

Project Number: 1884

Project Name:
30 Queens Avenue
Muswell Hill
London
N10 3NR

Method Statement for the Construction of the Basement

Client: IC Construction
13 Goodwin Street,
London, N4 3HQ

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1.0 Introduction

1.1 Braemar SD have been appointed by IC Construction to provide a basement impact assessment for the proposed development at 30 Queens Avenue, Muswell Hill, London. A site location map is included in Figure 1.



Figure 1 – Site Location Map

1.2 The proposed application seeks planning permission for extending the existing basement beneath the existing three storey semi-detached house. The application also includes a modest single storey rear extension at ground floor level.

1.3 The existing double fronted period property (appears Edwardian) is of red brick masonry construction and is currently a residential property (one residence) in a [semi-detached] building.

1.4 The existing building is located on a residential street in a row of semi-detached houses within the London Borough of Haringey.

1.5 The purpose of this report is to set out the impact of the basement in relation to the expected ground conditions and neighbouring structures.

1.6 An outline of the proposed construction method is included in this report. This is based on the desktop study findings of this report only. A detailed site investigation is anticipated at a later date to confirm these findings if the development is to be carried out.

2.0 Historic Damage

2.1 The illustration below in figure 2 is an extract from the Bomb Sight mapping of the WW2 bomb census which shows that there was a bomb impact on Queens Avenue in 1940/41. It would appear that this impact was in the vicinity of number 22 Queens Avenue which has since been redeveloped and does not match the rest of the street scene.

2.2 It is therefore believed that there is little to no risk of any Unexploded Ordnance (UXO) within the proposed development site.

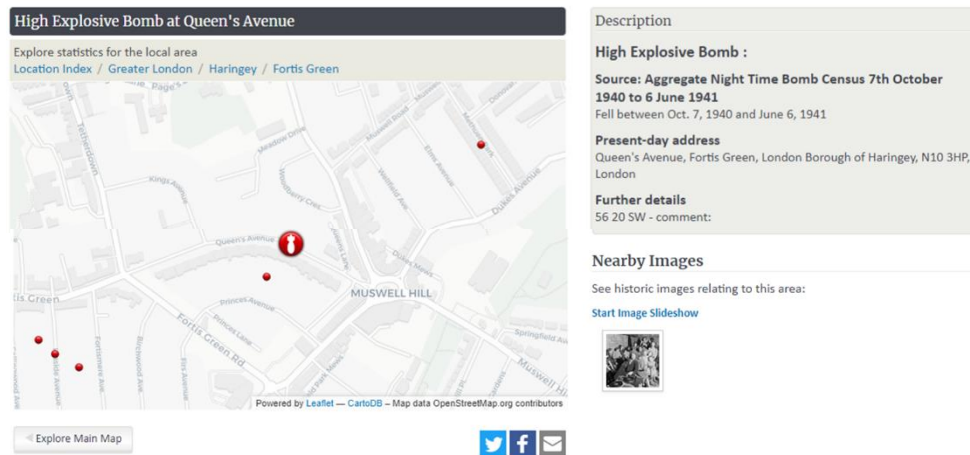


Figure 2 – Extract from bombsight.org

3.0 Listed Buildings

3.1 The illustration below in figure 3 is an extract from the Historic England website and confirms that there are no listed buildings, areas of archaeological priority or scheduled monuments on or near the site. The blue triangles identify the listed Public Library, Telephone Kiosk and cattle trough at the end of Queens Avenue by Muswell Hill Broadway.

