

Basement Impact Assessment

EX21/003/01

27 Aylmer Road,

Highgate, London

N2 0BS

Revision	Date	Changes
-	01.02.21	Initial Issue
A	17.02.2021	Onsite borehole results added page 12 and Appendix 7
B	24.02.2021	Surface water runoff changes & potential affect clarified
C	03.10.2022	Revised plans

Preamble

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Revisions & additional material

Document History and Status

Revision	Date	Purpose/Status
-	01.02.2021	First Issue
A	17.02.2021	Onsite borehole results added page 12 and Appendix 7
B	24.02.2021	Surface water runoff changes & potential affect clarified
C	03.10.2022	Plans revised

Document Details

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APPENDIX

1.0 Executive Summary

- 1.1.1. The site location is 27 Aylmer Road, Highgate, London N2 0BS. The site falls within the Fortis Green ward of the London Borough of Haringey. Grid Reference: TQ 27279 88654 (Easting: 527279 , Northing: 188654)
- 1.1.2. The current site arrangement includes, prior to the completed works, a two storey residential building with a loft.
- 1.1.3. The proposed development comprises the demolition of the existing building and the construction of a complete new residential building with a basement, ground floor, first floor, loft/ second floor and roof.
- 1.1.4. The report is based on the information produced by the clients Architects and is intended to provide the basis for planning and may be subject to further design discussion and development with the successful Contractor.
- 1.1.5. The following assessments are presented:
- Site Geology
 - Site Hydrology
 - CPG4 Screening Flowcharts
 - Construction Methodology
 - Outline Temporary and Permanent Works Proposal
 - Ground Movement and Damage Assessment
- 1.1.6. Refer to Architect drawings for:
- Existing floor plans and elevations;
 - Proposed floor plans and elevations.
- 1.1.7. The authors of the assessments are:
- M Weston CEng MIStructE (Structural Engineer): Structural stability analysis has been provided by JMS Engineers (Chelmsford)
 - D Staines CEng MIStructE (Structural Engineer): Damage Assessment provided by JMS Engineers Ltd.
- 1.1.8. The ground and groundwater conditions beneath the site are as stated in Hydrological/Site report by others.

- 1.1.9. The construction methods proposed are “hit and miss” and reduced level retaining wall construction technique. This is shown in the Appendix as indicative only. Please note that the drawings may be subject to confirmation of details and final input from the successful contractor.
- 1.1.10. A structural monitoring strategy to control the works and impacts to neighbouring structures will comprise, if required, of monitoring tools and scheduled movement registration. Slope monitoring is at the present not required, based on the information provided by the BGS. The engineer must be notified immediately if any slope stability issues are encountered.
- 1.1.11. The strategic drainage system is as designed by others.
- 1.1.12. This is a live document and that further detailed assessments will be ongoing as the design and construction progresses.

2.0 Introduction

This report has been prepared to set out the proposed design philosophy and construction method statement for the proposed basement construction at 27 Aylmer Road, Highgate, London N2 OBS. It will summarise the basis of the structural and civil engineering design and will be issued to all relevant parties including the Client, Local Planning Authority and Design team members.

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This report should not be relied upon exclusively by the Client for decision-making purposes and may require reading with other material or reports.

The scope of the proposal is. the demolition of the existing building and the construction of a complete new residential building with a basement, ground floor, first floor, loft/ second floor and roof.

The report is based on the information produced by the clients Architects, & borehole data provided by trial holes examination on site and is intended to provide the basis for planning and may be subject to further design discussion and development with the successful Contractor.

The work carried out comprises a Basement Impact Assessment, which is in accordance with the procedures specified in the planning guidelines for the London Borough of Haringey. The aim of the work is to assess if the proposed basement will have a detrimental impact on the surroundings with respect to groundwater and land stability and in particular to assess whether the development will affect the stability of neighbouring properties, local and regional hydrogeology and whether any identified impacts can be appropriately mitigated by the design of the development.

2.1. Sources of Information

2.1.1. The following baseline data have been referenced to complete the BIA in relation to the proposed development:

- Fiona Cobbs, Structural Engineer's Pocket Book;
- Architect's floor layouts, sections and elevations.
- BS8000-0:2014: Workmanship on construction site.

