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Pierluigi Chinellato
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Dear Pier,

RE: 43 CHALK FARM ROAD, LONDON

INTRODUCTION

M74 Consulting Engineers Limited has been commissioned to carry out a Basement Impact Assessment of this site at the above address, in support of a planning application.

The existing 2-storey building is located on Chalk Farm Road, London. The property is a terraced block with a basement under. The ground floor is being used as a restaurant at ground and lower ground floor levels and residential at the first floor level.

The proposal is to extend to the rear at ground floor level with a flat roof and to lower the basement at the rear by approximately 350mm.

This report is specific to the proposed development and the advice herein should be reviewed once the development proposals have been finalised.

SCOPE OF PROPOSED WORKS

The work carried out comprises a Basement Impact Assessment which is in accordance to procedures specified in the London Borough of Camden Planning Guidance CPG41 and their Guidance for Subterranean Development 2 prepared by Arup.

The aim of the work is to assess if the proposed lowering of the basement will have a detrimental impact on the surroundings with respect to groundwater and land stability and in particular to assess whether the development will affect the stability of neighbouring

properties, local and regional hydrogeology and whether any identified impacts can be appropriately mitigated by the design of the development.

QUALIFICATIONS

This assessment has been carried out by Thana Sanjeevan, a BEng in Civil Engineering, a chartered engineer (CEng), member of the Institution of structural Engineers (MIStructE), who has over 20 years specialist experience in structural engineering.

LIMITATIONS

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside the stated scope of the research. Any comments made on the basis of information obtained from third parties are given in good faith on the assumption that the information is accurate.

GROUND CONDITIONS

Soil Conditions: 3 No. Trial pits were carried out at the existing basement and the existing foundations to the adjoining properties were exposed. The investigation reveals that the existing foundations r at least 670mm below the existing basement floor level. A report was obtained from a nearby site and based on that report and a desk top study of the area indicates that, site should be underlain by made ground to approximately 1.3m, overlying the a firm becoming stiff red brown Clay below 1.3m. The geology in this area is generally horizontally bedded such that the boundary between the geological formations roughly follows the ground surface contour lines. Since there is a basement present already on site, the ground conditions below the existing basement level is assumed to firm to stiff Clay.

Groundwater Conditions: The London Clay Formation is classified as unproductive strata with soils that have a low permeability and negligible significance to local water supply, as defined by the EA. Ground water strike was encountered at 2.5m at the nearby site.

The site is not within an area at risk from flooding as defined by the EA.

Due to the predominantly cohesive nature of the soils, the groundwater flow rate is anticipated to be very slow. Published data for the permeability of the London Clay indicates the horizontal permeability to generally range between 1 x 10-10 m/s and 1 x 10-8 m/s, with an even lower vertical permeability. Vertical permeability within the Claygate is also likely to be slow in view of the presence of layers of clay, but horizontal permeability is likely to be one or two orders of magnitude higher. The Bagshot Formation is likely to have a permeability of about 1 x 10-5 m/s to 1 x 10-6 m/s

SCREENING

The LBC guidance suggests that any development proposal that includes a subterranean basement should be screened to determine whether or not a full BIA is required.

Screening Assessment: A number of screening tools are included in the Arup document and for the purposes of this report reference has been made to Appendix E which includes a series of questions within a screening flowchart for three categories; groundwater flow; land stability; and surface water flow. Responses to the questions are tabulated below.

Subterranean (groundwater) Screening Assessment

1a. Is the site located directly above an aquifer? - ***No***

1b. Will the proposed basement extend beneath the water table surface? - ***Probably not, but will need to be confirmed by ground investigation / trial pit investigation.***

2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line? - ***No known spring or well within 100 m of the site***

3. Is the site within the catchment of the pond chains? - ***No***

4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas? - ***No***

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)? - ***It is assumed that additional surface water will be discharged to existing surface water sewers, however this is not known (outside scope of this report)***

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 or spring line? - ***No***

Stability Screening Assessment

1. Does the existing site include slopes, natural or manmade, greater than 7°? - ***No***

2. Does the neighbour land, with a slope greater than 7°? - ***No***

3. Is the site within a wider hillside setting in which the general slope is greater than 7°? - ***No***

4. Is the London Clay the shallowest strata at the site? – ***Yes***

5. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained? - ***No***

6. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site? - ***No***

7. Is the site within 100 m of a watercourse or potential spring line? - ***No***

8. Is the site within an aquifer? - ***No***

9. Is the site within 5 m of a highway or pedestrian right of way? - ***Yes, the site is adjacent to Chalk Farm Road***

10. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties***?*** - ***No.***

11. Is the site over (or within the exclusion zone of) any tunnels, eg railway lines? - ***No***

Surface Flow and Flooding Screening Assessment:

This element of the BIA is provided for guidance only and should be confirmed by a suitably qualified engineer experienced in carrying out surface water assessments.