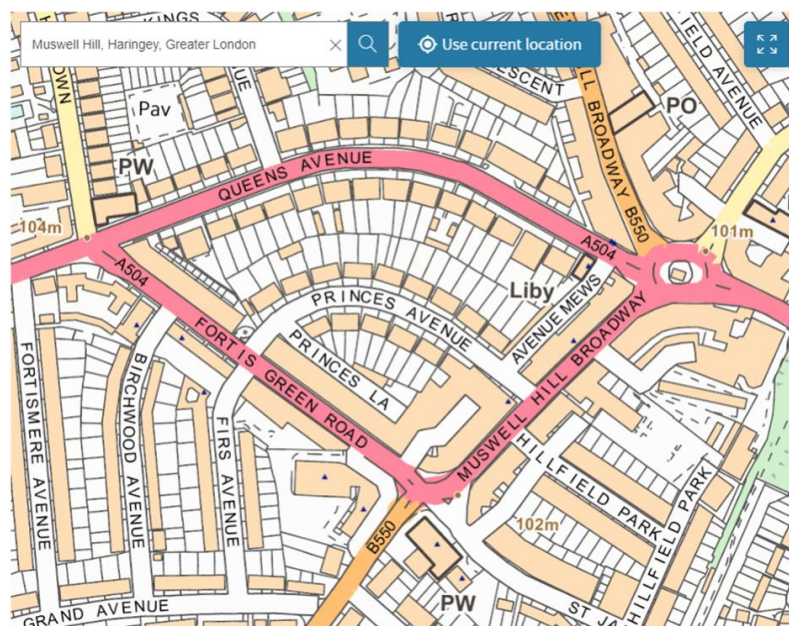


Figure 3 – Extract from historicengland.org.uk (Site location indicated by arrow)

4.0 London Underground and Railway Infrastructure

4.1 The Nearest London underground asset is the Northern Line which is located approximately 1400m to the south and west of the site with the nearest stations being East Finchley (1400m South West) and Highgate (1600m South).

4.2 There is a Thameslink and Great Northern train line approximately 1900m away with the nearest station being Alexandra Palace to the North East.

4.3 The proposed development and basement construction are therefore deemed to be far enough from any TFL or National Rail assets to have no impact on each other.

5.0 Site Geology

5.1 We have undertaken a desk study of the likely ground conditions. A specific site investigation will be necessary prior to the development commencing in order to confirm the anticipated ground conditions.

5.2 An extract from the British Geological Survey online viewer is included below in Figure 4.

5.3 No excavations or samples have been taken in producing this report. Based on the information shown in figure 4, the site is shown to be London Clay Formation, which is the prevalent soil type across most of London. It is assumed that there will be layer of topsoil or made ground across the site which is not anticipated to extend more than 1m below ground level.

5.4 Borehole records local to the proposed site indicate that the London clay extends to >20m and therefore is likely to be of sufficient depth so that the proposed basement excavation will be wholly within the clay strata. 5.5 A site specific geotechnical investigation will need to be carried out to confirm the soil type and thickness along with trial pits around the perimeter of the site to determine the extent of the foundations of the adjoining properties.