2.2. Existing and Proposed Development

2.2.1. The existing property is currently being occupied and comprises of a ground floor, first floor level and loft area. Refer to drawings in the Appendix.

2.2.2. The adjacent properties present similar features of 27 Aylmer Road, Highgate, London N2 OBS.

2.2.3. The property at 27 Aylmer Road, Highgate, London N2 OBS and adjacent properties are not in the Listed Building.

2.2.4. Underground infrastructures are not present beneath/close to the site. Refer to Transport for London Property Asset Register in Appendix

2.2.5. Existing and Proposed development drawings are provided by Architect. Refer to Architect's drawings in Appendix for details.

2.2.6. The proposed development will utilise "hit and miss" technique which include sequenced stages of works as denoted by the ASUC "Guidelines on safe and efficient basement construction".

2.2.7. The outline construction programme for the proposed development, shown as indicative only in appendix, is to be agreed with successful contractor.

2.2.8. The full extent of the proposed basement will be within the boundary of the property and below the footprint of the proposed above-ground construction. There will be increase in impermeable surface area.

2.3. London Borough of Haringey

- 2.3.1. This section contains materials from The London Borough of Haringey Website, The Natural History of Haringey: David Bevan, Haringey ward profiles and Haringey's Economic profile, Tottenham: Growth before 1850 and the Seven Sisters, London.
- 2.3.2. The London borough of Haringey was created in 1965 with the amalgamation of three former municipal boroughs (Hornsey, Wood Green and Tottenham) and has an area of slightly over 11 square miles.
- 2.3.3. The Haringey borough was at the edge of a huge glacial mass last ice age, and there is evidence from both the stone age and the bronze age as well as discoveries suggesting Roman settlement and a Saxon invasion.
- 2.3.4. The borough was very rural up until the 18th century just with a few large country houses, however, when railways arrived in the 19th century this led to rapid urbanisation and developments, at present around 25% of borough remains as green space.
- 2.3.5. There is a varied geography and topography of Haringey with very high ground around Highgate and Muswell Hill, up to 130m above sea level. The land then falls sharply away to the flat low lying land beside the River Lea in the East. The Borough is also home to 5 distinct ancient woods and 3 notable above ground rivers. Haringey has achieved Green Flag status for eight of its parks, the highest number awarded to any London Borough.
- 2.3.6. The Seven Sisters ward is at the very south of Haringey and close to the boundary of the Hackney borough. It is on the route of Ermine Street, a Roman road connecting London to York and an area once held by Waltheof II, Earl of Northumbria who held all land within the Tottenham Manor.
- 2.3.7. There is some speculation and mystery to the origin of the name 'The Seven Sisters'. It is believed the name is a reference to 7 elm trees, planted in a circle, around an oak tree in Page Green. The area was officially known as The Seven Sisters by 1732, although there is evidence from the early 1600s with references to 'an ancient walnut tree surrounded by a tuft of elms' this is also visible on a map from 1619. The name stuck with it as in 1840 the passing road connecting Tottenham and Camden town was named Seven sisters road, and in 1872 the Seven Sisters train station opened nearby.
- 2.3.8. It is documented that in 1852, the trees were in a sorry state so seven new trees were planted by the seven daughters of Mr J McRae. The tradition of planting the trees in a circle, by seven sisters, has continued to this day, with the trees being replanted a few times since.
- 2.3.9. The following historical maps indicate the development of this area over the period.

2.3.10. Published 1873 – Surveyed 1863-69



Figure 1: Map of Haringey Borough published in 1873 – Surveyed 1863-69

2.3.11. Our earliest map dating to the mid Victorian era, shows the entirety of the region later known as The Seven Sisters, with Page Green near the centre of the map. It is clear on the map the area is not very developed and is mostly agricultural land.

2.3.12. Published 1895 – Surveyed 1893-96



Figure 2: Map of Haringey Borough published in 1895 – Surveyed 1893-96

2.3.13. This second map, published only 22 years later shows a shot of page green, where we can see the area has transformed to very urban and densely populated area with lots of terraced housing in typical Victorian arrangement.

