BASEMENT IMPACT ASSESSMENT (SCREENING & SCOPING)

27 MARESFIELD GARDENS CAMDEN

LBHGEO

LBH4626bia December 2020

Document Control

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FOREWORD-GUIDANCE NOTES

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The report may present an opinion based upon information received from third parties. However, no liability can be accepted for any inaccuracies or omissions in that information.

1. INTRODUCTION

1.1 BACKGROUND

It is proposed to extend the existing lower ground floor of 27 Maresfield Gardens rearwards into the garden. The garden is set at a higher level and will need to be excavated to permit the rear extension.

1.2 BRIEF

LBHGEO have been appointed to prepare a Basement Impact Assessment (BIA) in support of a forthcoming planning application to be submitted to the London Borough of Camden.

1.3 PLANNING POLICY

The 2017 Camden Local Plan Policy A5 Basements reads as follows:

"The Council will only permit basement development where it is demonstrated to its satisfaction that the proposal would not cause harm to:

a) neighbouring properties;
b) the structural, ground, or water conditions of the area;
c) the character and amenity of the area;
d) the architectural character of the building; and
e) the significance of heritage assets.
In determining proposals for basements and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability in the form of a Basement Impact Assessment and where appropriate, a Basement Construction Plan.

The siting, location, scale and design of basements must have minimal impact on, and be subordinate to, the host building and property. Basement development should:

f) not comprise of more than one storey;
g) not be built under an existing basement;
h) not exceed 50% of each garden within the property;
i) be less than 1.5 times the footprint of the host building in area;
j) extend into the garden no further than 50% of the depth of the host building measured from the principal rear elevation;
k) not extend into or underneath the garden further than 50% of the depth of the garden;
l) be set back from neighbouring property boundaries where it extends beyond the footprint of the host building; and
m) avoid the loss of garden space or trees of townscape or amenity value.

Exceptions to f. to k. above may be made on large comprehensively planned sites.

The Council will require applicants to demonstrate that proposals for basements:

n. do not harm neighbouring properties, including requiring the provision of a Basement Impact Assessment which shows that the scheme poses a risk of damage to neighbouring properties no higher than Burland Scale 1 'very slight';
o. avoid adversely affecting drainage and run-off or causing other damage to the water environment;
p. avoid cumulative impacts;
q. do not harm the amenity of neighbours;
r. provide satisfactory landscaping, including adequate soil depth;
s. do not harm the appearance or setting of the property or the established character of the surrounding area;
t. protect important archaeological remains; and
u. do not prejudice the ability of the garden to support trees where they are part of the character of the area.

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding.

We will generally require a Construction Management Plan for basement developments.

Given the complex nature of basement development, the Council encourages developers to offer security for expenses for basement development to adjoining neighbours."

The following policies in the Local Plan are also relevant to basement development and will be taken into account when assessing basement schemes:

- "Policy A2 Open space";
- "Policy A3 Biodiversity";
- "Policy D1 Design";
- "Policy D2 Heritage"; and
- "Policy CC3 Water and flooding".

In addition to the Local Plan Policy, in 2018 Camden published updated Camden Planning Guidance (CPG) on Basements and Lightwells. These documents do not carry the same weight as the main Camden Development Plan documents (including the above Policy A5) but they are important supporting documents and refer back to the 2010 Camden Geological, Hydrogeological and Hydrological "Arup" Study.

1.4 REPORT STRUCTURE

This report commences with a 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 that may be associated with the proposed development.

1.5 DOCUMENTS CONSULTED

Information contained in the following documents has been taken viewed during preparation of this report:

- 2020 October Existing Plans by 5D Architects
  Ref: 06.978.01, .02, .06, .09, .11

- 2020 October Proposed Plans by 5D Architects
  Ref: 06.978.03, .04, .05, .07, .08, .10, .12, .13

2. THE SITE

2.1 SITE LOCATION

The site is located on the western side of Maresfield Gardens in South Hampstead, approximately 200m to the northeast of the Finchley Road Station.

The site may be located approximately by postcode NW3 5SD or by National Grid Reference 526440, 184875.

