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Basement Impact Assessment

79 Redington Road, London
Job No. 811365

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Status:	Preliminary

Approved for Issue by:

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1.0 INTRODUCTION

1.1 This report is for the private and confidential use of Tarn & Tarn, for whom the report is undertaken and may not be used in whole or part by any third parties for any use without the express authority of Ingleton Wood LLP (IW).

1.2 We were instructed by Tarn & Tarn to undertake the structural design of a refurbishment of their apartment at 79 Redington Road, London.

1.3 This report comprises a Basement Impact Assessment in accordance with Camden Council's planning guidelines.

1.4 The original site investigation, which was undertaken around 14th September 2017 was produced by Lister Geotechnical Ltd. The author of the report was Amanda David BSc MSc FGS and was checked by David Webster BSc MSc DIC FGS CGeol.

1.5 An Addendum Report for the site investigation was produced on 4th March 2018 following a period of monitoring of ground water and ground gas located within two standpipes at the front and rear of the property. This report was written by Amanda David BSc MSc FGS and reviewed by Dr Mark Cowley BSc MSc PhD MCSM FGS CGeol CSci.

1.6 The structural engineer responsible for the production of this Basement Impact Assessment and the overall design of the works is Andrew Wright BEng(Hons) CEng MICE MIStructE.

1.7 The civil engineer responsible for the production of the Flood Risk Assessment is Jonathon Soar Meng CEng MICE.

1.8 This report refers to the works to the basement only. There are load transfer works to upper storeys of the building, which can only take place once the basement works have been undertaken. These have not been discussed in detail as they are outside the scope of the Basement Impact Assessment and, in any event, will be subject to a Party Wall Award also Building Regulation Approval.

2.0 BUILDING DESCRIPTION

2.1 The site lies in a predominantly residential area and is currently occupied by half of a large residential house, 79 Redington Road, currently split into four separate dwellings.

2.2 The site itself extends to approximately 10m by 60m in area (including the external garden areas) and consists of the southwestern dwelling of the existing building.

2.3 The general topography of the area slopes down towards the south, however the site itself is generally flat lying, excluding the gradient down to the exposed basement, considered to be a man-made cutting.

2.4 The site fronts along Redington Road to the east and is bordered by residential houses to the north, south and west. The site area itself consists of a ground floor

level with a rear conservatory extension. The basement is located approximately 2.2m below garden level, and consists of a living area, bathroom, hallway and garage.

2.5 The basement is not retaining at the southern end, where there is a sloping driveway. Access to the basement is gained in this area via a standard door and double garage doors. To the northern end of the existing basement, a spiral staircase allows for access into the existing conservatory, and ground floor level.

2.6 Access to the rear of the property is gained via steps along the southern side of the site.

2.7 There are no other basements or voids close to the building that will be affected by the proposed works.

3.0 PROPOSED WORKS

3.1 It is proposed to extend the existing basement downwards vertically by approximately 1.0m only. This extension will generally be located under the existing footprint of Flat A of the property. The exception to this is a small lightwell at the front of the building and some lateral extension to the rear of the building to suit the new building footprint at ground floor level. These works are detailed on XUL Architecture LTD's (XUL) drawings.

3.2 A geotechnical investigation has been undertaken by Listers Geotechnical Ltd, please to refer to Appendix E and F. In summary this has identified the following:

3.3 The investigation has determined that the underline strata for the site comprises Topsoil on Made Ground to a depth of around 0.95m to 1.31m below ground level overlying the Bagshot Formation to depth of around 7.5m and 8.5m. This overlies the Claygate Member to the base of the boreholes at 12.0m below ground level.

3.4 The results of the laboratory testing identified that the Bagshot Formation as a medium volume change potential as defined by NHBC Building Standards, chapter 4.2.

3.5 During the first site investigation, ground water was encountered as standing level in both of the Boreholes during the field work and within one of the Boreholes during long term monitoring, which is approximately 3.5m below the existing basement level.

3.6 Owing to the increase of depth of the basement by 1.0m only, the water table under the proposed scheme will be approximately 2.0 m below the new basement level and therefore dewatering will not be required.

3.7 Although the ground has been considered to be of medium volume change potential, suitable protection measures will be provided to drains and mains services. A proprietary compressible layer such as Clay Master will be placed along the sides of the foundation excavations in order to accommodate heave forces in the ground adjacent to trees or vegetation.

3.8 The Bagshot Formation is considered suitable as a bearing strata, providing an allowable bearing pressure of 125 kN/m².

3.9 The Bagshot Formation is considered to be a suitable bearing strata for basement raft foundations at the proposed depth. Assuming the basement load does not exceed 60 kN/m² then no settlement should occur as imposed raft loading would equate to pre-excavation in situ stress.