2.3.14. Published 1895 – Surveyed 1893-96



Figure 3: Map of Haringey Borough published in 1895 – Surveyed 1893-96. Contains Ordnance Survey data © Crown Copyright and database right 2013.

2.3.15. The final map is from the same period, but to a different scale, where we can see more of the surrounding area. When compared to a current day map, the streets and houses on plan remain relatively unchanged, confirming that all properties are, more or less, from the same period.

2.3.16. *Contains Ordnance Survey data © Crown Copyright and database right 2013.*

3.0 Site Geology

The 1:50 000 scale geological map for this area, made available by the BGS, shows the sites bedrock geology to be London Clay Formation comprising of Clay, Silt, Sand & Gravel.

3.1. Bedrock Geology

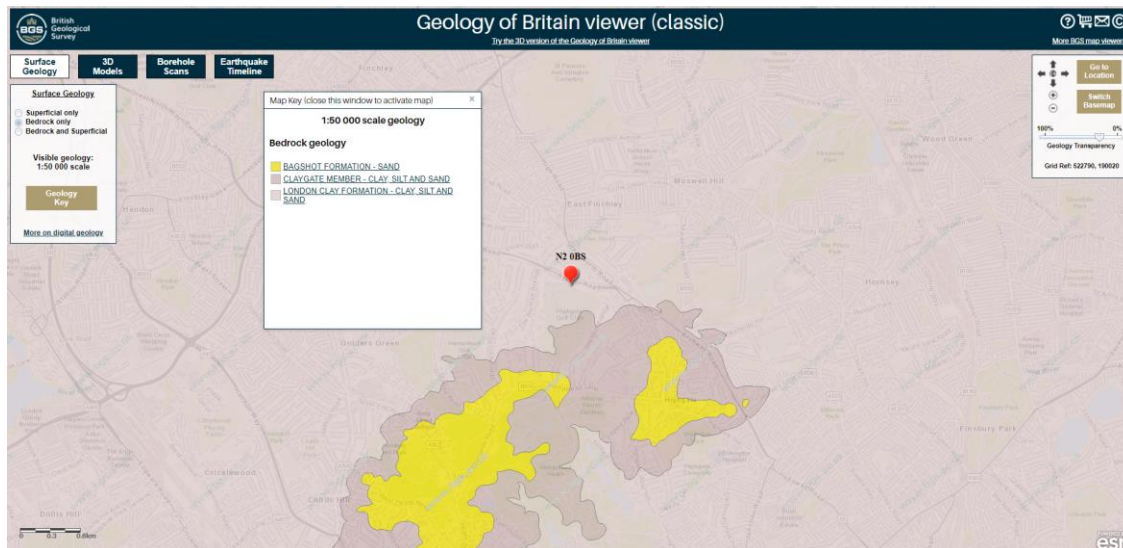


Figure 4: BGS Bedrock Geology Map

3.1.1. The superficial drift deposits are not recorded at this location, but based on the surrounding area we could expect this to be a mixture of silty clay, sand & gravel from river deposits, or an alluvium comprising of clay, silt and sand.

