conisbee

44 Ferncroft Avenue, NW3 7PE

Basement Impact Assessment – Screening and Scoping Report.

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Rev No: Planning

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1.0 INTRODUCTION

1.1 It is proposed to construct a new basement and associated lightwells and terraced landscaping under the existing ground floor apartment at 44 Ferncroft Avenue. Where the basement extends beyond the existing footprint of the building at the rear, the roof will become a new terrace area to the reception dining room and kitchen areas. The rear ground floor elevation is to be remodelled with an existing extension removed and the back wall realigned to create an open space with large openings to the new terrace. The sleeping accommodation will be moved into the new basement. The bedrooms to the front of the house will have new lightwells constructed to provide light, ventilation and emergency access/egress. Bedrooms those to the rear have direct access to a low level garden terrace with steps and terraced planting leading up into the garden.

1.2 This report is in response to The Camden Development Policy DP27, with reference to para. 27.3., where whilst the proposed development is outside the foot print of the existing dwelling, it is no greater area than the area of the footprint, and is only a single storey's depth, so may well be deemed to be relatively small given it's setting on the site and the much larger accommodations that surround it.

1.3 Following the format guidance in The Camden Policy Guidance PG4, the stages for a Basement Impact Assessment are:

- Stage 1 - Screening; •
- Stage 2 - Scoping; •
- Stage 3 - Site investigation and study; •
- Stage 4 - Impact assessment; and •
- Stage 5 - Review and decision making.

This report follows the Flow Charts and uses the Figurative information given in the Camden Geological, Hydro-geological and Hydrological Study to submit data with relevance to the small scale of this project to address stages 1 and 2.

1.4 The Flowcharts of the Appendix E to the Camden Geological, Hydro-geological and Hydrological Study are completed in table format in section 3 of this report and form the screening element of this report, including:

- Surface Flow and Flooding Impact Identification
- Subterranean (groundwater) Flow Impact Identification
- Slope Stability screening flowchart

1.5 44 Ferncroft Avenue is located with an arrow on the relevant Figures of the Camden Geological, Hydro-geological and Hydrological Study, appended to this report, Appendix A.

1.6 Again reflecting the size of the scheme, a brief scoping report is provided in section 4, to be commented upon by Camden. It is hoped this will satisfy the requirement of DP27 in terms of consideration to the Geological, Hydro-geological and Hydrological effects of the development.

2.0 SITE INFORMATION

2.1 44 Ferncroft Avenue is a 3 storey residential building converted into five apartments, with a limited cellar space belonging to the ground floor apartment. The existing construction is traditional load bearing brick walls on spread corbelled footings with loadbearing internal walls supporting timber floors and roof. Investigations will confirm all necessary existing conditions prior to more detailed design.

2.2 Ferncroft Avenue is on a hill sloping from its peak down to Platts lane in the Northwest to Heath Drive at its Southern end. The hill also rises from west to east across the site. The ground level to the front of the house is lower than the rear where the garden is terraced from the ground floor level to the natural ground level.

2.3 Ferncroft Avenue was affected by the 1975 floods, but not by the more recent flooding in 2002 (Camden Report : Floods in Camden report of Flood Scrutiny Panel – Appendix D)

2.4 Geological maps of the area highlight the strata as being London Clay Formation though near the edge of the Claygate member strata. Geological Society Borehole records show both London Clay and Claygate member layers in boreholes taken in the local area. (Appendix E)

2.5 There is some history of subsidence to the property. Repairs to brickwork have previously been carried out using helifix type bars. The driveway of the property, rear paved terrace and garden walls of the property show signs of movement, presumably due to nearby trees and possibly, for the drive and terrace paving, due to inadequate sub-base being laid at the time. The scheme proposes underpinning the whole property which would strengthen its foundations and where party walls are underpinned also offer additional support to the adjacent properties.

2.6 The property shares a single party wall with its neighbour where the single storey side extensions meet.

2.7 There are two mature London Plane trees in the street to the front of the house. These are a minimum distance of 6.1m from the new excavations. There is a large conifer to the rear of the house which will be removed. There is a large shrub (Deciduous Magnolia) in the garden a distance of 1.85m from the extent of the new excavations. This may be affected by the works, however the position of the flight of stairs means that the earth in this area may be sloped down to the terrace rather than cut vertically minimising damage to the root system. A mature tree in the adjacent garden is a distance of 7.95m from the excavation and therefore impacts are considered to be minimal. (Appendix C)

2.8 It is considered that a piled wall is the most appropriate method of basement construction outside of the building footprint and a raft with local thickenings be used below the existing structure with traditional underpinning of the external walls and a reinforced concrete liner wall to transfer vertical loads from the ground floor and lateral loads from soil and water pressures. The basement should be fully waterproofed.

Reference to the Environment Agency maps, as well as the maps appended, locate the site away from the ground source protection zones, however on the edge of a secondary aquifer as seen on the Environment Agency Map, below and Figure 8, appended. However this is within the bedrock strata, and as such some 100m + below our site. See Figs 1 & 2 (extracts from Camden Geological, Hydrogeological and Hydrological Study: Camden Surface Water Features) below.

