PRICE&MYERS

REPORT

25 Bracknell Gardens
London NW3 7EE

Structural Engineer's Report For Planning Application

Contents:

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1 Introduction

Price & Myers have been appointed by Weft Properties Ltd to assist their architects, the Charlton Brown Partnership, in the preparation of proposals for the comprehensive refurbishment and extension of the property at 25 Bracknell Gardens in Hampstead, London.

This report outlines the progress of the design at Planning Application stage.

The information in this report is based on a visual survey of the existing property, desk study searches of the area, and will be augmented on inspection of the records at London Borough of Camden's Building Control department.

2 The Site

Bracknell Gardens runs Northwest to Southeast between Heath Road and Frognal Lane, approximately parallel to the main Finchley Road. The site occupies an extensive, steeply sloping plot (over 4m fall) on the Southwest side of the street. The house is set back from the pavement, and therefore is at a lower level than its neighbours. The house occupies the central part of the site almost entirely, with only a small path passing down the West side of the house. On the East side the building appears to be built directly up to the boundary, with a retaining wall and step up of over 2m to a path down the side of number 23. Large mature trees exist to the perimeter of the back garden.

Historic maps included in Appendix A show that the site was open fields until the early C19th. Development of the street has started in the 1915 OS map, but the building has yet to appear, suggesting that the original parts of the house date from the 1920's.

3 Ground Conditions & Hydrogeology

The published geological maps of the area are included in Appendix A and indicate that the site will be underlain by London Clay (a stiff grey silty clay) below an unknown thickness of Made Ground. As the ground rises away from the house to the Northeast, the more sandy Claygate and Bagshot Beds, which overlie Hampstead Heath, start to be encountered.

Rainwater falling on the Heath soaks through the permeable sands and forms into springs where it meets the impermeable clay layers. Many of London's Lost Rivers have their sources at this junction, and one of the tributaries of the River Westbourne is recorded as having passed close to the site – refer to the Lost Rivers of London map in Appendix A.

A preliminary geotechnical investigation has been carried out by Geotechnical and Environmental Associates, which confirms the above and suggests that subject to further investigation in the next stage, hydrogeological issues will only be of potential significance to the construction sequencing.

4 Existing Building

As described in section 2, it appears that the original parts of the existing building will date from the 1920's. Bomb damage maps suggest that there was no damage to the building during WWII. Preliminary research into past Planning Applications suggests that the following alterations have occured over recent years:
1978 Front porch added.

1992 Demolition of garage car-port, two chimney stacks, first floor front bay windows and part of rear wall, along with construction of two storey rear extension and side extension along with conversion of top floor.
2009 Alterations to chimneys, gates and dormer windows.

Approaches have been made to LB Camden Building Control, and we are awaiting a response from them, which will allow access to view the records of the 1992 alterations in particular.

From a visual inspection of the building it appears to consist primarily of loadbearing brick walls, and timber joisted floors with some steel frames in the roof spaces to create the top floor. The layout of the existing structure is shown on drawings in Appendix B.

5 Proposed Structure

5.1 Substructure

In order to extend the living space in the house the small existing area of lower ground floor is to be extended over the full plan of the building, incorporating a small swimming pool. To do this the existing perimeter walls will be underpinned using reinforced concrete underpinning, and the loadbearing brick internal walls will be propped before being extended down in new brickwork on new foundations. A new concrete lower ground floor slab will be provided throughout.

5.2 Superstructure

The superstructure will be largely retained with the exception of the majority of the rear and side extensions which are rebuilt in new construction using concrete slabs where external terraces or garages are built. Timber floors are replaced or resupported on steel beams where required, and some co-ordination of structural and architectural internal layouts will be needed in the next stage.

The proposed structural arrangement along with a typical underpinning detail is given in Appendix C.

5.3 External Works

The structural design of elements within the external works will be developed in more detail in the next stages of the design in conjunction with the Landscape Architect.

6 Construction Method for Lower Ground Floor and Implications on Local Hydrogeology

The lower ground floor extension is to be constructed by a sequential underpinning process which is a quiet and gradual process, well known and understood. The building is an independent free-standing structure and so, even though the chance of structural movement is very low in this situation, the risks to adjoining owners is negligible. The normal Party Wall processes will be undergone in due course to resolve any technical issues which might arise in this respect.