3.2. Superficial Geology

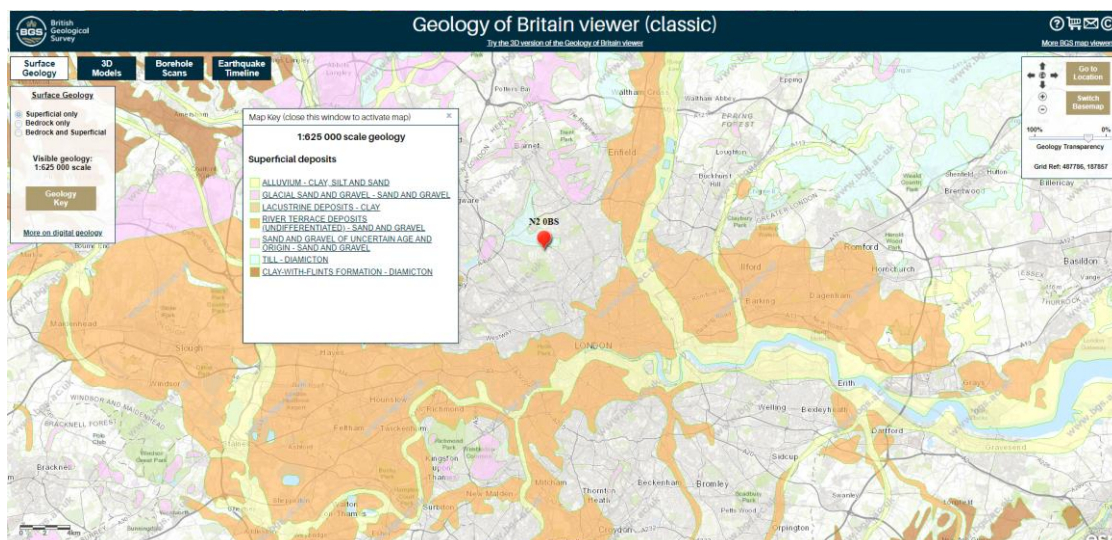


Figure 5: BGS Superficial Geology Map

- 3.2.1. Most of Haringey is underlain with London clay and significantly below this, a layer of chalk, which acts as the major aquifer of the London basin drained by the River Thames.

3.3. Boreholes

- 3.3.1. A site specific borehole was carried out. See Appendix for Borehole details.
- 3.3.2. The onsite borehole log results, that can be found in Appendix 7, indicate a soft silty clay up to 1.5m deep, followed by a strata of firm mid brown slightly silty clay to a depth of approx. 2.5m which turns to stiff mid brown slightly silty clay to a depth of 3.5m. From there it starts to become very stiff, dark brown slightly silty clay with orange silt partings to a depth of 6.0m. Groundwater is observed at approx. 4.0m of drilling. However as the clay is not particularly permeable, changes in groundwater level should be minimal. Typical safe bearing capacity for stiff clays ranges between 150 – 300 kN/m (Cobb, 2015).