LOCATION PLAN

2.2 TOPOGRAPHICAL SETTING

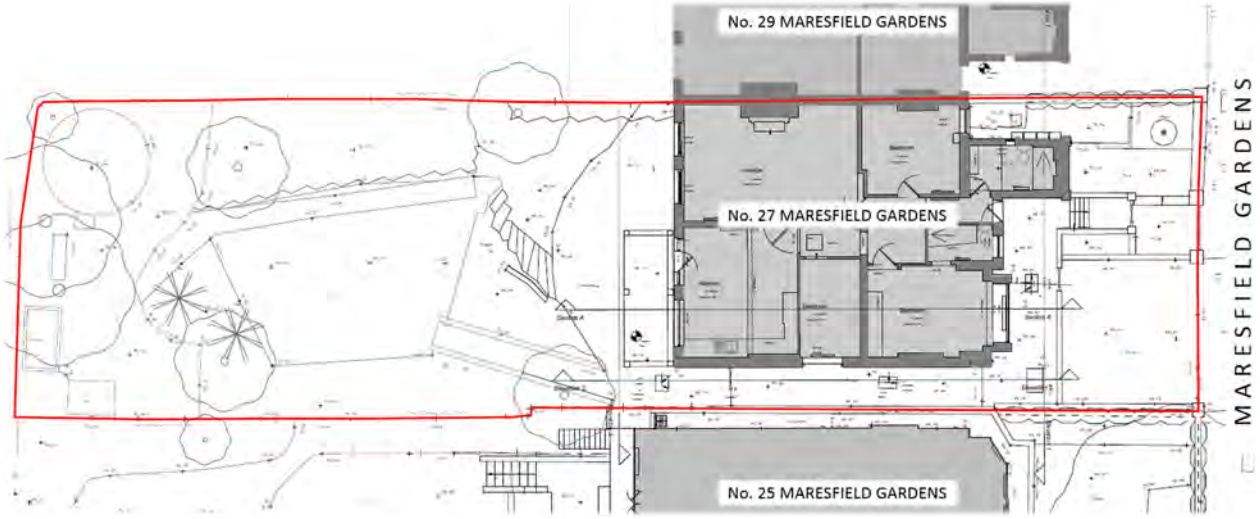
The site lies on the south western slopes of the Hampstead Hill, with headwaters of the River Westbourne and the River Tyburn emerging to the west and east of the site respectively.

EXTRACT FROM FIGURE 16 OF THE CGHHS

2.3 SITE DESCRIPTION

The site is occupied by a four storey semi-detached Victorian building, with an elevated ground floor level set at approximately +71.8m OD, some 2.5m higher than street level (Approx. +69.3m OD). The lower ground floor is set some 0.6m lower than street level at approx. +68.7m OD.

LOWER GROUND FLOOR LEVEL PATIO AT THE FRONT



EXISTING SITE PLAN

The ground floor is accessed from the street via a set of steps. A small front patio is set at the lower ground floor level and leads to a side passage between No. 27 and No. 25 Maresfield Gardens.

A larger patio is present to the rear, beyond which the garden slopes up across a rockery to a lawn area set approximately 1.5m higher than the lower ground floor (approx. +70.2m OD).

REAR ELEVATION

A rear balcony is present at ground floor level, supported by three brick columns.

SIDE ELEVATION (SOUTHERN)

The rear garden comprises a lawn bordered by bushes, shrubs and a variety of trees at the far rear.