The building is already founded in the impermeable London Clay, and as such the new lower ground floor structures cannot pose any more of an obstruction to the movement of groundwater at the top of the Clay. This fact combined with the fact that the extension of the lower ground floor does not increase the width of the structure in the direction of the fall in the ground levels, suggests that there is no hydrogeological effect that the lower ground floor could cause beyond the confines of the site. The site maintains significant undeveloped ‘corridors’ either side of the building where no barrier to groundwater movement exists.

The Royal Borough of Kensington and Chelsea recently employed engineers, Ove Arup & Partners to carry out an investigation of the effects of below ground development. Arup Geotechnics subsequently published a 'Subterranean Development Scoping Study', the conclusions of which include the statement that '..[c]oncerns about the significance of the impact of subterranean development on groundwater levels and groundwater flows are likely to be misplaced. It is likely that such effects, if any, will be small and that they may be less significant than seasonal or other variations in the groundwater level.'

7 Design Criteria

7.1 Codes and Standards

The design will be developed based on the current relevant British Standards.

7.2 Loadings

Typical domestic floor loads of 1.5kN/sqm willl be used generally with additional allowances made for heavy floor finishes, and some additional live load allowance used in the larger public rooms.

7.3 Design Fire Periods

Fire periods of one hour will typically be achieved by encasing structural members in plasterboard.

7.4 Disproportionate Collapse

As a 4 storey single occupancy house the building will be classed as Category 2A under the Building Regulations Part A3. This requires the incorporation of horizontal ties into the structure which can be accommodated in a masonry and timber structural solution.