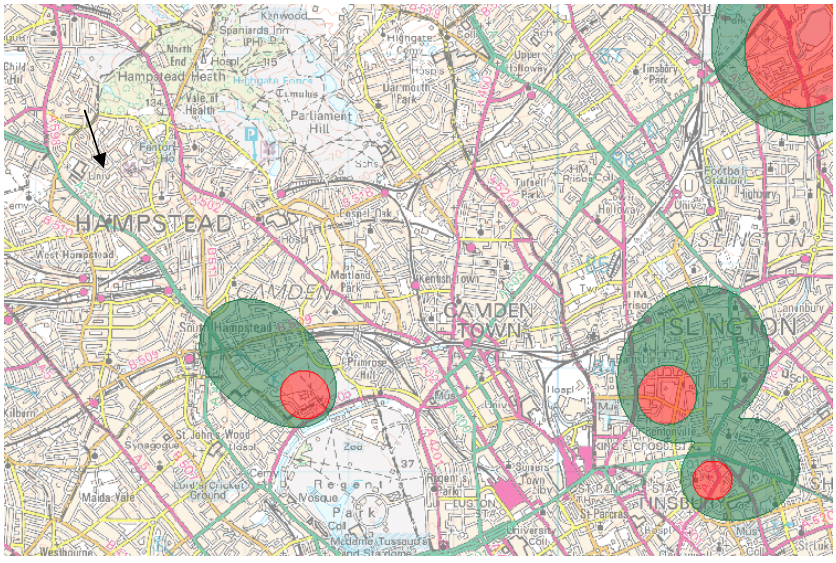

FIG 1. GROUND SOURCE PROTECTION ZONES

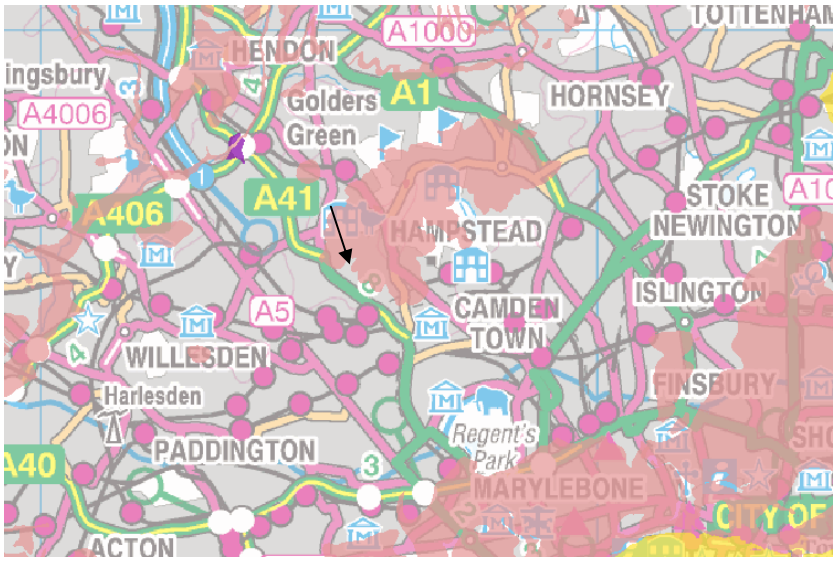

FIG 2. AQUIFER MAP BEDROCK DESIGNATION – PINK IS SECONDARY 'A'

2.9 A Structural Scheme for the basement is appended to this report, Appendix B.

3.0 RESPONSE TO BIA SCREENING FLOWCHARTS

Appendix E: Camden geological, hydrological and hydrology study: Guidance for subterranean development.

3.1 Surface Flow and Flooding Impact Identification		
3.1.1	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 & 15 appended.
3.1.2	As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing one?	Not significantly. The hard landscaping approximately equivalent to the existing. As the surrounding soil type is largely clay, soak-aways are of little use, therefore run off from paved areas will be into the drainage system.
3.1.3	Will the proposed basement development result in a change in the proportion of hard surface / paved external areas?	No. The area hard landscaping approximately equivalent to the existing hard finishes

3.1.4	Will the proposed basement development 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 Change
3.1.5	Will the proposed basement development result in a change to the quality of surface water being received by adjacent properties or downstream watercourses?	No significant change in water quality is expected.

3.2	**Subterranean (groundwater) Flow Impact Identification**	
3.2.1	Is the site located directly above an aquifer?	No - The site is over the unproductive strata. It is, however, near the edge of the Secondary A Aquifer, within the bedrock designation which covers the north parts of Camden, which lies under London Clay member. It is not over a source protection zone. Refer to Figure 8.
	○ Will the proposed basement extend beneath the water table surface?	No. The water table in that area is at approximately 90m. However the basement is over London clay, so perched water lying over the London clay layer maybe encountered. As such pumping out in wet weather during construction may be needed and the design is to take into account the effects of perched water.
3.2.2	Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	Yes, refer to Figure 11,appended
3.2.3	Is the site within the catchment of the pond chains on Hampstead Heath?	No, refer to Figures 14 & 15 appended

3.2.4	Will the proposed basement development result in a change in the proportion of hard surface / paved areas?	No. The area hard landscaping approximately equivalent to the existing hard finishes
3.2.5	As part of the site drainage, will more surface water ((e.g. rainfall and run-off) than present be discharged to the ground? (e.g. via soak-aways and/or SUDS)	No, run off from the hard surfaces will be into the sewer system as per the patio run-off presently.

3.3	**Slope Stability screening flowchart**	
3.3.1	Does the existing site include slopes, natural or manmade, greater than 7 degrees (approx. 1 in 8)?	No. Variations in levels in the garden are made with terraces and retaining walls rather than slopes. This will be the case when the basement is created with terraced planters and steps leading from garden level to the lower terrace and retaining walls to each side.
3.3.2	Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7 degrees (approx. 1 in 8)?	No, the slopes at the site boundaries are to remain the same.
3.3.3	Does the development neighbour land, including railway cutting and the like, with a slope greater than 7 degrees (approx. 1 in 8)?	No, refer to slope angle map Figure 16 appended.
3.3.4	Is the site within a wider hill setting in which the general slope is greater than 7 degrees (approx. 1 in 8)?	The general Hampstead Hill area is sloped, however at its very steepest it has a gradient of max 1 in 11 and the street in question has a gentler slope.
3.3.5	Is the London Clay the shallowest strata at the site?	According to the geological long section, viewed in relation to topographical information from an OS Map, it is likely that some 100m of London Clay overlies the thinner Lambeth group. The site is on the very edge of a layer of Claygate member