VIEW OF THE REAR GARDEN FROM THE PATIO

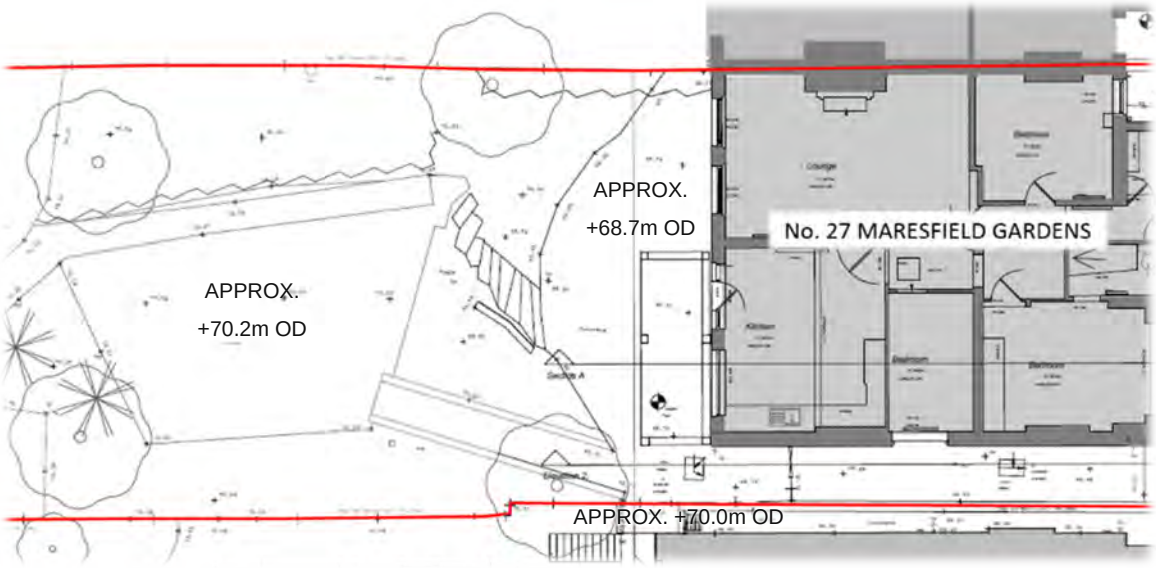
A crab apple tree is present approximately 5m from the rear elevation of the building close to the boundary with No. 29 Maresfield Gardens and an acer is present in a similar position close to the boundary with No. 25 Maresfield Gardens

The lower ground floor and rear patio of No. 29, the adjoined property, is set at a similar level to that of No. 27. A planning application was recently approved for a single storey lower ground floor extension at No. 29.

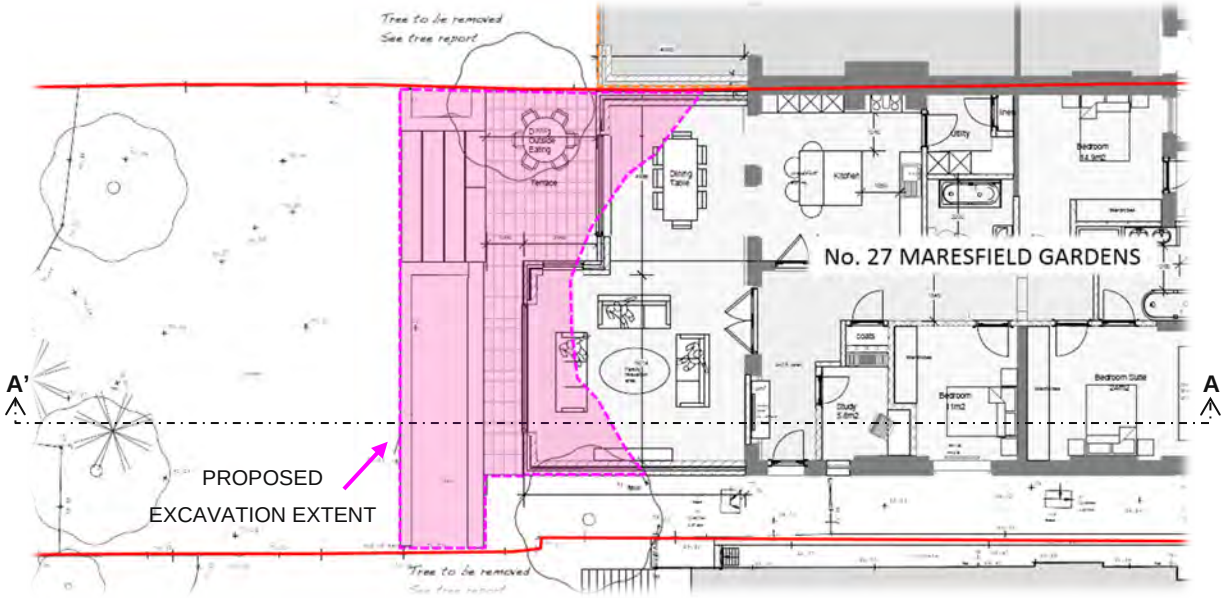
No. 25 Maresfield Gardens is a detached house to the south, separated by side passages to both properties. Although the lower ground floor of No. 25 is set approximately 0.3m lower than that of No. 27, the rear garden and side passage is set higher at approximately +70m OD, with a low retaining wall between the two. It is understood that planning permission for a rear lower ground floor extension, similar in scope to the proposals at No. 27 and No. 29, was recently also granted for No. 25.