Appendix A – Desk Study Search Results

Map 1: Street Map

Map 2a: Ordnance Survey Map 1866

Map 2b: Ordnance Survey Map 1894

Map 2c: Ordnance Survey Map 1915

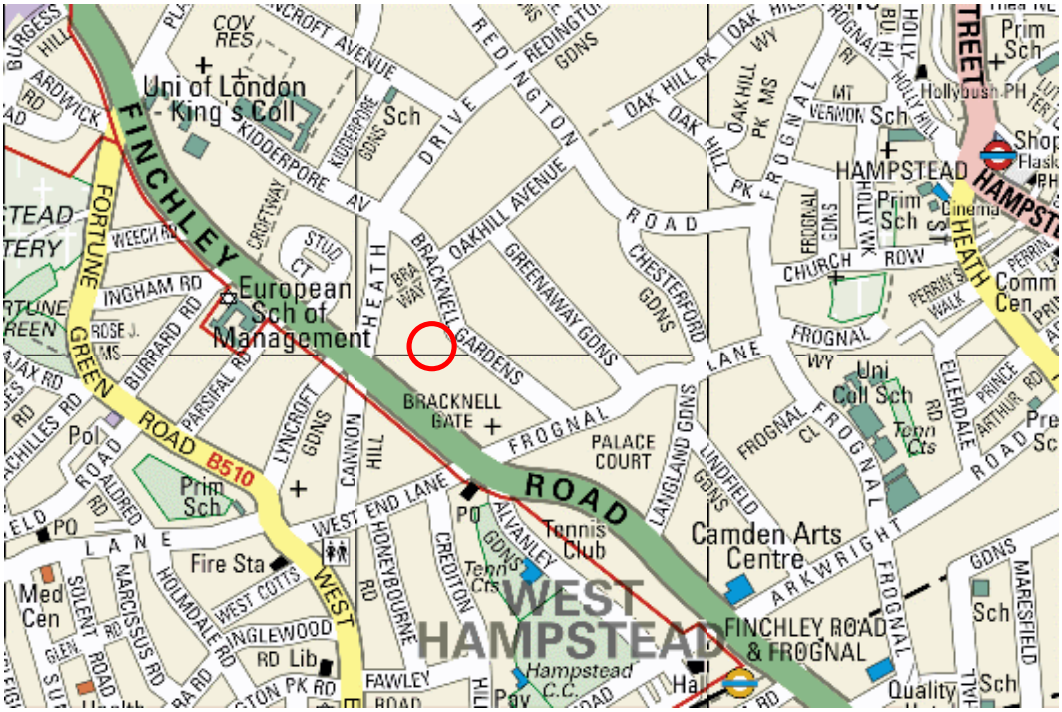
Map 3: Tube Map