		which may be present.
3.3.6	Will any tree/s be felled as part of the proposed development and/or any works proposed within any tree protection zones where trees are to be retained?	One tree (conifer) is proposed to be felled as part of the proposal. A large deciduous magnolia (shrub) may be affected by the landscaping changes. It is expected that some 10% of the outer root perimeter of the affected shrub will be subject to a 'trim' due to the anticipated terracing. This is a generally acceptable amount that should not cause long term harm. There are two London plane trees on the public pavement which are a minimum distance of 6.1m from the excavation. As such some roots may be trimmed but should not suffer long term harm.
3.3.7	Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects on site?	London clay has high shrinkage potential, Whilst there are no obvious signs of movement of the existing property, nor to its neighbours, the adjacent driveway, rear paved terrace and garden walls of the property show signs of movement, presumably due to nearby trees and possibly, for the drive and terrace paving, due to inadequate sub-base being laid at the time. The rear terrace paving would be removed as part of the relandscaping of the back elevation on appropriate base.
3.3.8	Is the site within 100m of a watercourse or potential spring line?	Yes, refer to Figure 11.
3.3.9	Is the site within an area of previously worked ground?	The site is a basement below a house therefore the ground has been worked to create the footings etc for the existing building.
3.3.10	Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during	No - The site is over the unproductive strata. It is, however, near the edge of the Secondary A Aquifer, within the bedrock designation which covers the north parts of

	construction?	Camden, which lies under London Clay member. It is not over a source protection zone. Refer to Figure 8.
3.3.11	Is the site within 50m of Hampstead Heath?	No, as indicated on most of the appended maps.
3.3.12	Is the site within 5m of a Highway or pedestrian right of way?	The lightwell to the front of the property is approximately 4.5m from the property boundary with a 2.5-3m public pavement between the boundary masonry wall and road surface.
3.3.13	Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes. The basement is directly adjacent to its neighbour along the edge of the single storey side extension only and is several meters from the main three storey buildings on each side. However there is no indication that a full storey height basement exists in either neighbour.
3.3.14	Is the site over (or within the exclusion zone of) any tunnels, e.g. railways lines?	No. The Northern Line runs from Golders Green to Hampstead Station but the route approximately follows North End Road

4.0 SCOPING

4.1 The screening undertaken as observations in reply to the flowcharts above highlights only a need for clarification of the geological properties of the site, lying as it does on the very edge of the claygate member and aquifer.

4.2 A flood risk assessement has also been carried out and has not identified potential flood risks for the site that cannot be managed. Recommendations for managing the flood risk include

4.2.1 Provision of permanent waterproofing measures

4.2.2 Dewatering during construction

4.2.3 Implementation of surface water drainage to provide a robust and sustainable drainage regime

4.3 The flood risk assessment concludes that the development of the site will not increase flood risk elsewhere

4.4 In conclusion, it is considered that there are no negative impacts anticipated in this basement proposal on the hydro-geological and hydrological conditions of the local environment that cannot be suitably addressed in the detailed design of this proposal It is however recommended that a full SI be undertaken to establish more precisely the soil types and water table.

J. Foster
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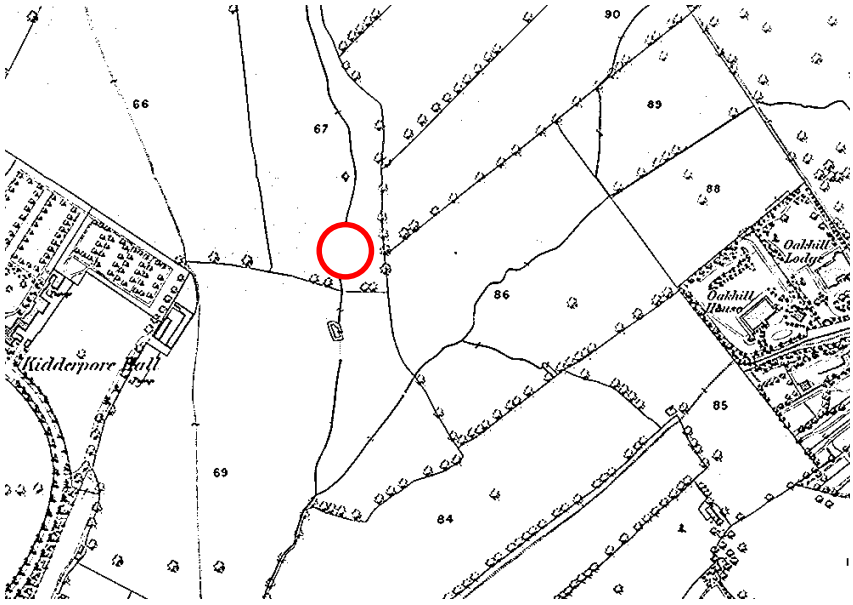
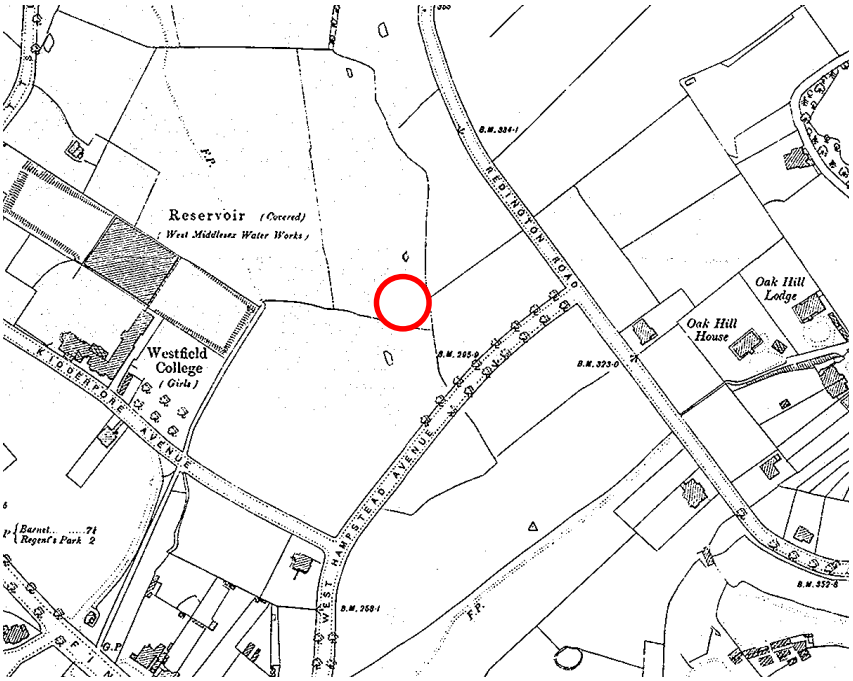
APPENDIX A