2.4 PROPOSED DEVELOPMENT

It is proposed to extend the existing lower ground floor rearwards by up to 6m rearwards. A small rear patio is to be created at the same level, together with stepped access up to the rear garden.



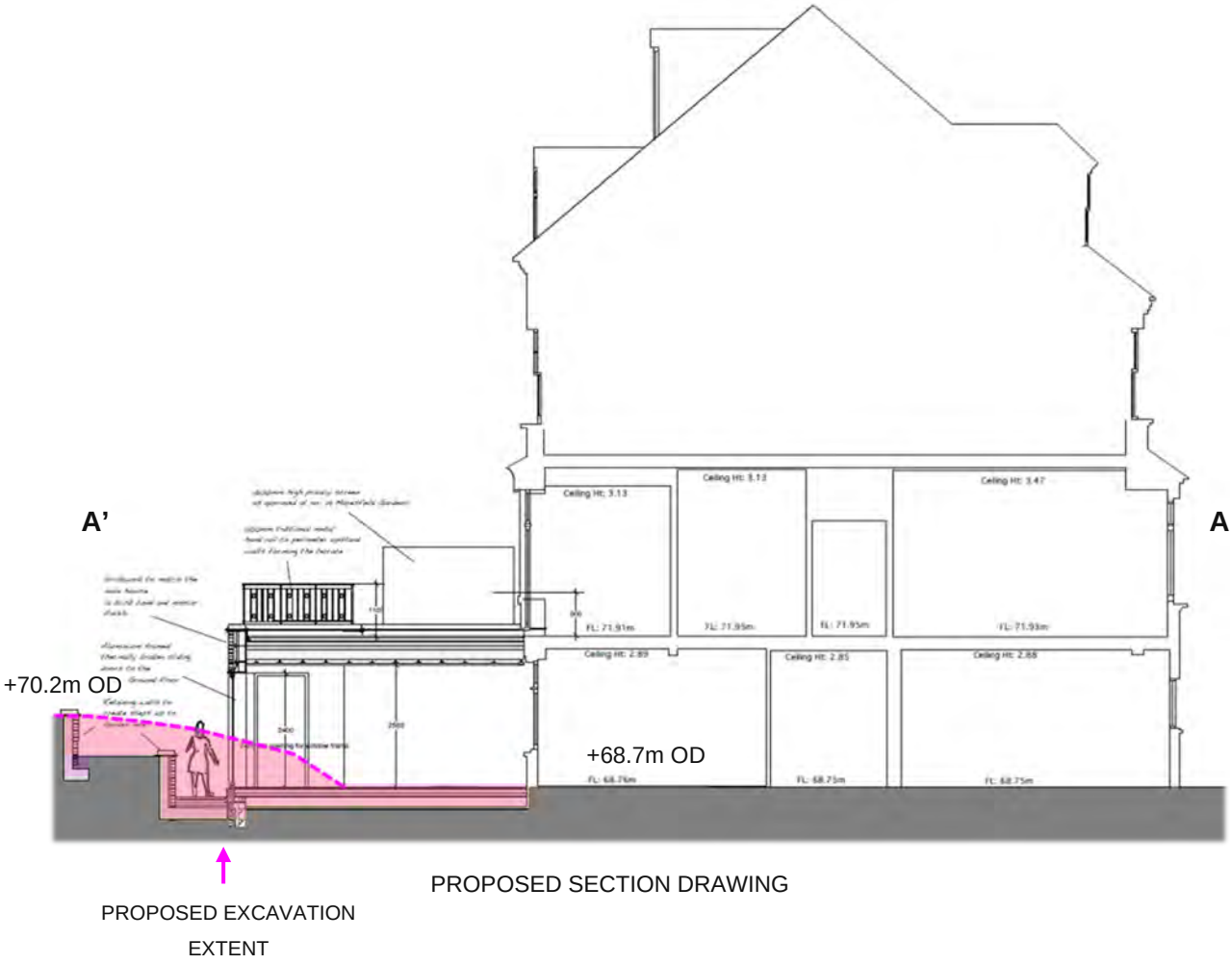
EXISITNG LOWER GROUND FLOOR AND GARDEN PLAN



PROPOSED DEVELOPMENT PLAN

The development will necessitate excavation of the rear garden; the remainder of which will be supported by 1.5m high retaining walls.