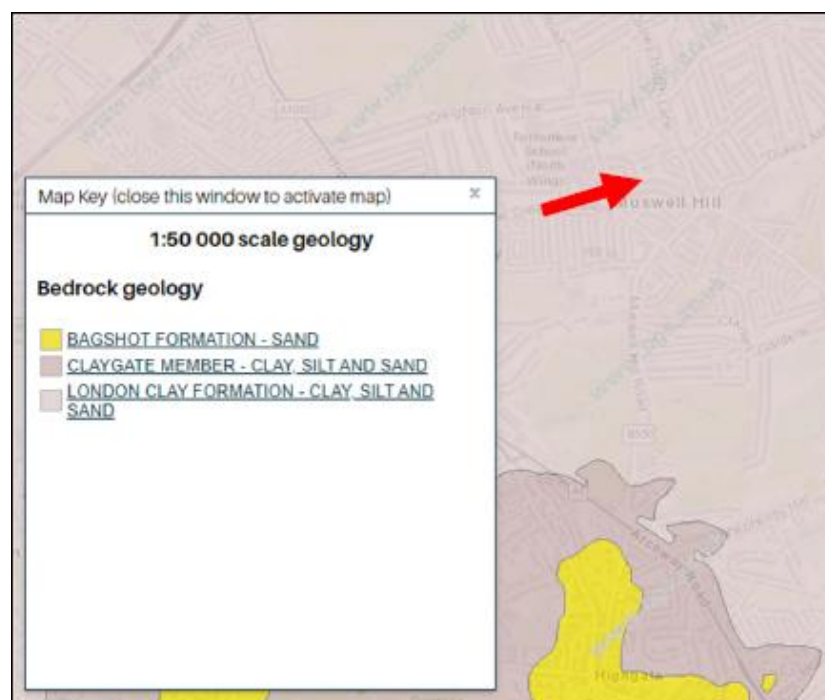


Figure 4 – British Geological Survey Map Extract (Site location indicated by arrow)

6.0 Hydrogeology & Flood Risk

6.1 The site is located within Flood risk zone 1, defined as “little or no” risk of flooding from river, tidal or coastal sources (<0.1%). Figure 5 below for an extract from the Government's Flood Map for Planning website. showing the flood risk across the borough.

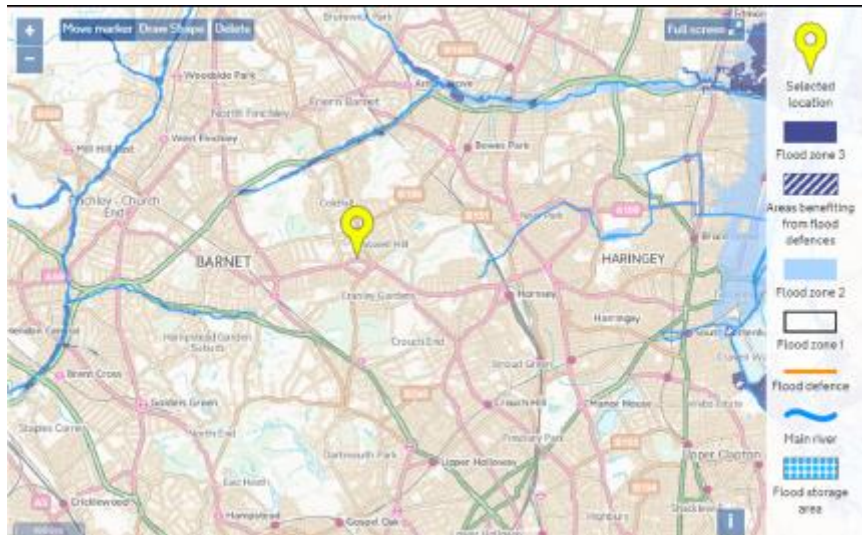


Figure 5 – Extract from London Flood Map for Planning

6.2 A review of the Lost rivers of London has shown that there is an underground stream (Muswell stream) in the vicinity that flowed into the lakes in Alexandra Park but this was later culverted. We have been unable to ascertain its original path. There appear to be no significant rivers or streams located in the vicinity of the proposed site as shown in figure 5 above.

6.3 The site is also not located within an area designated as an aquifer (either principal or Secondary). The BGS Aquifer designation map also indicates that the site is in an area of “Low” to “unproductive” groundwater vulnerability.



Figure 6 – Extract from BGS Aquifer Designation Map

6.4 The relatively shallow depth of the proposed construction and the low permeability of London Clay will present a minimal risk of significant diversions to any groundwater flows that may be present.

7.0 Proposed Basement Construction

7.1 The existing structure on site is to remain throughout the works with no significant demolition.

7.2 The proposed basement will be constructed by utilising section underpinning methods to all of the perimeter and internal load bearing walls.

7.3 The basement walls will be excavated in 1m wide sections in a hit / miss sequence (to be determined during the detailed design stage). Each section will be cast with a mass concrete foundation and a reinforced concrete retaining wall which will provide the vertical and lateral support to the surrounding ground and properties.

