

**BASEMENT IMPACT ASSESSMENT**  
**FOR**  
**61 BAYHAM PLACE**  
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**Issue Status**

Issue No.	Date of Issue	Details	Produced by	Checked by
1	01.10.14	INITIAL ISSUE	L.A. McDonald	L.A. McDonald
2	15/01/15	Issue 2	L.A. McDonald	L.A. McDonald
3	17/04/15	Issue 3	L.A. McDonald	S.J. Fleming

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## 1.0 **Brief**

As instructed by Modern City Estates Ellis and Moore Consulting Engineers Ltd have undertaken a Basement Impact Assessment (BIA) in accordance with the Guidelines prepared by Camden Council.

The wording in the Camden document is as follows:

*Subterranean development of the site would trigger the need for a Basement Impact Assessment (BIA) prepared in accordance with Camden CPG4 (Basement and Lightwells). The policy DP27 sets out that applications should demonstrate (by Methodologies appropriate to the site) that schemes comply with the criteria (A) to (H). The BIA should address the impact of the proposals in terms of the stability and water environment, using the screening flow chart set out in the CPG. In particular, structural stability of the existing building on the site would be of concern and so the issue of slope stability will require attention.*

This report follows the Camden Council requirements at the following Stages.

Stage 1	Screening
Stage 2	Scoping
Stage 3	Site Investigation and Study
Stage 4	Impact Assessment.

In preparing the report, the following Appendices have been relied on to provide information.

Appendix 1	Soils Investigation by Ground Engineering Ltd.
Appendix 2	Structural Scheme drawings prepared by Ellis and Moore for the basement
Appendix 3	Thames Water Sewer Records
Appendix 4	Camden Geological, Hydrogeological and Hydrological Maps.

This report has been prepared by Lachlan McDonald BSc MICE MStructE of Ellis and Moore Consulting Engineers Ltd. and endorsed by Steve Fleming C.Geol. FGS

## 2.0 **Stage 1 - Screening**

A Basement Impact Assessment has been requested for this development to determine if the proposed works will result in possible flooding in future either due to ground or surface water.

Currently there is a two storey terraced building on the site dating from Victorian times. The general profile of the land slopes down gently to the east

The flow charts Figures 1,2 and 3 in the Camden Planning Guidance document have been considered and it has been decided that a Basement Impact Assessment is necessary because of groundwater potential.

The following are the answers to the Flow Screening Chart Figure 1.

- 1A The site is not located above an aquifer as it is underlain by London Clay.
- 1B From the soils investigation the level of the basement floor will be similar to the water level found in the borehole as part of the site investigation.
2. The site is not within 100 metres of a water course.
3. The site is not within the catchment of the pond chains on Hampstead Heath.
4. The proposed basement development will occupy the same amount of hard surfaced areas as the current building. The building occupies the full area of the plot.
5. The proposed surface water run off will be the same as existing for the reason given in question 4 above.
6. This does not apply as the site is not near a local pond or spring line.

The following are the answers to the Flow Screening Chart Figure 2

1. The existing site is almost flat and does not include any slopes of 1 in 8
2. The proposed profiling of the landscape will not change current slope
3. The development is not close to a railway cutting or any slopes steeper than 1 in 8.
4. The site is not within a hillside setting
5. London Clay is the shallowest strata on the site below the made ground.
6. There are no trees on the site
7. There is a history of tree root subsidence in the area, but this building has not been affected in the past.
8. The site is not within 100 metres of the water course with potential spring line.
9. The site has been built on in the past and the records are included in the soils investigation.
10. The site is not within an aquifer. There is a possibility of finding ground water which is believed will be perched and localised pumping may be required during the construction
11. The site is not within 15 metres of the Hampstead Heath Ponds
12. The site is within 5 metres of the highway as there is a pavement immediately outside the front of the building.
13. The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.
14. The site is not over any tunnels either railway or underground.

The following are the answers to Flow Screening Chart Figure 3.

1. The site is not within the catchment area of the pond chains on Hampstead Heath.
2. The surface water drainage from the site will not increase as the existing building is retained and is the same area following the proposed alterations
3. The proposed development will not result in a change in the proportion of hard surfaced external areas.
4. The proposal is to collect the surface water using existing drainage and use main sewer in the road as existing.

5. The quality of the surface water will be similar to existing, namely from the existing roof.

### **Stage 2 – Scoping -**

This section deals with the points raised in Stage 1 which require further investigation.

as part of this Section answers have been given as part of the Flow Screening exercise as follows.