Minimal excavation of the existing lower ground level will be required in order to cast a floor slab to match the existing Finished Floor Level (FFL).



PROPOSED SECTION DRAWING

Approx. +68.7m OD

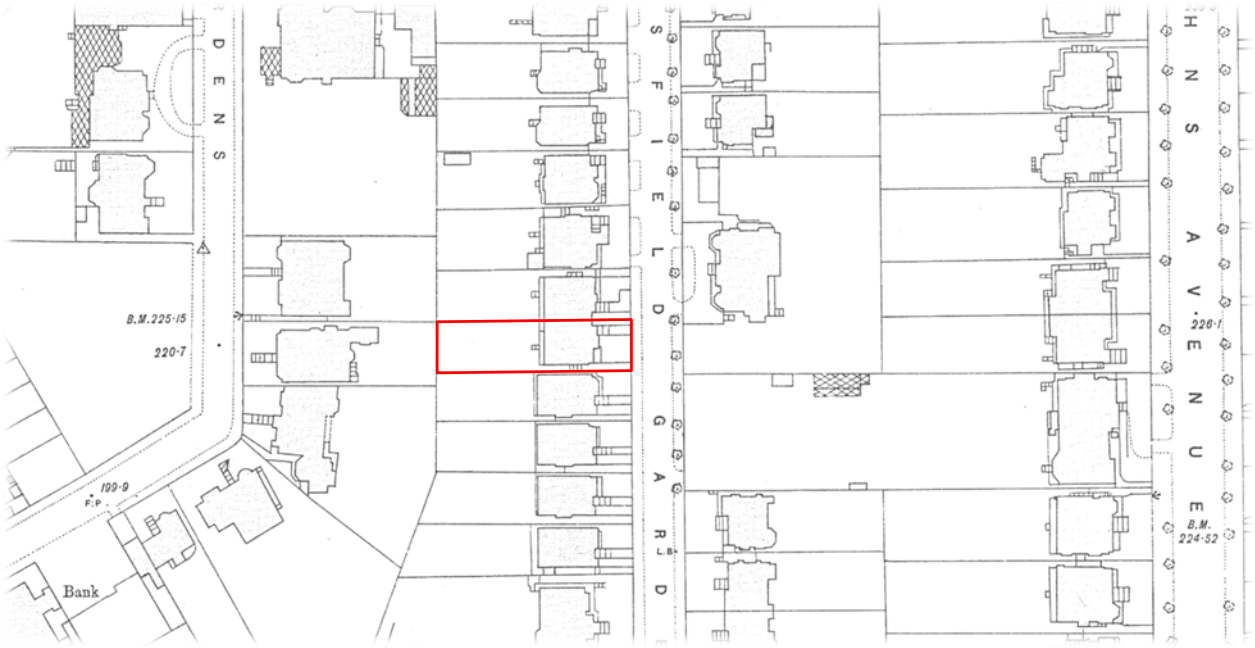
Approx.
+68.7m OD

PROPOSED REAR ELEVATION

3. DESK STUDY

3.1 SITE HISTORY

The area remained largely undeveloped until the late 19th Century when it experienced extensive residential development, including the establishment of Maresfield Gardens.



1893 - 1896

Aside from minor extensions, the properties along Maresfield Gardens have remained relatively unchanged.

A number of similar lower ground floor rear extensions are being constructed along Maresfield Gardens, including No. 29 and No. 31.

3.2 GEOLOGICAL INFORMATION

The British Geological Survey (BGS) records indicate that the site is directly underlain by the London Clay Formation.

EXTRACTS OF FIGURE 2 (LEFT) AND FIGURE 3 (RIGHT) OF THE CGHHS

3.3 HYDROGEOLOGICAL INFORMATION

Figure 2 of the CGHHS (above) indicates that a tributary of the River Tyburn runs approximately 200m to the east of the site.

