63 Frognal, London, NW3

Planning Application Structural Report

Ref: 120740/HH

Date: February 2013

Rev No: Planning

conisbee

Consulting Structural Engineers
Consulting Civil Engineers

1 – 5 Offord St London N1 1DH
Telephone 020 7700 6666
Fax 020 7700 6686

design@conisbee.co.uk
www.conisbee.co.uk

INVESTORS IN PEOPLE

CCAS ISO 14001 Registered UKAS ENVIRONMENTAL MANAGEMENT 055
2010/586

CCAS ISO 9001 Registered UKAS QUALITY MANAGEMENT 055
2010/586

Norwich Office
9 – 10 Redwell Street
Norwich NR2 4SN
Telephone 01603 628 074

Table of Contents

1.0 INTRODUCTION

1.1 63 Frognal is a detached house arranged over three storeys (including an attic storey) situated on the west side of Frognal, opposite its junction with Church Row, NW3.

1.2 The current owners intend to undertake a thorough remodelling of the property including the introduction of a basement storey, other lateral extensions to the floor plans and the creation of a sunken terrace at the rear.

1.3 Geotechnical & Environment Associates have carried out a detailed desk study and ground investigation in November and December 2012, the results of which have informed the design and methodology of the proposals.

1.4 This report has been prepared to discuss the structural implications of the development and is to be read in conjunction with the parallel geotechnical and hydrological Basement Impact Assessment (BIA) prepared by Geotechnical & Environment Associates (GEA).

1.5 The Desk Study and Ground Investigation report by GEA concludes:

The BIA has not indicated any concerns with regard to the effects of the proposed basement on the site and surrounding area.

1.6 The report is prepared by Helen Hawker BEng MSc MIStructE on behalf of Conisbee.

2.0 EXISTING STRUCTURE

2.1 The existing property is a detached dwelling of three stories, built circa 1940. The property is of traditional construction, with masonry load-bearing walls on concrete spread foundations and timber floors and roof. Intermediate supports to the floors are provided by the brickwork internal partitions and steel beams. There is a separate, single storey garage to the south of the house.

2.2 The property was altered in 2006-7, when the house underwent substantial rearrangement and extensions to the rear and side. Full structural drawings have been obtained for these works, and these have been verified by investigations on site.

3.0 PROPOSED DEVELOPMENT & STRUCTURE

3.1 The ambition is to create a basement under the entire footprint of the original house and extending beneath the garage, which is to be rebuilt within the enlarged volume. This will demand a carefully planned sequence of operations – first to pick up all the load bearing elements of the retaining structure, then to permit safe excavations underneath and finally to transfer the loads onto the new permanent structure – all without allowing significant settlements of subsidence taking place.

3.2 Alterations to the original house will include opening up the ground floor to create larger reception areas, with relatively modest alterations at first and second floor levels.

3.3 The basement is to be formed with a sheet piled wall about most of the perimeter of the building, which will be propped by a new ground floor transfer slab and act as a retaining and supporting wall under both temporary and permanent conditions. This is as per recommendations in GEA's report.

3.4 A basement slab, tied into the perimeter retaining wall and internal piles will be designed to resist uplift from water and have suitable anti-heave material below it to take into account expected uplift from underlying clays. New internal walls and columns off the basement slab will support the ground floor slab and structure over in the permanent condition. Internal piles will support the ground floor slab temporarily and the basement slab in the permanent condition.

3.5 Appendix A contains a long section through 63 Frognal and its basement, extended to show the relative proximities of number 65 Frognal (which lies 15m to the north) and 61 Frognal (which lies 6.8 metres to the south). From this is can be seen that even with the new basement, the stability of the adjoining houses and highway will not be compromised by the development at number 63.

3.6 Both the elevated garden boundary to number 65 and the garage to number 61 Frognal will be securely buttressed by the new perimeter retaining walls of number 63.

3.7 Refer to structural scheme drawings within Appendix A.

4.0 FLOODING AND GROUND WATER CONTROL.

4.1 GEA's Basement Impact Assessment does not identify a risk of flooding to the property nor that the proposed development would pose risk of increased flooding to the property and its surroundings.