4.0 Hydrology

4.1 GS Hydrogeology Map Extract

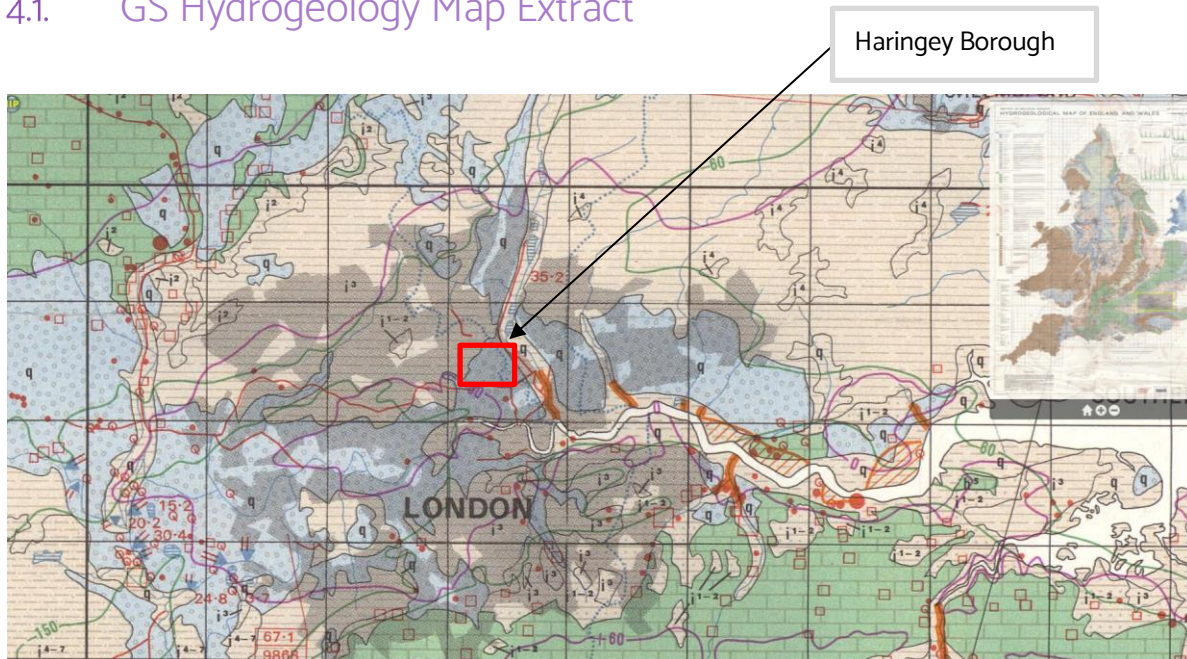


Figure 6: Hydrology Map of London

4.1.1. Key: Relates to areas in the box of interest:

4.1.2. Blue: Quaternary Sands and Gravels – Include glacial, fluvioglacial and plateau gravels, river terrace deposits, raised beaches and marine sands and gravels of differing origin, but all of limited importance as aquifers.

4.1.3. Yellow: All yellow areas defined as ‘Concealed aquifers; aquifers with limited or local potential.

4.1.4. The Hydrogeology study will enable:

- Identification of maximum probable flood at any location
- The variation in water production from catchments
- The relationship between a catchments surface water and groundwater resources
- Expected flood flows over a spillway, at a culvert, or in an urban storm drainage system
- Required resevoir capacity to allow adequate water for irrigation or municipal water supply in drought conditions

4.1.5. Every building must be designed and constructed in such a way that there will not be a threat to the building or the health of the occupants as a result of flooding and the accumulation of groundwater.

- 4.1.6. Basements affect groundwater flows as the displaced water has to find a new course around the area of obstruction, the newly diverted flow may have the potential to cause problems for nearby buildings.

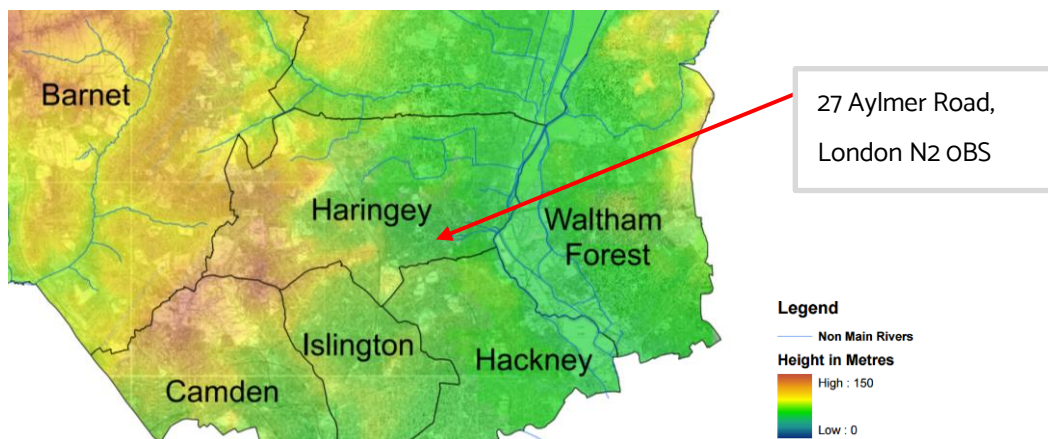
5.0 CPG4 Screening Flowcharts

For the purposes of this report reference has been made to Appendix E of the Arup document screening tools, which includes a series of questions within a screening flowchart for three categories; groundwater flow; land stability; and surface water flow.

5.1 Slope Stability

5.1.1. Does the existing site include slope, natural or man-made, greater than 7° (approximately 1 in 8)?

5.1.2. No. The following topography map shows flat ground around our area of interest in Haringey - all the sloping ground is all to the west of Haringey.



5.1.3. Will the proposed re-profiling of landscaping at site change slopes at the property boundary to greater than 7° (approximately 1 in 8)?

5.1.4. No. The proposal does not include landscaping that affects the boundaries.

5.1.5. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?