7.4 Upon completion of each section, and given sufficient curing time, the next stage in the sequence will be carried out until the full perimeter and the internal loadbearing walls of the basement have been underpinned.

7.5 A typical proposed section for the basement, showing the new foundations and retaining structures is included below in Figure 7.

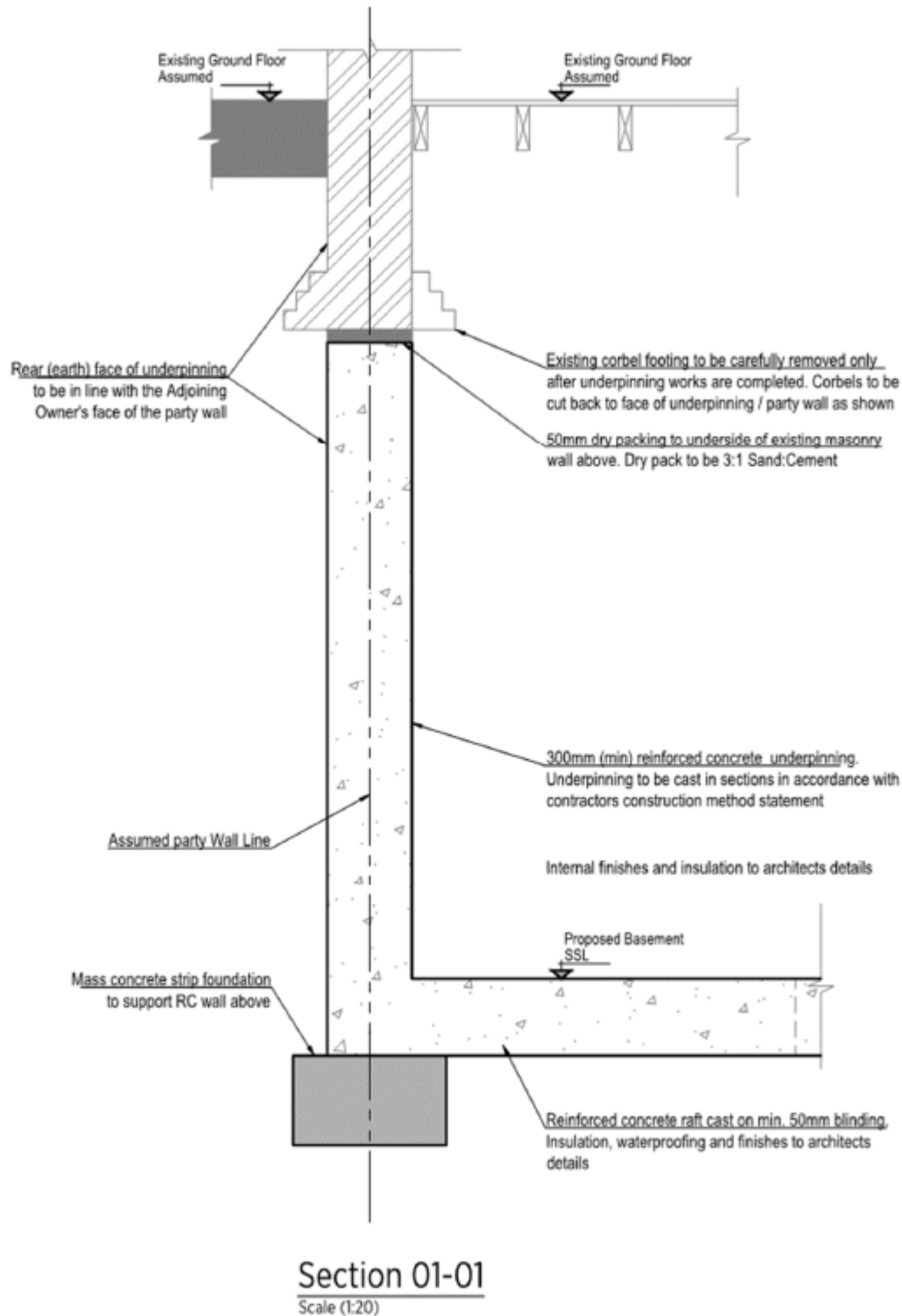


Figure 7 – Section showing Typical Proposed Basement Construction

7.6 Upon completion of the full underpinning works, the remainder of the basement can be excavated and the basement raft slab installed throughout.