4.0 GROUND WATER AND GROUND GAS

4.1 Ground water was consistent throughout the period of monitoring.

4.2 Monitoring took place in September and October 2017 and then again in February and March on a weekly basis over a period of four weeks.

4.3 The water identified in borehole 1 was at approximately 3.93m below ground level (103.52 mAOD) falling to around 3.7m below ground level (103.75 mAOD) during the February and March monitoring.

4.4 Borehole 2 followed the same pattern and was consistently around 103.65 mAOD or around 6.0m below ground level.

4.5 The ground water levels were observed to be at least 2.0m below the proposed basement level as witnessed by the monitoring undertaken during the wettest parts of the year.

4.6 Therefore, hydrostatic pressures due to natural ground water levels are not anticipated to be present during or following construction.

4.7 Gas monitoring was undertaken twice over a four week period during September and October and four times over a six week period during February and March.

4.8 Listers have undertaken a Ground Gas Risk Assessment in accordance with BS8485:2015 and have concluded that no gas protection measures will be required.

4.9 However, Listers identify that there is a risk of Radon gas in the area and therefore have recommended a Radon barrier membrane as a precaution. This has been included underneath the basement floor slab.

5.0 PROPOSED CONSTRUCTION METHODOLOGY

5.1 It is proposed to construct the basements on prescribed hit and miss basis with the pins being constructed at a maximum of 1.2m width. To achieve this the following methodology will be used.

5.2 The existing basement slab will be broken out.

5.3 Once this has been completed a pin of maximum 1.20m width will be excavated to minimise any lateral displacement of the wall.

5.4 Any corbeling of the basement wall will be removed and trimmed to a flush face.

5.5 The basement pin will then be constructed to a depth of around 1.5m, which will provide a finish floor level of 1.0m below the existing level.

5.6 The pin will be constructed as an L shaped base and wall, with reinforcement fixed between each pin and into the new basement slab.

5.7 Heave protection will be provided to the external faces of the pins and to the underside of the slab.

5.8 Once the pins have been completed to an acceptable standard and the building is fully supported, the new basement floor slab will be constructed. This will be tied by reinforcement into the external pins.

5.9 Upon completion of the underpinning and basement slab the external walls will be tanked with a Delta Membrane type system. This will drain to sumps in the basement which will then pump any of the surface water to the existing drainage outfall.

5.10 The existing drainage to the building will be largely unaffected by these works. If any new drainage is required it will be pumped to the existing outfalls. Surface water and any water ingress collected by the Delta membrane system will discharge to a soakaway.

5.11 Following completion of the basement works the internal structures will be constructed to support the building over as required.

6.0 DRAINAGE

6.1 Currently the existing drainage passes underneath the existing building and discharges to a sewer in the road.

6.2 Owing to the significant difference in height between the rear garden, where the drainage is located for part of the building, and at the front of the building there is sufficient fall to allow this drainage to be re-routed around the building and then passed down the side passage to discharge to manholes located in the front hardstanding area.

6.3 There is minimal additional drainage discharge from the building and the footprint of the building remains largely unchanged.

6.4 Any foul water or surface water in the basement areas will be pumped to high level and discharged into the gravity drainage.

6.5 The delta membrane tanking system will require its own sum pumps. There will be a working and back up pump for this system and these again will discharge into the local gravity drainage, which will discharge to a soakaway in the garden.

6.6 A soakaway will be located in the rear garden at a distance of no less than 5.0 m from any structure. This is indicated on the drawings.

7.0 CONCLUSIONS

7.1 It is anticipated that there will be little to no damage to the existing buildings or to adjacent buildings, as the extension of the basement is only 1m below the existing basement, level. Hence, any damage to the building will be negligible at best and will not exceed the Burland Scale of 1 as required by CPG4.

7.2 Furthermore, the basement depth is being increased by 1.0m only, with the majority being under the existing footprint of the building. As such, settlement is expected to be negligible and heave movement of the ground underneath the loadbearing walls will be minimal.

7.3 Ground water is also not expected to be an issue, as the standing water observed in the boreholes was found to be at least 2.0m below the proposed basement level. Seasonal ground water may occur, but this will be managed by the basement tanking system.

7.4 An allowance of a Hydrostatic head of 2.0m above basement level has been allowed for an inadvertent water leakage of burst water main. A Hydrostatic head of 2.0m on the underside of the basement slab has been allowed for in this event.

7.5 A void former has been allowed for underneath the basement slab to fight protection against any possible heave arising from the excavation of the basement, although this is expected to be negligible given the small depth of excavation undertaken.

