SC Structures Ltd

14D Avenue Road, London NW8 6BP

For

Metropolitan Basements

Basement Impact Assessment

Ref: 0018-BIA001 B

Date: November 2016

Revision B, February 2018 – Updated to revised architectural drawings

Revision A, January 2017 – Updated to revised architectural drawings

Contents

1.0 NON TECHNICAL SUMMARY

1.1 Development Description and Proposal

14D Avenue Road is a three storey end of terrace property accessed directly off of Avenue Road via a shared private driveway used by seven other terraced houses. The eight terraced houses, arranged in two rows of four, also share an area of partial underground parking with garages. The owner of the property seeks to create a new single storey basement structure beneath the footprint of the existing building to create additional recreational space.

1.2 Desk Study Summary

Historical maps from 1873 show the site to be occupied by a single dwelling and the site looks to be relatively unaltered until 1968 when some development took place in the rear garden to form Guinness Court accessed from St Edmunds Terrace. Maps from 1973 show the terraced rows forming 14A to 14D and 14E to 14G Avenue Road and these look to have remained relatively unchanged up to present day. The British Geological Survey (BGS) maps and borehole records indicate the site to be underlain by a layer of near surface permeable Gravels over impermeable London Clay.
There are no significant trees or known watercourses in the immediate vicinity of the site.
One of the other terraced houses, 14F Avenue Road, has been granted Planning Permission for a basement larger in size than that proposed at 14D.

1.3 Ground Investigation Summary

A site specific intrusive geotechnical investigation has been undertaken and confirms the presence of the permeable Gravels overlying London Clay. These findings are summarised in a site specific geotechnical survey report prepared by Fastrak Ltd which discusses hydrogeology, hydrology and offers guidance on foundation design.

1.4 Conclusion

Utilising good workmanship and following established construction techniques should allow the basement to be constructed with estimated damage to adjoining buildings being classified as ‘slight’ in line with CIRIA C580 and with the Burland scale, and without significant impact on existing local groundwater flows. The property has been assessed as being at very low risk from surface water flooding and the formation of the basement is not expected to change this classification for 14D Avenue Road or the surrounding properties.

2.0 INTRODUCTION

2.1 Proposed Development

The proposed development includes the formation of a new single storey basement structure beneath the footprint of the existing building; some minor internal alterations to accommodate the construction of new stairs etc. will be required.

2.2 Site Description

The site is situated at the northeast side of Avenue Road (Grid reference TQ273835). It is a three storey end of terrace property with partial basement parking to the front and a small paved garden to the rear of the property which backs directly on to Avenue Road. Access to the front of the property is via a driveway off of Avenue Road which leads to the partial basement parking area. The front of the property is fully paved.

2.3 Qualifications

This assessment has been prepared with input from the following professionals:
Martin Rush MSc FGS (Fellow of the Geological Society of London)
Steve Catton BEng (Civil) (Hons) CEng MIStructE (Chartered Engineer registered with the Engineering Council UK)

3.0 GROUND CONDITIONS

3.1 Soil Conditions

Reference to the 1:50,000 scale geological map of the area (256, North London) shows the site to be underlain by London Clay Formation - Clay, Silt and Sand. This sedimentary bedrock was formed approximately 34 to 56 million years ago in the Palaeogene Period. The rocks were formed in deep seas from infrequent slurries of shallow water sediments which were then re-deposited as graded beds.

This is confirmed by a borehole drilled at the site showing a band of granular materials above the underlying London Clay Formation described as Clay, Silt and Sand.

3.2 Groundwater Conditions

The borehole on site was taken to a maximum depth of 5.00m and no groundwater was noted. The groundwater table is therefore assumed to be located at a depth greater than 5.00m. The site is located within Inner zone (Zone 1) groundwater source protection zone as defined within the Environment Agency website**.**

4.0 SCREENING

4.1 Screening Assessment

4.1.1 Subterranean (ground water) flow screening

Question	Response for 14D The Avenue, London, NW8 6BP
Question 1a: Is the site located directly above an aquifer	No. The geological map of the area (256, North London) shows the site to be underlain by London Clay Formation - Clay, Silt and Sand.
Question 1b: Will the proposed basement extend beneath the water table surface	No. The basement level will not extend beneath 5 metres; boreholes taken to 5 metres did not encounter any ground water.
Question 2: Is the site within 100m of a watercourse, well (used/disused) or potential spring line	No. There are no watercourses within 100m of the property.
Question 3: Is the site within the catchment of the pond chains on Hampstead Heath	No. The site is over 2km from these features
Question 4: Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas	No. The current rear garden of 14D is entirely hard surfaced.
Question 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. There will be no change to the current arrangement.
Question 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 Hamstead Heath) or spring line	No. There are no natural ponds or spring lines within 100m of the site.