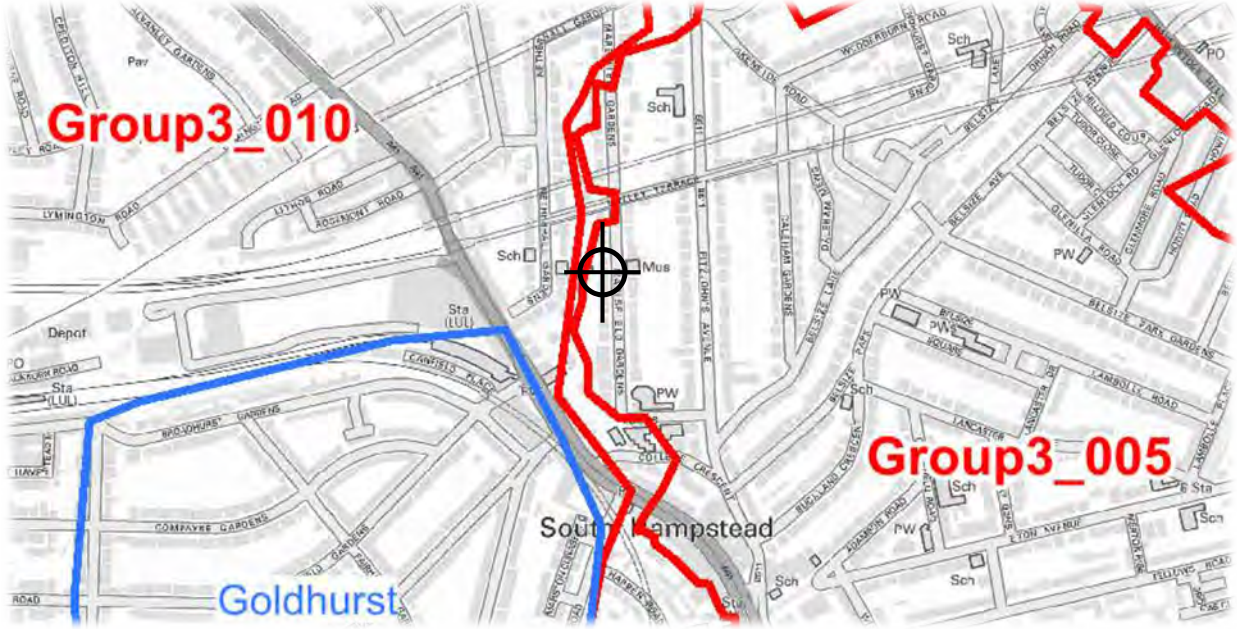
The London Clay formation is virtually impermeable; hence no significant groundwater presence is to be expected beneath this site.

3.4 HYDROLOGICAL INFORMATION

Environment Agency (EA) surface water flood maps suggest that parts of the site and the surrounding area are at a low risk of surface water flooding.

EXTRACT OF EA SURFACE WATER FLOOD RISK MAP

Figure 6 of the Camden SFRA indicates that the site lies within a Critical Drainage Area (Group 3_005), but outside of any Local Flood Risk Zone.



EXTRACT OF FIGURE 6 OF THE CAMDEN SFRA

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 full BIA is 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?	No	The site is underlain by the impermeable London Clay Formation.
Will the proposed basement extend beneath the water table surface?	No	
Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	The nearest watercourse is approximately 200m to the east of the site.
Is the site within the catchment of the pond chains on Hampstead Heath?	No	See CGHHS Fig.14.
Will the proposed development result in a change in the area of hard-surfaced/paved areas?	Yes	The proposed development will extend into the rear garden and thereby reduce the area of soft landscaping on site.
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	All surface water falling within the development will be attenuated and discharged as per the existing. Advice on the incorporation of SuDS at the development is provided by a separate Surface Water Drainage Assessment and Outline SuDS strategy prepared by LBHGEO.
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	See CGHHS Fig. 12, there are no nearby ponds.