- OS MAPS 1866 & 1894

– FIGURES FROM THE CAMDEN GEOLOGICAL, HYDROGEOLOGICAL AND HYDROLOGICAL STUDY WITH 44 FERNCROFT AVE LOCATED.



Part OS Historical Map No 27 – Hampstead 1866



Part OS Historical Map No 27 – Hampstead 1894

524000 526000 528000 530000 532000 534000

188000 186000 184000 182000

Highgate

Hampstead Town

44 Ferncroft Ave.

Frognal and Fitzjohns

Fortune Green

Gospel Oak

Kentish Town

West Hampstead

Belsize

Haverstock

Cantelowes

Swiss Cottage

Camden Town with Primrose Hill

Kilburn

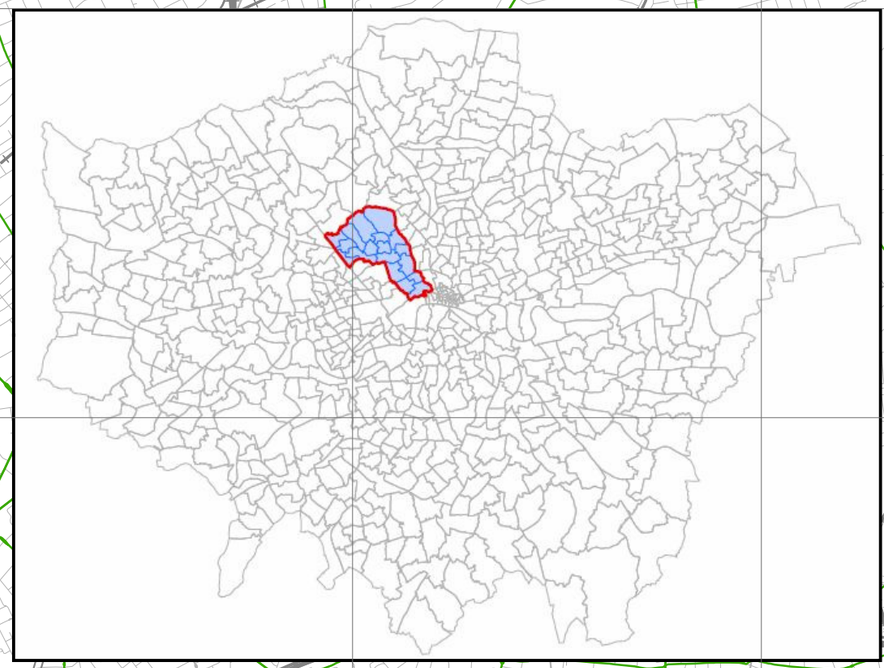
St. Pancras and Somers Town

Regent's Park

King's Cross

Bloomsbury

Holborn and Covent Garden



524000 526000 528000 530000 532000 534000

N

Scale at A3: 1:30,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

Legend

- London Borough of Camden
- Camden Wards
- Railway Lines
- A Roads

Camden Geological, Hydrogeological and Hydrological Study

Camden Administrative Boundaries

213923 FIGURE 1

524000 526000 528000 530000 532000 534000

188000 186000 184000 182000

44 Ferncroft Ave.

Data source - BGS Mapping - Scale 1:10,000

N

Scale at A3: 1:30,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

Legend

- London Borough of Camden
- Railway Lines
- A Roads

BGS 1:10K Artificial Ground

- MADE GROUND
- WORKED GROUND

BGS 1:10K Drift Geology

- ALLUVIUM
- HACKNEY GRAVEL FORMATION
- LANGLEY SILT FORMATION
- LYNCH HILL GRAVEL FORMATION
- STANMORE GRAVEL FORMATION

BGS 1:10K Solid Geology

- BAGSHOT FORMATION
- CLAYGATE MEMBER
- LAMBETH GROUP
- LONDON CLAY FORMATION

NB: Geological boundaries are largely indicative based on available geological mapping data

Camden Geological, Hydrogeological and Hydrological Study

Camden Geological Map

213923 FIGURE 3

524000 526000 528000

186000

44 Ferncroft Ave.

524000 526000 528000

Data Source: BGS Mapping - Scale 1:10,000

N

Scale at A3: 1:15,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.25 0.5 1 1.5
Kilometers