1. Is the site within the catchment of the pond chains on Hampstead Heath? - ***No***

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***

3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas? – ***No***

4. Will the proposed basement development 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***

5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses? - ***No***

6. Is the site in an area known to be at risk from surface water flooding or is it at risk of flooding because the proposed basement is below the static water level of a nearby surface water feature? - ***No***

POTENTIAL IMPACTS

The following potential impacts have been identified.

Potential Impact: The existing site includes slopes, natural or manmade, greater than 7°
Possible Consequence: Local slope instability within the site
Applicable for the site: No

Potential Impact: The site within 100 m of a watercourse, well (used/ disused) or potential spring line
Possible Consequence: The flow from a spring, well or watercourse may increase or decrease if the groundwater flow regime is affected by a proposed basement. If the flow is diverted, it may result in the groundwater flow finding another location to issue from with new springs forming or old springs being reactivated. A secondary impact is on the quality of the water.
Applicable for the site: No

Potential Impact: The site is within a wider hillside setting in which the general slope is greater than 7°?
Possible Consequence: Ground instability
Applicable for the site: No

Potential Impact: Tree/s to be felled as part of the proposed development and/or works proposed within any tree protection zones where trees are to be retained?
Possible Consequence: The removal of trees may cause the recovery of the soil moisture deficit of clay, which may lead to swelling of the clay. Existing root systems may be adding stability to the existing slope and the removal of trees may induce instability.
Applicable for the site: No

Potential Impact: The site is within an aquifer
Possible Consequence: Dewatering can cause ground settlement. The zone of settlement will extend for the dewatering zone, and thus could extend beyond a site boundary and affect neighbouring structures. Conversely, an increase in water levels can have a detrimental effect on stability.
Applicable for the site: No

Potential Impact: Site within 5 m of a highway or pedestrian right of way
Possible Consequence: Excavation of a basement may result in structural damage to the road or footway; however work for the proposed basement at this site will take place at a distance of greater than 5 m from adjacent public highways.
Applicable for the site: Yes, however lowering of the existing basement is at the rear of the property and approximately 12m away from work area.

Potential Impact: Proposed basement development may result in a change in the proportion of hard surface / paved external areas
Possible Consequence: A change in the proportion of hard surfaced or paved areas of a property will affect the way in which rainfall and water are transmitted away from the 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 may additionally increase the risk of flooding.
Applicable for the site: No

Potential Impact: Site located directly above an aquifer
Possible Consequence: Potentially the basement may extend into the underlying aquifer and thus affect the groundwater flow regime
Applicable for the site: No

BASEMENT IMPACT ASSESSMENT

The screening identified a number of potential impacts. The desk study and ground investigation information has been used below to review the potential impacts, to assess the likelihood of them occurring and the scope for reasonable engineering mitigation. The table below summarises the previously identified potential impacts and the additional information that is now available from the site investigation in consideration of each impact.

Potential Impact: The site is underlain by an aquifer
Conclusions: It is believed that the site is not underlain by an aquifers

Potential Impact: Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?
Conclusions: The desk study indicated that the site is not within 100 m of a water course or known well. Hence that the water levels are such that they will not be affected by the proposed basement.

Potential Impact: The development will reduce grassed areas and increase paved areas
Conclusions: It is understood that additional surface water will be discharged to existing sewers, which if necessary should be increased to cope with the extra capacity. Some grassed areas will still be in existence therefore flow to aquifers will remain.

Potential Impact: Slopes greater than 7°
Conclusions: No

Potential Impact: Felling of trees
Conclusions: No trees are to be felled

Potential Impact: Location of public highway
Conclusions: The basement will be located within the site, at approximately 12 m from the closest highway; therefore this is not considered to represent a risk.

Site is underlain by an aquifer

The site is not underlain an aquifer.

Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?

The basement will not interrupt any flow of groundwater as the groundwater level is lower than the proposed basement, furthermore the amount of groundwater within the aquifer should not rise as some soft landscaping areas will be removed.

Slopes within and adjacent to the site greater than 7°

The ground level is no greater than 7°slope, hence no significant effect.

Location of public highway

The basement excavation will be approximately 12 m from the nearest public highway, such that the construction of the basement will not have a detrimental effect on the stability of adjacent highways.

Felling of trees

There are no trees to be felled.

CONCLUSIONS

Whilst located on the very periphery of the London Borough of Camden, a Basement Impact Assessment has been carried out following the information and guidance published by the London Borough of Camden. Information from available reports has been used to assess potential impacts identified by the screening process. It is concluded that the proposed development is unlikely to result in any specific issues relating to land or slope stability, the hydrogeology and hydrology of the site. Suitable construction methods will ensure slope stability at the site and there should not be any negative impact on the groundwater.

Yours Sincerely,

Thana Sanjeevan BEng (Hons) CEng MIStructE

Trial Pit Information