7.7 Temporary propping will be required and installed throughout the full excavation and construction of the proposed basement. Refer to section 11 below for further details.

7.8 Utilising this method of construction will minimise the potential for significant settlements of the existing property and the adjacent properties. It will also ensure that the vertical support is maintained to all structural elements throughout the construction process. This method has also been constructed on numerous developments across the borough and wider city of London and is generally accepted for the purposes of underpinning existing structures to form basements.

8.0 Drainage

8.1 The drainage design is to be carried out by others however an assumed basement drainage scheme is as follows.

8.2 A CCTV survey of the existing drainage from the site will be carried out in order to determine the foul and surface water sewer from the site. It is likely that the new below ground drainage to the basement area will require a pumped solution, due to the new basement being approximately 3.0m below the existing ground floor level.

8.3 The flow from the upper levels will route out under gravity to the front of the site as per the assumed existing condition.

8.4 Where possible the connection back to the main sewer within the street will be maintained, with a new connection formed onto this within the property boundary.

9.0 Design Criteria

9.1 Deflections:

9.1.1 The deflections of the new structure will be designed to meet the following criteria:

- Concrete Elements (in-situ and precast):
Vertical deflection of floor slabs and beams will be limited to deflections under total loads:
Continuous = $[\text{span} / 250]$
Cantilevers = $[\text{span} / 125]$
- Deflections under live loads:
Internal = $[\text{span} / 360]^*$
Perimeter = $[\text{span} / 500]^*$
Cantilevers = $[\text{span} / 175]^*$
*or 20mm whichever is the lesser
Differential deflection between any two floors = +20mm
- Steelwork Elements:
Vertical deflection of beams will be limited to:
Deflections under total load
simply supported = $[\text{span} / 250]$
cantilever = $[\text{span} / 125]$
- Deflections under live loads:
simply supported = $[\text{span} / 360]^*$
cantilever = $[\text{span} / 180]^*$
perimeter = $[\text{span} / 500]^*$
*or 20mm whichever is the lesser

All cladding finishes and services must be designed and detailed to accommodate the worst combination of these.

9.2 Durability:

9.2.1 Long term durability of the concrete structure will be achieved by providing adequate cover to reinforcement as recommended in BS EN 1992. A Site Investigation report will define what classes (DS/AC) the concrete in contact with the ground at formation level will be need be.

9.2.2 Once this information is available the required concrete classes will be noted accordingly.

9.2.3 Testing of the ground water will be carried out to confirm the design sulphate class (DS) and the Aggressive Chemical Environment for Concrete (ACEC).

9.2.4 Corrosion protection of the steel structure will be achieved by a suitable paint system which provides a life to first major maintenance of 10 to 15 years.

9.2.5 Timber achieves a 50-year lifespan when located in an internal heated environment, detailed architecturally to allow the structure to breathe using vapour control layers.

9.3 Fire Protection:

9.3.1 It is assumed that the fire rating for the structure to the proposed building will be 90mins, although this is subject to confirmation from the fire consultant / Architect.

9.3.2 Fire protection to new reinforced concrete structure will be achieved by providing cover to the reinforcement and minimum concrete section sizes as recommended in BS EN 1992.

9.3.3 Fire protection to steelwork elements is to be determined by the Architect. This may take the form of spray applied systems, fire boarding or intumescent paints.