For this Stage, information has been sought from various sources including the Camden Geological, Hydrogeological and Hydrological maps together with the sewer records.

As the site is in Zone 1 it is proposed that a Flood Risk Assessment will not be undertaken as part of this exercise due to the limited size of the development. It is concluded that the site is not prone to flooding.

Referring to the map indicating water courses near the site it is to the west of the Fleet River which is culverted.

The geology of the area indicates that the site is underlain by made ground and London Clay of substantial thickness.

In Appendix 3, the Thames Water Sewer Records indicate that there is a combined sewer serving the property and a trunk storm sewer also close to the property.

As a result of the information obtained the above information it was concluded that an intrusive soils investigation in addition to a Desk Study was required to be included in this report.

### **Stage 3 – Site Investigation and Study**

A soils investigation has been undertaken by Ground Engineering Ltd. and is included in Appendix 1.

The survey can be summarised as follows. A single borehole and a single foundation inspection pit were undertaken. The borehole was drilled to 6.45 metres below existing ground level and the trial pit was used to expose the existing foundation to the building. Insitu testing was undertaken and a standpipe was installed to check the groundwater level. A subsequent visit was made to check the water level which was recorded at rose to 2.8 metres below existing ground level.

A desk study was undertaken as part of the soils investigation. The information is included in Stage 2 above as part of the Scoping. In this instance it is considered that sufficient soils investigation work was undertaken to conclude on the soil conditions as the development is limited in scope.

It is concluded given recent experience of projects in this area that the water found in the borehole is a perched water table near the surface. It will be investigated further at the commencement of the site works.

At this stage no further monitoring of the groundwater conditions is required due to the depth that was recorded in the soils investigation.

#### **Stage 4 – Impact Assessment**

From the information gathered in the previous Stages 1 to 3, it is considered that the most applicable structural solution would be to construct a series of L shaped retaining walls, underpinning the existing walls of the building. The details are indicated on the attached drawings 14946/Sch/01 and /03. Drawing /03 shows the depth of the made ground below existing ground level and the level of water that was found in the standpipe. The excavation will require adequate propping during the construction, which will involve the use of sacrificial steel sheets at the rear of the excavation to prevent damage to the adjacent properties. A detailed method statement will be prepared to accompany the working drawings.

It is likely that the ground slab and walls would be formed in waterproof concrete using one of the waterproofers either Caltite or Pudlo.

Due to the depth of the new basement it is likely that the foul water may have to be pumped up to the existing ground level and fed into an existing SVP which drains into an existing manhole. It will be necessary to undertake a CCTV survey of the existing drainage prior to the works commencing so that access can be achieved into the existing for the foul drainage.

It is concluded that the proposed drainage will adequately take care of any rainfall and runoff as it will be similar to the existing.

During the site works, it is likely that localised pumping of excavations may be required as a result of rainfall and the possible perched water table.

#### **Conclusions**

The following conclusions are drawn based on the investigative work undertaken to date:

- From the Soils Investigation it is concluded that this building will not impose any restrictions on the flow of ground water as the underside of the basement is approximately 400mm below the water level that was measured.
- As far as flooding is concerned, the existing drainage should be able to cope.
- Various flood maps have been consulted and they generally indicate that the site is in the area of low flood risk therefore no flood protection precautions are required for this development.
- As a result of the property being underpinned there is the possibility that as a result of the work there will be some minor cracking in the existing building as the underpinning settles in. This should be viewed as part of the works.
- Monitoring will be undertaken as follows with target points on the Party walls. Vertical movements of the party walls will be measured with the limits set as follows:

5mm green – OK  
10mm amber – review working methods  
15mm red – stop work.

Relative measurements will also be taken between points.

Given the properties of the clay and the information in the soils investigation settlements would be of the order of 15mm to 20mm taking into account theoretical heave. Past experience indicates that this would result in Category of Damage 2 which is crack widths of less than 5mm which can easily be filled. Using the working methods proposed it is considered that this is realistic in conjunction with the proposed monitoring.

Method statements will be required for both the underpinning and the proposed structural works to form the basement.

- o It was concluded that when the basement is completed there should be no residual issues affecting the property or the land surrounding the building. It will be aim of the contractor to undertake the work using the safest possible techniques given the type of structure that has been selected.
- o In summary it is concluded that this basement can be constructed successfully as long as the guidelines in this report are followed. It is likely that there will be no effect on the groundwater conditions below the site.

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