5.1.6. No. The neighbouring sites are at a similar gradient.

5.1.7. Is the site within a wider hillside setting in which the general slope is greater than 7° (Approximately 1 in 8)?

5.1.8. No. The wider gradient is less than 1:8.

5.1.9. Is London Clay the shallowest stratum on the site?

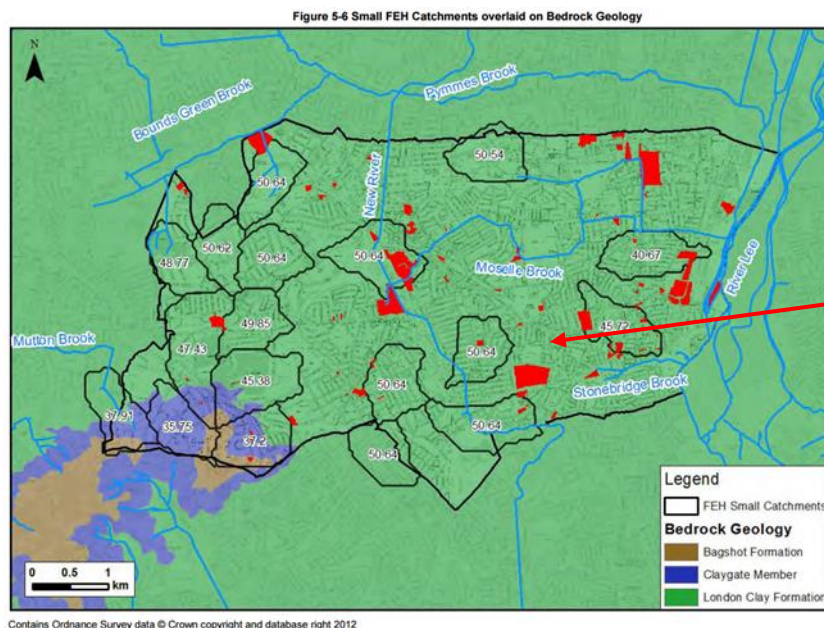
5.1.10. Yes. London Clay is the shallowest stratum – carry forward to scoping stage.

5.1.11. Will any trees be felled as part of the proposed development and/or are there any proposed works within any tree protection zones where trees are to be retained?

- 5.1.12. No. No trees are to be felled. The area of the site is described as TPO. Please see Appendix 12.
- 5.1.13. Is there a history of shrink swell subsidence in the local area and/or evidence of such effects at the site?
- 5.1.14. No. There is no such evidence to the existing building or neighbouring properties.
- 5.1.15. Is the site within 100m of a watercourse, or spring line?
- 5.1.16. No. The Brent Reservoir, approx. 5.6 km from the site, the only other near watercourse is the West Reservoir, approx. 5.0km from the site.
- 5.1.17. Is the site within an area of previously worked ground?
- 5.1.18. No. Historic records indicate that the site has only been built on in the late 18th Century & was built on land with agricultural or horticultural use prior to that.
- 5.1.19. Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering will be required during construction?
- 5.1.20. No– the site lays within an area that water level is not recorded. Presumed to be below basement formation level. Notify the engineer if otherwise.
- 5.1.21. Is the site within 50m of any ponds?
- 5.1.22. No. The site is outside a 50m zone of any ponds.
- 5.1.23. Is the site within 5m of a public highway or pedestrian right of way?
- 5.1.24. No, as shown by Google maps attached in the Appendix.
- 5.1.25. Will the proposed basement significantly extend the differential depth of basements relative to neighbouring properties?
- 5.1.26. Yes. The proposed basement does not abut existing cellars. – carry forward to scoping stage.
- 5.1.27. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?
- 5.1.28. No – see Haringey Critical Infrastructure Map and Transport Asset In Appendix.

5.2. Surface Flow and Flooding

- 5.2.1. Is the site within a catchment area?
- 5.2.2. No. The site is outside the catchment area. As shown on the map below:



- 5.2.3. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run off) be materially changed from the existing route?
- 5.2.4. Yes. The proposed site drainage and surface water flows will be changed from the existing route since the footprint of the proposed building is larger in comparison to the existing.
- 5.2.5. Will the proposed basement development result in a change in the proportion of hard surfaces/paved external areas?
- 5.2.6. Yes. The amount and proportion of hard standing areas will change (see Appendix).
- 5.2.7. Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?
- 5.2.8. Yes. There will be changes in the surface water flow off-site as a result of this proposal. Surface water will be discharged via proposed connection. Please refer to 5.5.1.
- 5.2.9. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?
- 5.2.10. No. There will be not changes in the quality of surface water as a result of this proposal.
- 5.2.11. Is the site in an area known to be at risk from surface water flooding? Or is the proposed basement below the static water level of a nearby surface water feature?
- 5.2.12. No. The map from the Haringey council shows areas of potential flood zones which the site falls outside (see Appendix).