Legend

- London Borough of Camden
- Railway Lines
- A Roads

BGS 1:10K Artificial Ground

- MADE GROUND
- WORKED GROUND

BGS 1:10K Drift Geology

- ALLUVIUM
- HACKNEY GRAVEL FORMATION
- LANGLEY SILT FORMATION
- LYNCH HILL GRAVEL FORMATION
- STANMORE GRAVEL FORMATION

BGS 1:10K Solid Geology

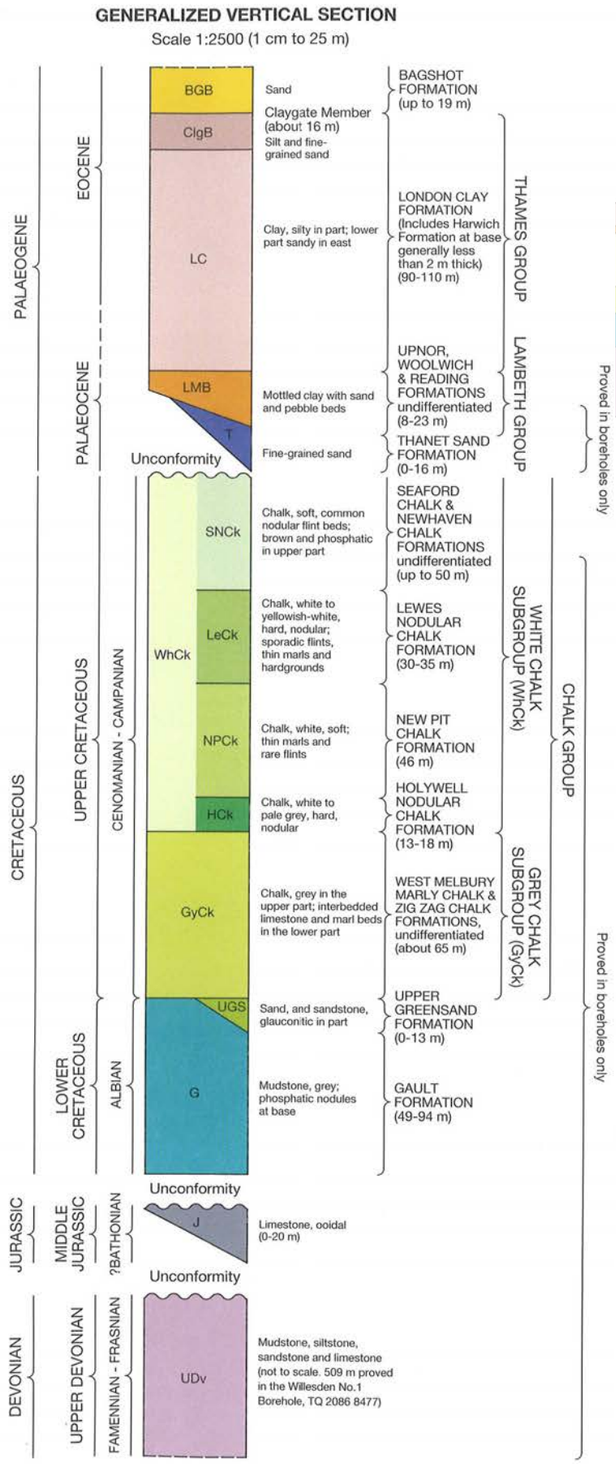
- BAGSHOT FORMATION
- CLAYGATE MEMBER
- LAMBETH GROUP
- LONDON CLAY FORMATION

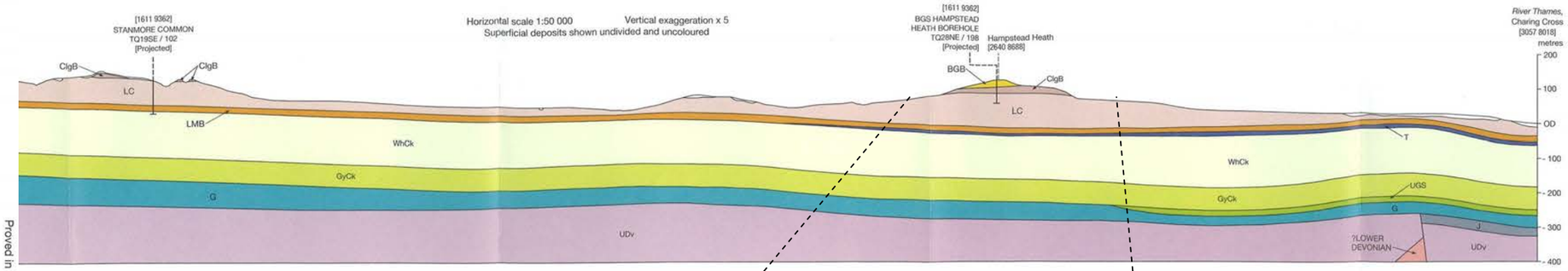
NB. Geological boundaries are largely indicative based on available geological mapping data

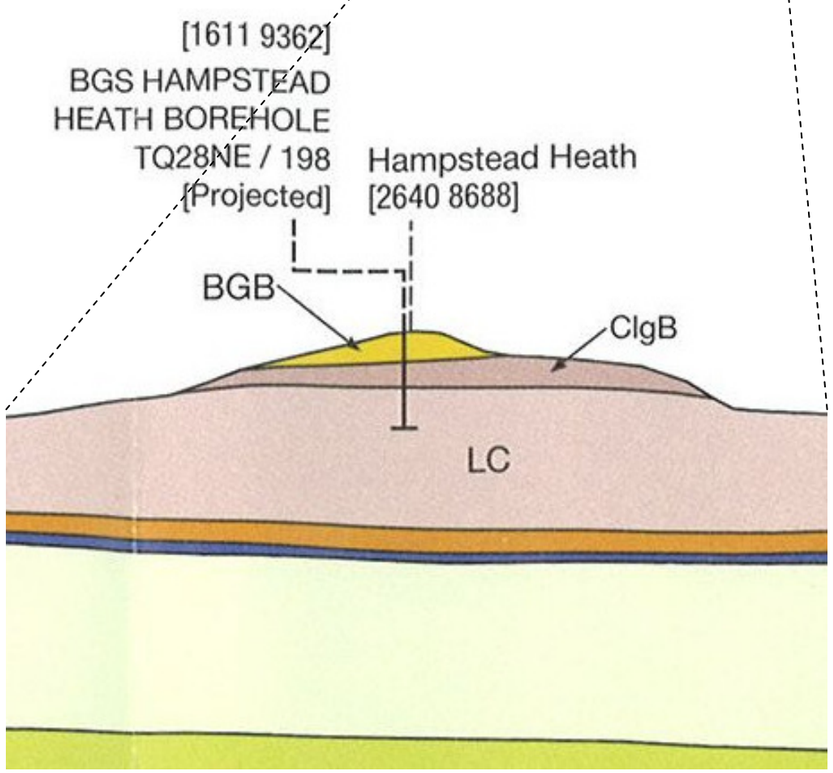
Camden Geological, Hydrogeological and Hydrological Study