Map 4: Geological Survey Map

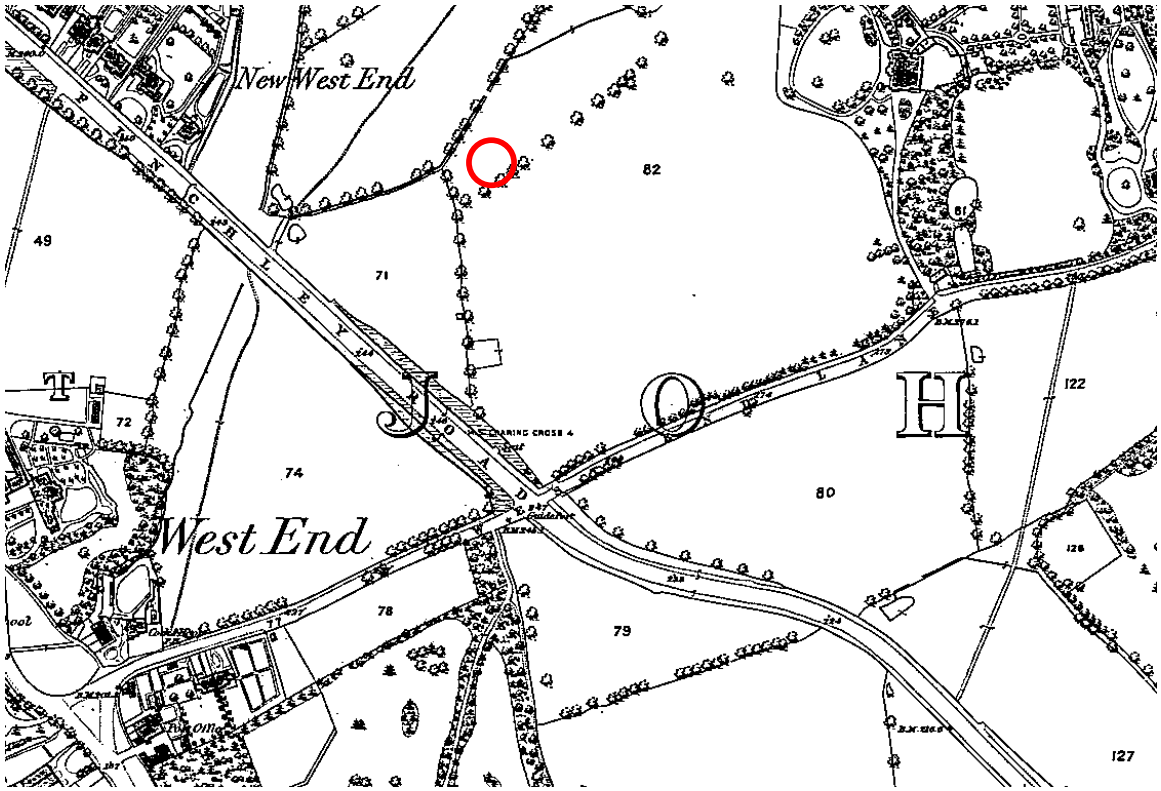
Map 5: Bomb Damage Map

Map 6: Lost Rivers of London Map

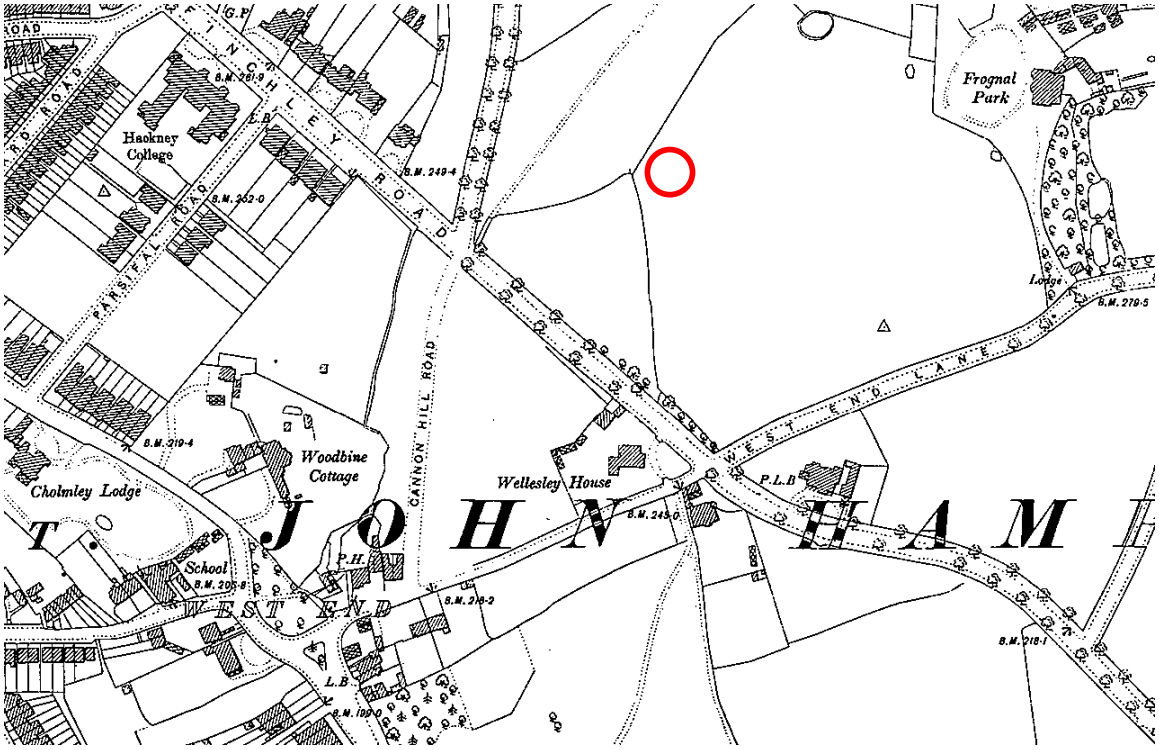
Aerial Photos



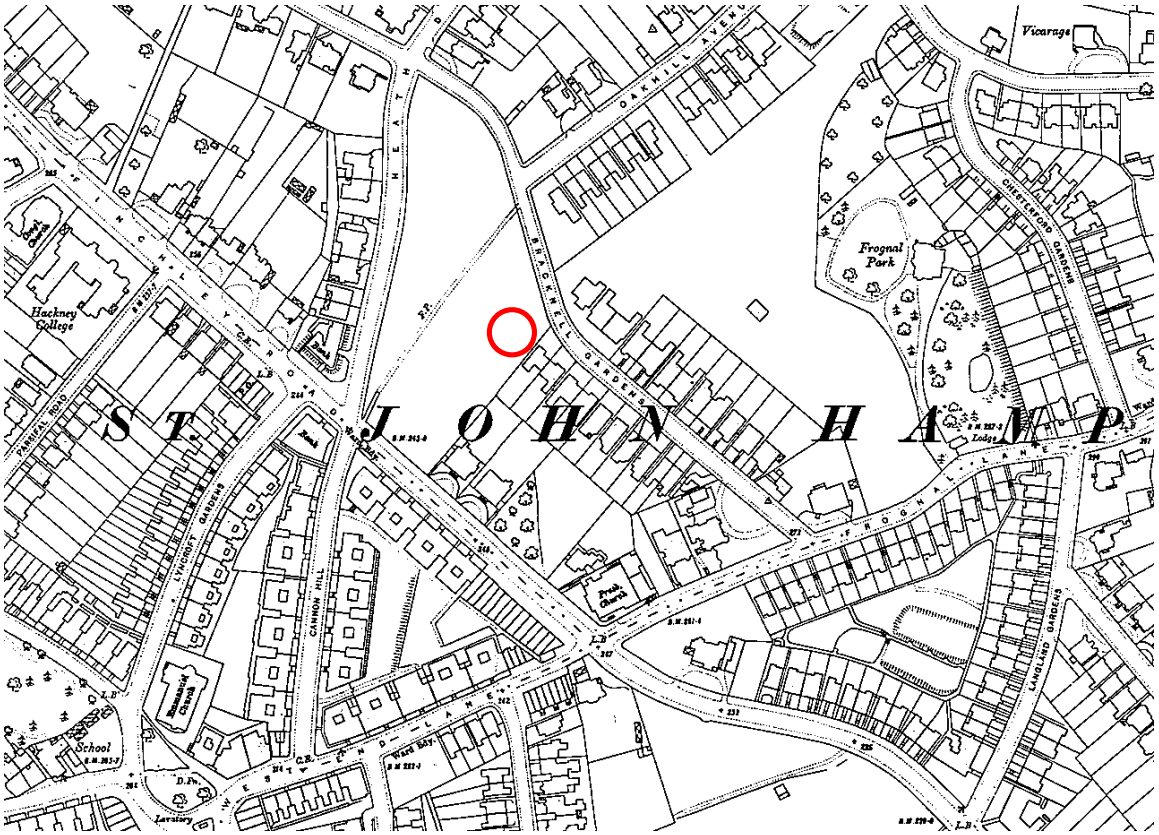
Map 1: Street Map