5.3. Surface Water (Flood Risk)

- 5.3.1. Given the development lies within flood zone 1 and is not subject to overland flooding, no special construction features are required to mitigate fluvial flooding.

5.4. SUDs Considerations

- 5.4.1. Consideration of SuDS is a planning requirement for major developments in order to provide betterment to the runoff regime post-development. SuDS are designed to replicate the natural course of drainage as closely as possible with a view to reducing the impact of flooding, removing pollutants at source and combining water management with green space. Any solution needs to be agreed with appointed Civil/Drainage Engineer.
- 5.4.2. The following hierarchy for surface water disposal is considered where reasonably practicable:
- Into ground (infiltration);
 - To a surface water body;
 - To a surface water sewer;
 - To a combined sewer.
- 5.4.3. For this development the London Borough of Haringey Council has been identified as the Lead Local Flood Authority (LLFA) and as such are responsible for the approval of SuDS proposals. The requirements are set out in the London Borough of Haringey guidance document. In accordance with the guidance, the surface water design follows the criteria and incorporates SuDS wherever practicable.

5.5. SUDs Incorporation and Maintenance

- 5.5.1. The site geology is generally clay, therefore it is unlikely that surface water can be disposed of via infiltration. A flow control and attenuation system is proposed in order to restrict the rate of run-off to an appropriate run-off rate. The final system will be agreed once the planning layout will be approved, in order to evaluate the opportunity for SUDs features that maximise amenity and biodiversity benefits.
- 5.5.2. Maintenance of the system shall include for regular inspections at varying intervals depending on the system requirements. In this case, the responsibility for maintaining system will be with the property owner.

5.6. Surface Water Strategy

5.6.1. The surface water strategy will be based upon the SuDS implementation as outlined above and the hierarchy for surface water disposal considerations include:

- Store rainwater for later use - rain water storage can be utilised where possible.
- Use infiltration techniques, such as porous surfaces in non-clay areas - infiltration is often unlikely owing to the general geology in the area which is predominantly clay.
- Attenuate rain water in ponds or open water features for gradual release – can be applied where the planning layout allows.
- Surface water runoff can be restricted before discharging to the public sewer at a reduced rate, using flow control and attenuation techniques. Systems will be designed to accommodate the worst case duration for all storm events up to the 1:100 year, inclusive of climate change.
- Direct rainwater direct to the watercourse – N/A
- Discharge rainwater to a surface water sewer/drain – N/A

6.0 Scoping Stage

The purpose of scoping is to assess in more detail the factors to be investigated in the impact assessment. Potential consequences are assessed for each of the identified potential impact factors.

It is considered that the scope of the investigation complies with the guidance issued by the Council and is therefore a suitable basis on which to assess the potential impacts.

6.1 Groundwater Flow

6.1.1. From previous excavations carried out in this area supervised by this Company, it has been established that ground water levels are below that of the proposed excavation depth and is reinforced by the findings of historic boreholes. Borehole onsite shows similar results.

6.2 Slope Stability

6.2.1. London Clay is the shallowest stratum on this site and the structural design of the retaining walls and slabs will take this into account accordingly.

6.2.2. The site lies within an area identified as a secondary aquifer. The nearby bore-hole records suggest that the water table is lower than the basement and associated works.

6.2.3. The existence of basements in adjoining buildings is presumed to be absent. However, the structural engineering proposal for this scheme involves the use of “hit and miss” sequenced retaining wall construction where close to nearby properties to form the structural box below ground which should have no negative effect on neighbouring properties.