North Camden Geological Map

213923 FIGURE 4



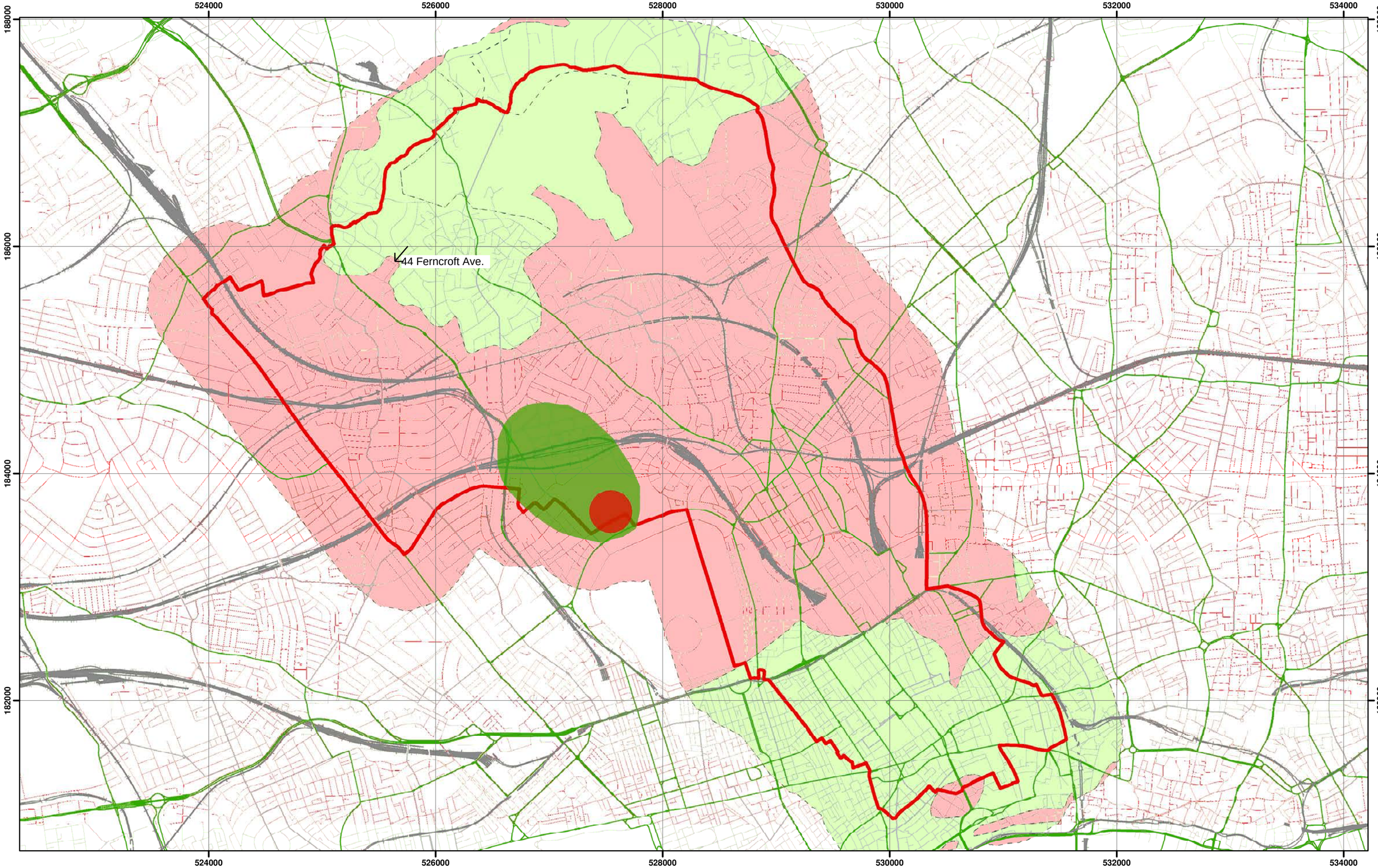




Source - British Geological Society, 1:50,000 Series
England and Wales Sheet 256 – North London

Camden Geological, Hydrogeological and Hydrological Study
Geological Long Section (NW – SE)

213923 **FIGURE 7**



Environment Agency Aquifer Designation based on BGS Mapping

N

Scale at A3: 1:30,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.5 1 2 3
Kilometers