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	See CGHHS Fig.14.
As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing route?	No	The existing drainage arrangement discharging to the public sewer will be maintained.
Will the proposed basement development result in a change in the proportion of hard-surfaced/paved areas?	Yes	The proposed development will extend into the rear garden and thereby reduce the area of soft landscaping on 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	The existing drainage arrangement discharging to the public sewer will be maintained.
Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	The existing drainage arrangement discharging to the public sewer will be maintained.
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 Long Term Flood Risk service indicates the area of No. 27 Maresfield Gardens is at a 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 is planned at the site.
Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees?	No	There are no slopes greater than 7 degrees within the neighbouring land.
Is the site within a wider hillside setting in which the general slope is greater than 7 degrees?	No	See Figure 16 of the CGHHS.
Is London Clay the shallowest strata at the site?	Yes	The site is directly underlain by the London Clay.
Will trees be felled as part of the proposed development and/or are works proposed within tree protection zones where trees are to be retained?	Yes	Two semi-mature trees are to be removed prior to the development, a crab apple and an ornamental acer
Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	No	
Is the site within 100m of a watercourse of a potential spring line?	No	The nearest watercourse is a tributary of the River Tyburn approximately 200m to the East of the site
Is the site within an area of previously worked ground?	No	See Fig. 3 of the CGHHS.
Is the site within an aquifer?	No	The Environment Agency (EA) maps indicate that the site is not underlain by an aquifer.
Will the proposed basement extend beneath the water table such that dewatering may be required during construction?	No	
Is the site within 50m of the Hampstead Heath ponds?	No	See CGHHS Fig.14.

Is the site within 5m of a highway or pedestrian right of way?	No	The proposed excavations will take place exclusively at the rear of the site, more than 20m away from the pavement of Maresfield Gardens.
Will the proposed basement significantly increase the differential depth of foundations relative to the neighbouring properties?	No	The adjacent No. 29 Maresfield Gardens is founded at the same level as No. 27 and no excavations below this level as proposed. The neighbouring No. 25 is founded approximately 0.3m lower than No. 27.
Is the site over (or within the exclusion zone of) tunnels, e.g. railway lines?	No	The Belsize Tunnels run underneath Nutley Terrace, approximately 95m to the North 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 other potential concerns considered within the screening process have been demonstrated to be not applicable or not significant when applied to the proposed development.

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 Screening assessment has identified a single issue to be carried forward to scoping, as follows:

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

The guidance advises that the sealing off of the ground surface by pavements and buildings to rainfall will result in decreased recharge to the underlying ground. In areas underlain by an aquifer, this 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. The guidance advises that a change in the in proportion of hard surfaced or paved areas of a property 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.

It is, however, expected, that the site is underlain by the impermeable London Clay Formation and therefore no significant groundwater flow will be present.

4.2.2 SCOPING FOR SURFACE WATER FLOW AND FLOODING

- *The proposed basement development will 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 a property 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.

The identified issue will be assessed separately as part of the Surface Water Drainage Assessment, which will provide an outline drainage strategy incorporating Sustainable Drainage Systems (SuDS) to manage the surface water run-off and discharge from the site.

4.2.3 SCOPING FOR STABILITY

- *London Clay is the shallowest strata at the site.*

The guidance advises that of the soil strata present in LB Camden, the London Clay is the most prone to seasonal shrink-swell (subsidence and heave).

- *Trees be felled as part of the proposed development.*

The guidance advises that the soil moisture deficit associated with felled tree will gradually recover. In high plasticity soils (such as London Clay) this will lead to gradual swelling of the ground until it reaches a new value. This may reduce the soil strength which could affect slope stability. Additionally the binding effect of the tree roots can have a beneficial effect on stability and the loss of a tree may cause loss of stability.

The impact of the removed trees on the underlying soils is to be assessed in terms of the depth of potentially affected / desiccated soils which may cause heave movement as moisture re-enters the soil. The depth of proposed foundations will need to be assessed in order to conform to the NHBC requirements.

5. CONCLUSION

The Screening and Scoping assessment of the site and the proposed development has concluded that a full Basement Impact Assessment (BIA) will be required in order to adequately assess the impact of the development on the neighbouring and host buildings for comparison with the LB Camden policy requirements.

A separate Surface Water Drainage Assessment will also be required to provide advice on the potential SuDS measures to be used at the site to reduce the surface water runoff in line with Camden policy.