4.1.2 Slope stability screening flowchart

Question	Response for 14D The Avenue, London, NW8 6BP
Question 1: Does the existing site include slopes, natural or manmade, greater than 7°? (approximately 1 in 8)	No. There is no significant change in level across the site.
Question 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. There will be no change to the slopes at the property boundary.
Question 3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°? (approximately 1 in 8)	No. Development does not neighbour land with a slope greater than 7°. There are no railway cuttings etc. within 100m of the site.
Question 4: Is the site within a wider hillside setting in which the general slope is greater than 7°? (approximately 1 in 8)	No. The site is not considered to be a hillside setting. There is a gradual slope southwest to Primrose Hill and south towards the river Thames, however these remain less than 7°.
Question 5: Is the London Clay the shallowest strata at the site?	No. Borehole testing carried out at the site confirmed the shallowest strata to be a layer of Superficial Head Deposits overlying the London Clay. This is backed up by data from geological map of the area (256, North London).
Question 6: Will any tree/s 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. There are no significant trees within the immediate vicinity of the site.
Question 7: Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	No. Although Superficial head and London clay formation are both prone to shrinking and swelling.
Question 8: Is the site within 100m of a watercourse or a potential spring line?	No. There are no watercourses within 100m of the property
Question 9: Is the site within an area of previously worked ground?	No. Historical maps show residential use of the site and borehole testing revealed undisturbed clay beneath the rear garden.
Question 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. The geological map of the area (256, North London) shows the site to be underlain by London Clay Formation - Clay, Silt and Sand.
Question 11: Is the site within 50m of the Hampstead Heath ponds?	No. The site is over 2km from these features
Question 12: Is the site within 5m of a highway or a public right of way?	**Yes. The site is within 5m of Avenue Road, however the proposed basement is approximately 10.45m from the boundary with Avenue Road.**
Question 13: Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	**Yes. The proposed basement will increase the differential depth of foundations to neighbouring properties.**

Question 14: Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No. The nearest tunnels are some 650m away.

4.1.3 Surface flow and flooding screening chart

Question	Response for 14D The Avenue, London, NW8 6BP
Question 1: Is the site within the catchment of the pond chains of Hamstead Heath?	No. The site is over 2km from these features
Question 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. On completion site drainage and surface water flows will be routed similarly to existing route.
Question 3: Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	No. The current rear garden of 14D is entirely hard surfaced.
Question 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. The extent of hard paved areas to the rear garden will not be increased during the proposed works and will therefore not impact upon the inflows of surface water being received by adjacent properties.
Question 5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No. Water will be routed similarly to the current arrangement so no change to surface water being received by adjacent properties or downstream watercourses is anticipated.

Question 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 strategic water level of nearby surface water feature?	**Yes. According to the EA and Camden Council the local area is identified as being at risk from surface flood water.**

4.2 Non-Technical Summary of Screening

The majority of questions answered during the screening process were answered 'No', and justifications for these answers are given next to each question. Only the three following questions were answered 'Yes':

Slope stability screening flowchart – Question 12

Slope stability screening flowchart – Question 13

Surface flow and flooding screening chart – Question 6

5.0 SCOPING

5.1 Potential Impacts

The following three questions were answered 'Yes' during the screening process and these require some further assessment and/or investigation.

Slope stability screening flowchart – Question 12

The rear garden shares a boundary with the pedestrian footpath along Avenue Road, the proposed basement is set back approx. 10.45m from the boundary and may have the potential to impact upon this infrastructure.

Action: The buildability and potential to impact on the footpath should be considered in a project specific Basement Construction Methodology report.

Slope stability screening flowchart – Question 13

The formation of the basement will result in an increase in differential depth relative to the foundations of the adjoining terraced house 14C Avenue Road.

Action: The buildability and potential to impact on the adjoining property should be considered in a project specific Basement Construction Methodology report and should include reference to estimated damage criteria listed in CIRIA C580 and the Burland Scale.

Surface flow and flooding screening chart – Question 6

The site has been highlighted as being at risk from surface water flooding.

Action: Prepare project specific Flood Risk Assessment report to evaluate the risk.

5.2 Non-Technical Summary of Scoping

For the three items carried forward from the screening process the following Actions have been identified:

- The buildability and potential impact of the proposed basement on adjoining buildings and infrastructure should be considered in a project specific Basement Construction Methodology report and should include reference to estimated damage criteria listed in CIRIA C580 and the Burland Scale.

- Prepare project specific Flood Risk Assessment report to evaluate the risk.

6.0 BASEMENT IMPACT ASSESSMENT

6.1 Conclusions from Investigations into Potential Impacts

A Basement Construction Methodology report ref 0018-BCMS001 B has been produced to assess the construction sequencing and buildability of the proposed basement along with the severity of estimated damage that is likely to occur by predicting crack widths based on CIRIA report C580 and the Burland Scale. The degree of damage has been estimated as category 2 or 'slight' damage which is described as being easily repairable during redecoration.

A Flood Risk Assessment report ref 0018-FRA001 B has been produced to assess the likelihood of the site being affected due to surface water flooding. The report concludes that the risk of flooding of the proposed development, including the basement from rivers, surface water, seas, groundwater and reservoirs is considered to be very low. No evidence of historical surface water flooding were identified as having occurred at the property and the report makes recommendations to how the development could further reduce the risk of flooding.

6.2 Non-Technical Summary of Basement Impact Assessment

Utilising good workmanship and following established construction techniques should allow the basement to be constructed with estimated damage to adjoining buildings being classified as 'slight' in line with CIRIA C580 and with the Burland scale. The property has been assessed as being at very low risk from surface water flooding and the formation of the basement is not expected to change this classification for 14D Avenue Road or the surrounding properties.

APPENDICES

Site in relation to Hampstead Heath Ponds