Legend

Borough of Camden
Railway Lines
A Roads

Aquifer Designation

Secondary A Aquifer
Unproductive Strata

Source Protection Zone

Outer Source Protection Zone
Inner Source Protection Zone

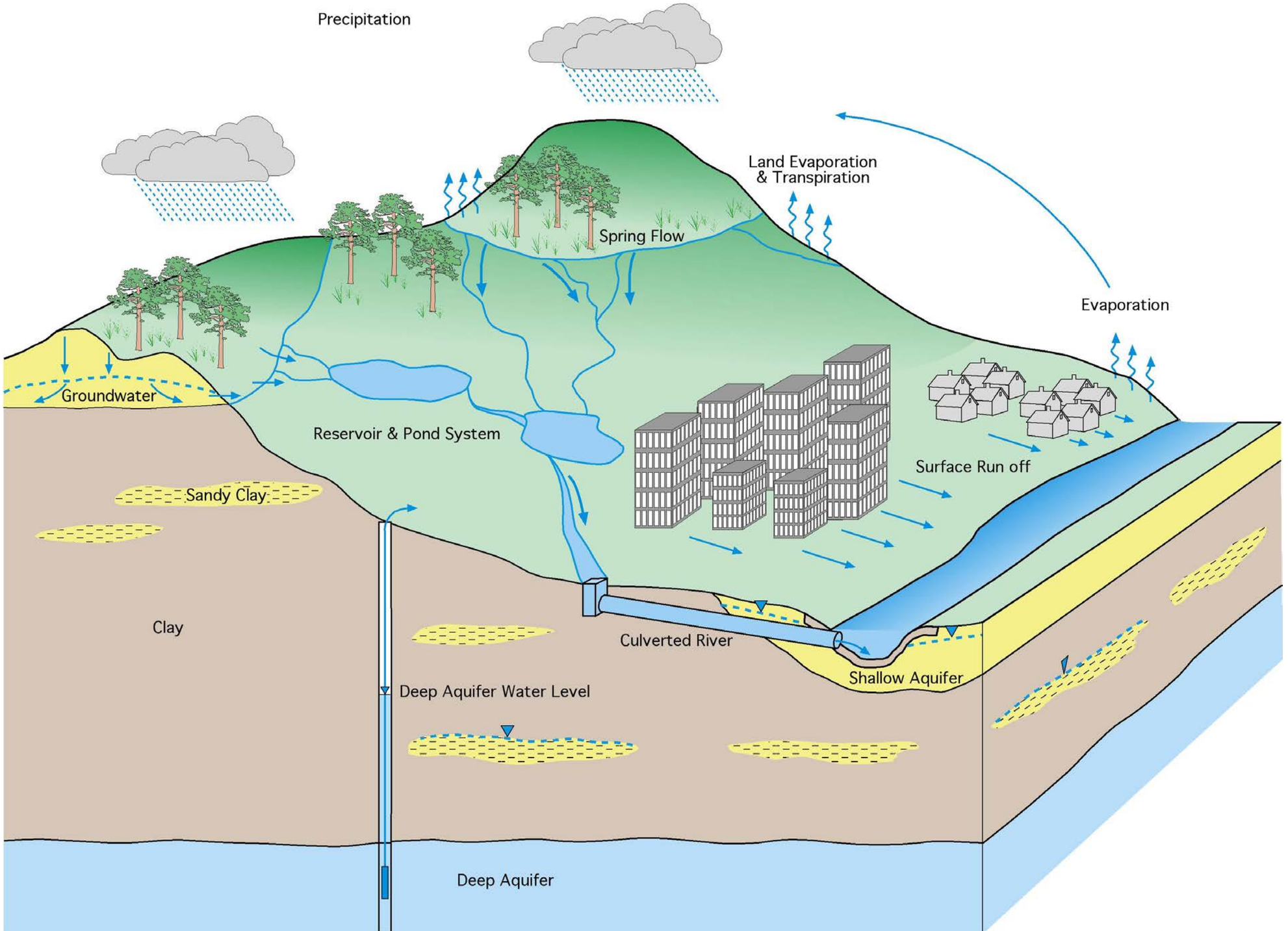
NB. Aquifer boundaries are indicative based on available geological mapping data