7.6 It is intended to complete the work in phases to minimise disruption to the structure. The first phase will be the basement formation and following phases will comprise removal of above ground load bearing elements, formation of openings and subsequently fitting out. The following phases will only commence once the basement works are complete.

APPENDICES

Appendix A: Site Location

Appendix B: Drawings

Appendix C: Calculations

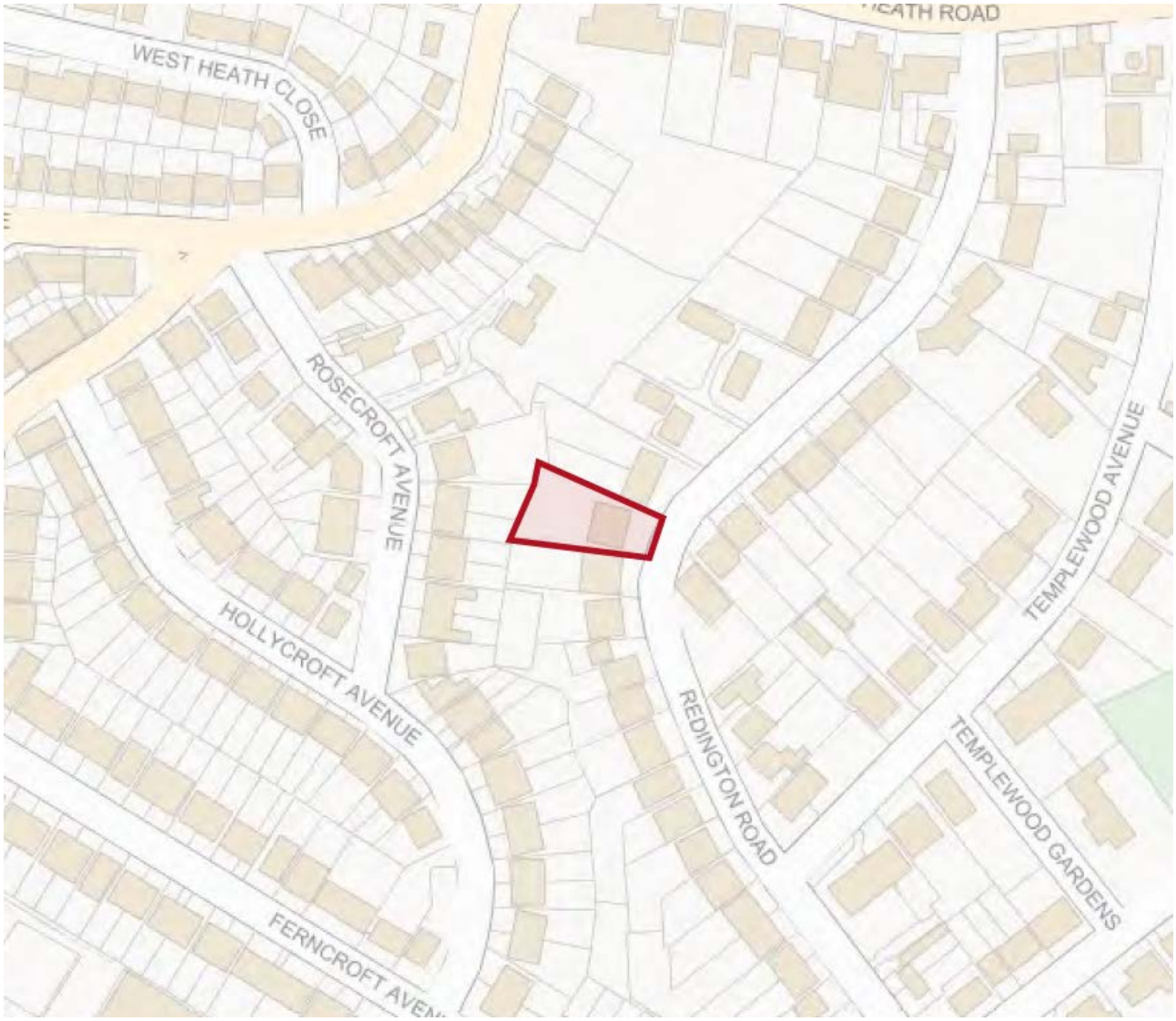
Appendix D: Site Investigation

Appendix E: Addendum Site Investigation

Appendix F: Flood Risk Assessment

Appendix G: Screening Responses

APPENDIX A: SITE LOCATION



Site location plan

APPENDIX B: DRAWINGS

APPENDIX C: CALCULATIONS

APPENDIX D: SITE INVESTIGATION

APPENDIX E: ADDENDUM SITE INVESTIGATION

APPENDIX F: FLOOD RISK ASSESSMENT

APPENDIX G: SCREENING RESPONSES