induce local changes of water pressures in the London Clay, which could affect the development.

It is anticipated that the existing house is founded on Claygate Member above the London Clay and above the ground water table.

Review
A site specific geotechnical investigation will be undertaken to confirm the ground conditions however, given the anticipated depth of the water table and the nature of the soils at the site, water will tend to continue to flow underneath the formation level of the deeper lower ground floor without any restriction.

Q 5: As part of the 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)? Yes

Impact Assessment
The total area of roof of the existing building 570m2. The proposed area of basement will add 30m2 to this, which equates to an increase of approximately 5%.

Review
Sustainable urban drainage solution(s) will be utilised in the design to modify the existing drainage to accommodate this addition flow.

Slope Stability Screening

Q 1: Does the existing site include slopes, natural or manmade, greater than 7° ? (approximately 1 in 8). Yes

Impact Assessment
Based on measurements taken from the site survey conducted in May 2019 the general slope of the site from North to South does not exceed 1 in 8 however, the landscaped area between the North facing elevation of the Western end of the building and the Northern boundary slopes at a gradient of ~1 in 1.6.

Review
As part of the proposed works, a retaining wall will be constructed to create a walkway beside this part of the building (currently the ground is banked against the face of the building). The design of this wall will be such that the resultant gradient of the landscaped area behind will not exceed 1 in 8.

5 Conclusions

A BIA Screening exercise has been undertaken in accordance with Camden Planning Guidance – Basements and Lightwells (CPG4). This has shown that the issues to be brought forward for further study are minor in nature and can be addressed easily in the design:
the location of the site above an aquifer
a marginal increase in surface run-off due to new roof area
the existing slopes having a gradient exceeding 1 in 8.

Given that the proposed works constitute a relatively small extension to an existing lower ground floor and the creation of a narrow lightwell, rather than a full new basement, we believe that a full BIA is not required.