Camden Geological, Hydrogeological and Hydrological Study

Camden Aquifer Designation Map

213923

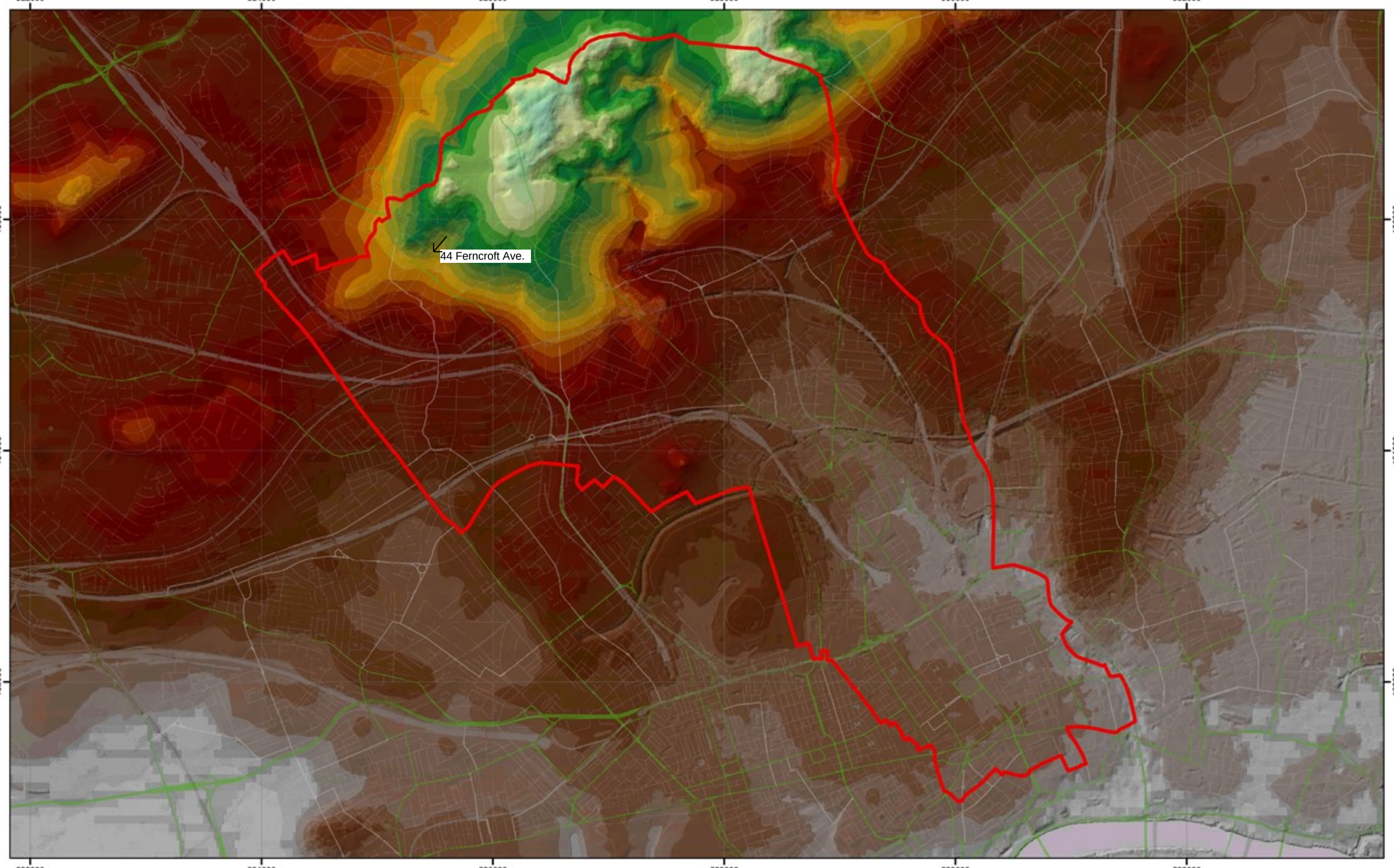
FIGURE 8



Camden Geological, Hydrogeological and Hydrological Study
Conceptual Ground Model

213923

FIGURE **9**



Topographic map based on digital terrain model provided by Camden Borough Council

N

Scale at A3: 1:30,000

Coordinate System:
British National Grid
GCS_OSGB_1936

0 0.375 0.75 1.5 2.25 3 3.75
Kilometers

Legend

- London Borough of Camden
- Railway Lines
- A Roads

DTM Terrain
* Window Size: 20.000

Elevation

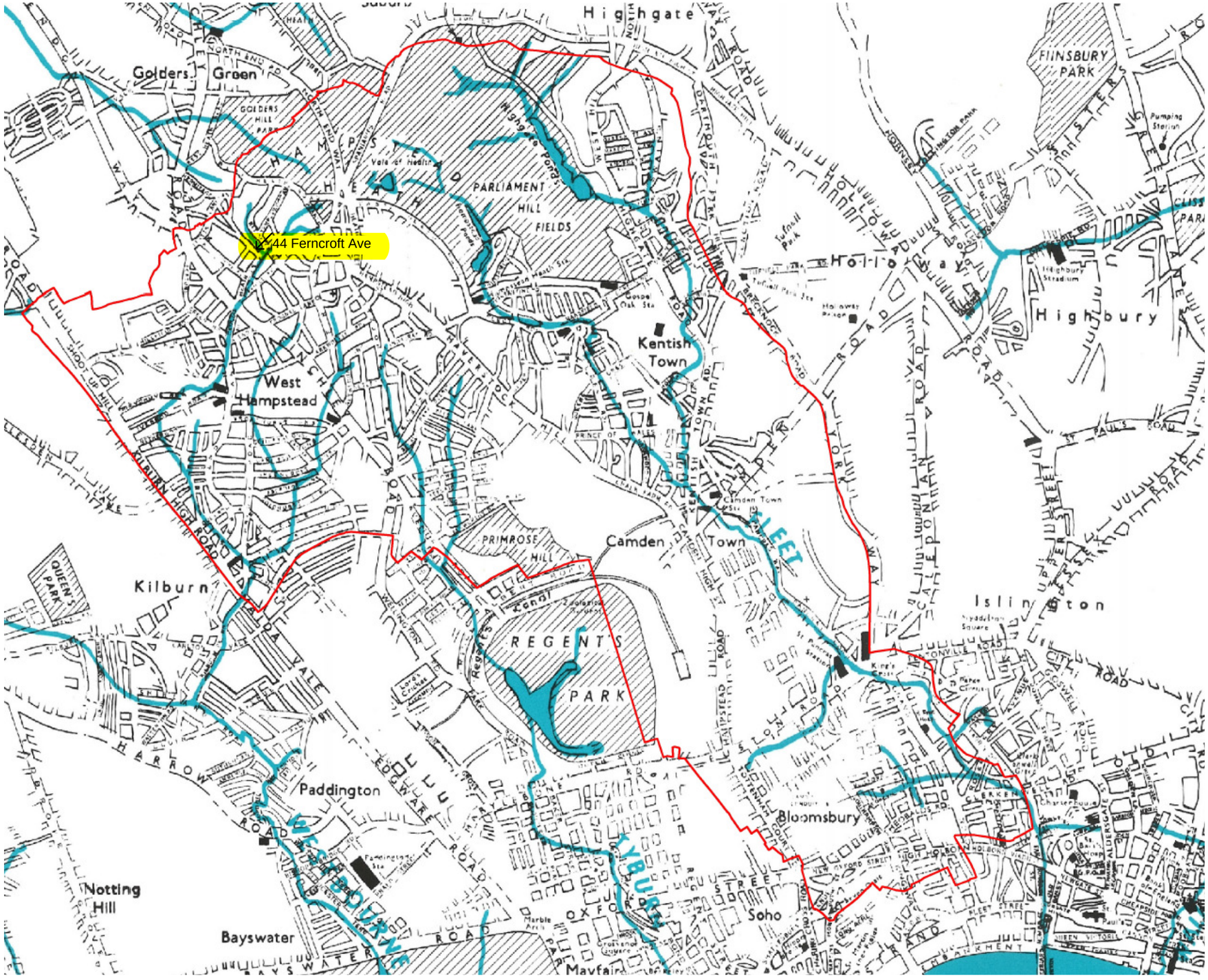
145 - 150	125 - 130	90 - 95	55 - 60	20 - 25	
140 - 145	120 - 125	85 - 90	50 - 55	15 - 20	
135 - 140	115 - 120	80 - 85	45 - 50	10 - 15	
130 - 135	110 - 115	75 - 80	40 - 45	5 - 10	
	105 - 110	70 - 75	35 - 40	0 - 5	
	100 - 105	65 - 70	30 - 35	-5 - 0	
	95 - 100	60 - 65	25 - 30	-7.4 - -5	

Camden Geological, Hydrogeological and Hydrological Study

Camden Topographic Map

213923

FIGURE **10**



Source – Barton, Lost Rivers of London

Camden Geological, Hydrogeological and Hydrological Study
Watercourses

213923 FIGURE **11**