9.4 Tolerances:

9.4.1 The frame will be constructed to be within the tolerances set down in the technical specifications and the recommendations of BS 5606. All finishes, cladding, services, internal partitions are required to be detailed to accommodate the worst combination of these.

9.5 Structural Robustness:

9.5.1 The new basement of the building will be designed in accordance with the relevant design standards to satisfy the requirements for robustness. The basement falls within Consequence class 2B according to the Building Regulations.

10.0 Party Wall Act

10.1 The proposed development falls within the scope of the Party Wall Act 1996. Procedures under the Act will be dealt with by the client's party wall surveyor. The party wall surveyor will prepare necessary notices under the provisions of the Act and agree party wall awards.

10.2 The contractor will be required to provide the party wall surveyor with appropriate drawings, method statements and all other relevant information covering the works that are notifiable under the Act, which will necessitate confirmation of existing footing profiles for each condition. The resolution of matters under the Act and provision of the party wall awards will protect the interests of all owners.

10.3 Where required, condition surveys of the adjoining and nearby properties will be undertaken prior to commencement of the site works.

10.4 The proposed works to form the basement will be designed and detailed so that any movement of the existing structure is no worse than "Category 2", defined as slight within the BRE digest 251 table 1 and Ciria 580 (Burland et al). This will be agreed as part of the party wall process.

11.0 Temporary Works

11.1 The design of the temporary works and the temporary stability of any existing structure to be retained as part of the permanent works is entirely the responsibility of the contractor. The contractor is to submit an overall Method Statement a minimum of four weeks prior to a site start and detailed drawings and calculations a minimum of four weeks, which are to include an assessment of the anticipated ground movement due to temporary works and piling, this is to cover each stage of construction, initial excavation, propping, full excavation etc.

11.2 The contractor will be required to appoint a Temporary Works Co-ordinator for the duration of the contract.

12.0 Movement & Monitoring Strategy

12.1 It is not anticipated that any movement of the basement during its formation will cause any damage to the buildings surrounding the site. However, as part of the Party Wall process, it may be agreed to carry out movement monitoring.

12.2 Possible method of monitoring movement is set out below:

Movement Category	Measured Movement	Action
Green	Movement recorded below predicted limit	Continue Work
Amber	Movement recorded approaching predicted limits	The Contractor is to notify the Engineer and review the construction sequence
Red	Movement recorded is beyond the predicted limits	The Contractor is to immediately cease the construction works and install temporary support as required to prevent further adverse movement. These measures are to be kept in place until such time as they have been reviewed and deemed safe to be removed.

12.3 The contractor is to monitor the site during all phases of the construction works. A minimum of daily full visual inspections of all temporary works and surrounding structures and a twice weekly measured survey of the proposed basement structure using survey points as agreed with the Party Wall surveyors.

12.4 The nature and frequency of monitoring should be appropriate to the phase of the works and include readings prior to commencement of the works (to be used as a base reading) and once the construction stage is complete.

12.5 The movement measured by survey points are to be in both the horizontal and vertical directions. The limits of any movement may be set against the colours green, amber and red.

13.0 Conclusions

13.1 The findings of this report show that the proposed basement construction will have a low impact on the surrounding area. The report has highlighted no novel or contentious issues.

13.2 The neighbouring properties will need to have a detailed monitoring regime in place to ensure any movement of the existing structure is dealt with by the agreed strategy in place for the duration of the construction works.

13.3 The underlying geology is expected to be London Clay

13.4 The site is not considered to be in an area with raised ground water levels or in a significant flood risk zone.

13.5 There are no areas of archaeological interest or scheduled monuments in the vicinity of the site that could be affected by the works.

13.6 There are no listed buildings in the vicinity of the site that could be affected by the works.

13.7 A full utilities search will determine any services within the site boundary.

13.8 The construction sequence indicated within this document allows for the basement to be constructed in a manner that is safe and economic considering the scale of the proposed building.