4.2 Their report confirms that the property is located over a secondary aquifer. From the Environment's Agency maps this is a 'minor high' aquifer and whilst ground water maybe expected during construction the report by GEA states:

'It is not considered that the proposed basement would result in a significant change to the ground water flow regime in the vicinity of the proposal.'

4.3 During construction ground water flowing into the excavation will be pumped from the excavation, however from the GEA report, flow within the claygate layer is slow and as such the quantities of water expected, not withstanding heavy rainfall, may be limited.

4.4 Under the permanent condition, waterproofing to the basement will be achieved by welding the sheet piled wall and/or a pumped cavity system.

4.5 With reference to the Environment Agency's website, the site is not at risk from flooding from neither rivers, reservoirs nor the sea.

5.0 CONSTRUCTION METHOD STATEMENT

5.1 The following sequence of construction is to indicate the proposal to be implemented for the construction of the new basement and alterations to 63 Frognal. The final choice of methodology and sequencing of work for the project will be decided by the main contractor and developed in detail by their special sub-contractors (in discussion with Conisbee). A sketch drawing to show the method of construction is within Appendix A.

5.2 The Contractor is responsible for the stability and structural integrity of the works, including enabling, temporary works and site storage, and their effect on surrounding ground, trees and structure during the full construction and post construction phases.

5.3 The method statement is to be read in conjunction with appended Conisbee drawings, Gregory Phillips Architects Drawings and the Site Investigation by Geotechnical & Environmental Associates.

5.4 <u>Construction method statement:</u>

5.4.1 Site set up including demolition and protection of services, tree roots.

5.4.2 Perimeter and internal piling – temporary and permanent.

5.4.3 Temporary support and protection to existing structure, insertion of stools to load bearing walls.

5.4.4 Formation of reinforced concrete capping beam and ground floor slab supported on perimeter piles and temporary internal piles.

5.4.5 Basement level dug out from the rear of the property, pumping out ground water as necessary.

5.4.6 Basement slab formed, tied into perimeter piled retaining wall and internal piles.

5.4.7 Internal load bearing walls and columns and built up / inserted within basement.

5.4.8 Internal piles cut back down to basement slab level.

5.4.9 Internal works to upper floors proceeds.

5.4.10 Make good structure left and holes made by temporary works.

6.0 SERVICES AND GROUND WATER

6.1 A drainage strategy has been drawn up by Conisbee; please refer to Appendix B.

6.2 The BIA has not indentified any expected impact to the surface water flows, nor significant changes to the ground water flows about the property as a result of the proposed development.

6.3 The main sewer along Frognal, into which the present drainage system is connected via a manhole within the drive, lies 5-6m below the existing finished floor level to the ground floor. Therefore it will possible to have a gravity system from the new basement level into the mains sewer.

6.4 The existing and proposed hard-surfacing of the existing and proposed schemes are similar, therefore there will be no change in surface water run-off.

6.5 A rain water harvesting tank is to be incorporated into the landscaping to achieve attenuation and grey use of the water running of hard landscaped areas, including the terrace and lightwell areas. This will be connected to a pumped irrigation supply to water the garden in drier weather and terrace planting.

7.0 MITIGATING NOISE AND NUISANCE

7.1 The main contractor shall implement measures in accordance with any Planning Conditions imposed to keep noise from construction activities to within acceptable limits. However the works proposed do not include traditionally noisy construction techniques and much local disturbance may be mitigated by agreed working hours.

7.2 Sheet piling is traditionally associated with high noise and heavy vibration. New techniques and machinery have been developed that achieves the piles being pushed into suitable substrata with limited noise and negligible vibration. ‘Zero’ or ‘Silent’ piling is proposed at 63 Frognal, which also achieves a shallow section that may be placed very close to the existing structure. Information on the JZ100 Silent Piler System is within Appendix C.

Helen Hawker MSc BENg (Hons) MIStructE
Senior Engineer
Conisbee