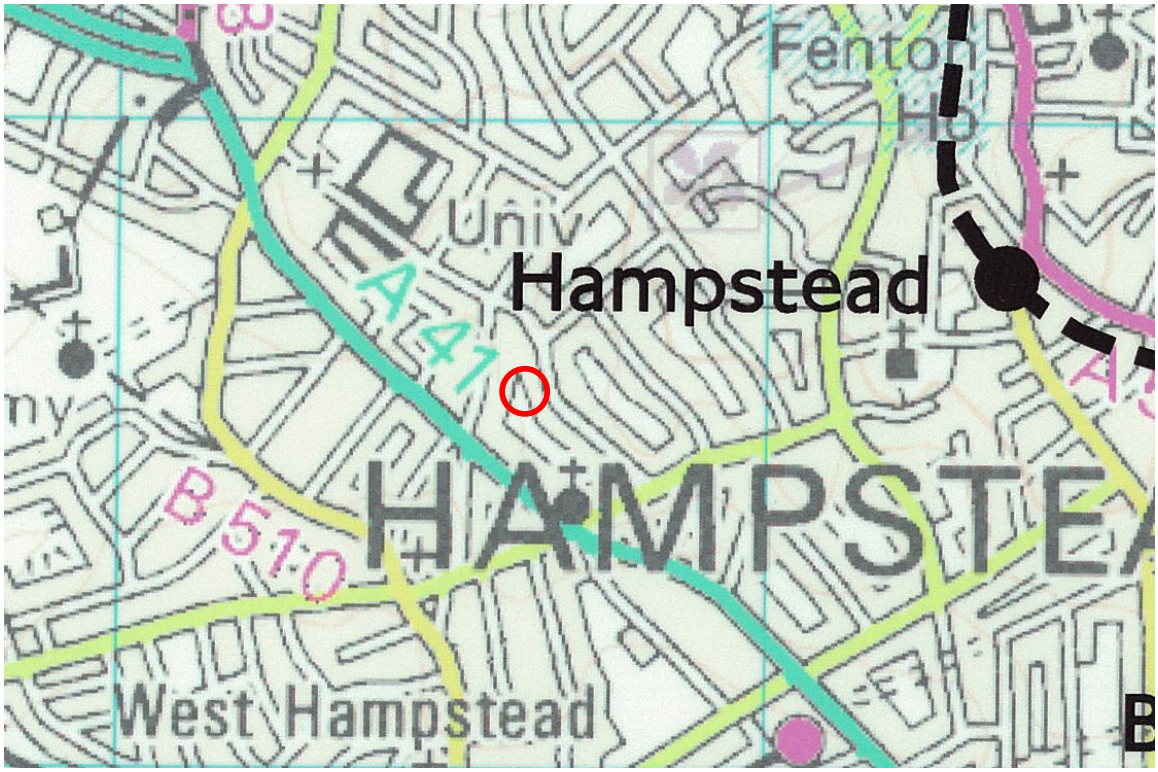
Map 2a: Ordnance Survey Map 1866



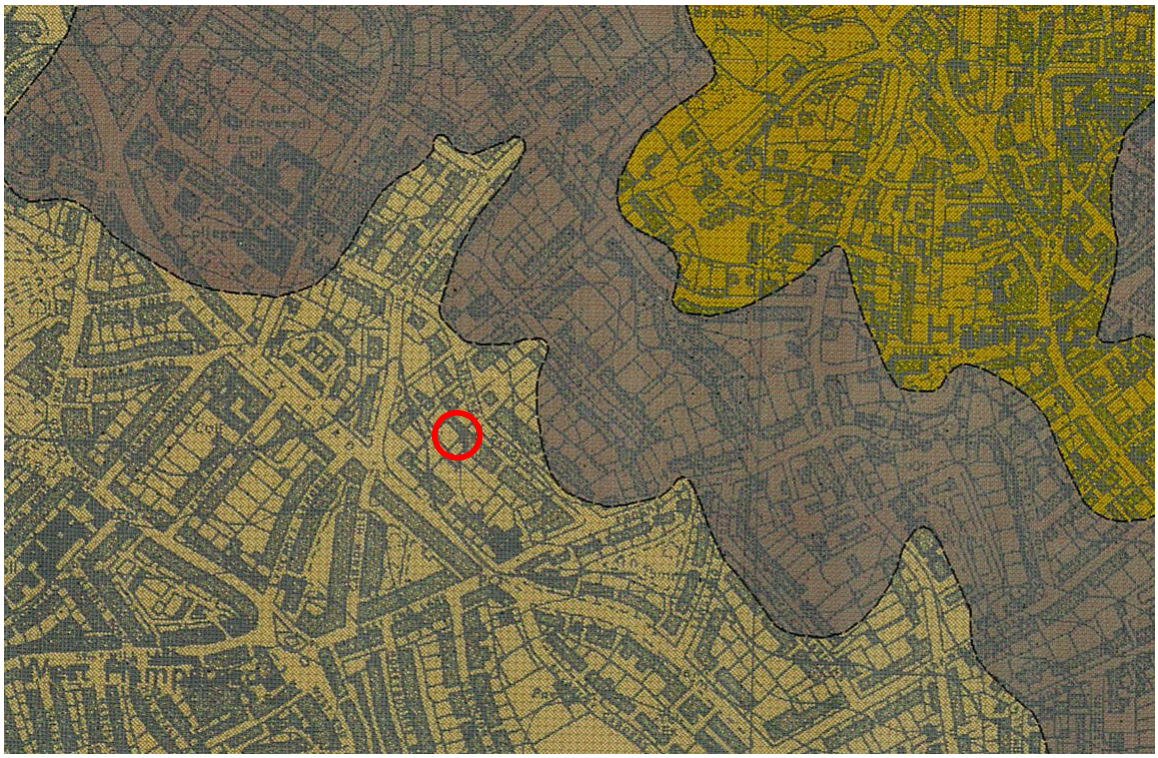
Map 2b: Ordnance Survey Map 1894



Map 2c: Ordnance Survey Map 1915

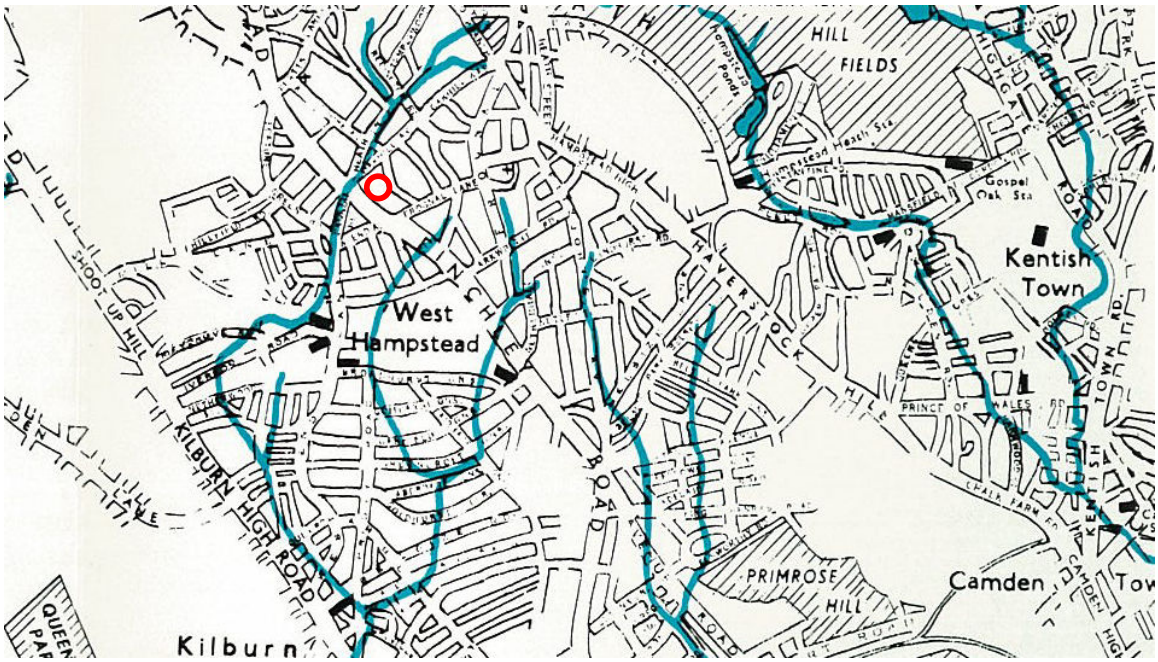


Map 3: Tube Map



Map 4: Geological Survey Map – London Clay

Map 5: Bomb Damage Map



Map 6: Lost Rivers of London Map

North Elevation

East Elevation

South View

West View

Appendix B – Existing Structural Arrangements