6.2.4. Due to the limited soils information available the following parameters are to assumed within the designs: Using k_0 , the earth pressures are considered 'at rest'. Active pressure (k_a) will be mobilised if the wall moves 0.25-1% of the wall height, while passive pressures (k_p) will require movements of 2-4% in dense sand or 10-15% in loose sand/fill.

k_0 values adopted:

- 0.50-0.60 for normally consolidated clay,
- 0.35 for dense sand,
- 0.6 for loose sand/fill
- 1.0-2.8 for over-consolidated clays such as London clay.

(source: Structural Engineer's Pocket Book, Eurocodes by Fiona Cobb)

7.0 Construction Methodology/ Engineering Statements

7.1 Outline Temporary and Permanent Works Proposals

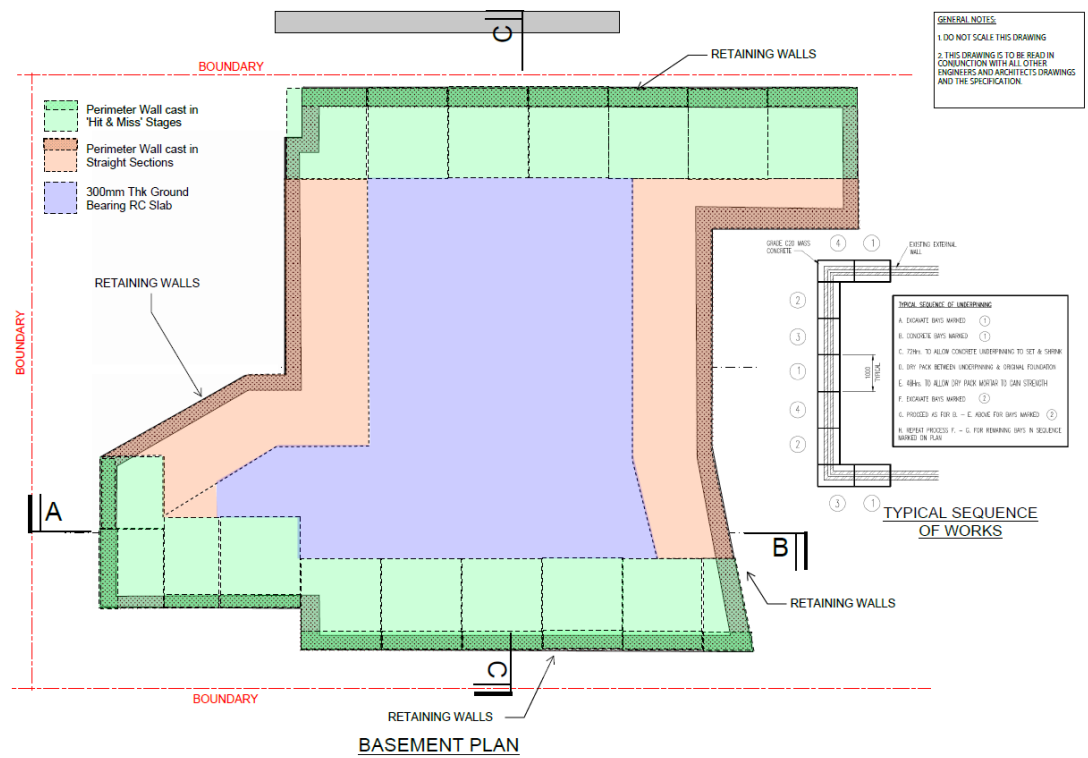
- 7.1.1. This method statement has been prepared to provide information on the likely methods for Basement Construction, subject to confirmation of details and final input from the successful contractor.
- 7.1.2. The final methods will be subject to the limitations and constraints noted in this document. Any revised matters associated with the Method Statement will be issued for review and comment prior to any site construction works.
- 7.1.3. The method of construction is to be agreed by all parties, with specific reference to the potential for vibrations and noise from the basement construction.
- 7.1.4. A detailed method statement for means of access, site logistics and intended vehicle movements, particularly spoil removal, will be agreed with the main contractor prior to commencing any site works and any variations reported accordingly.
- 7.1.5. All services surveys, diversion agreements and temporary supply requirements will be agreed, and approvals will be in place prior to commencement of works.
- 7.1.6. Existing building condition surveys will be carried out prior to commencing any works, of neighbouring property.

7.2 Sequence of works

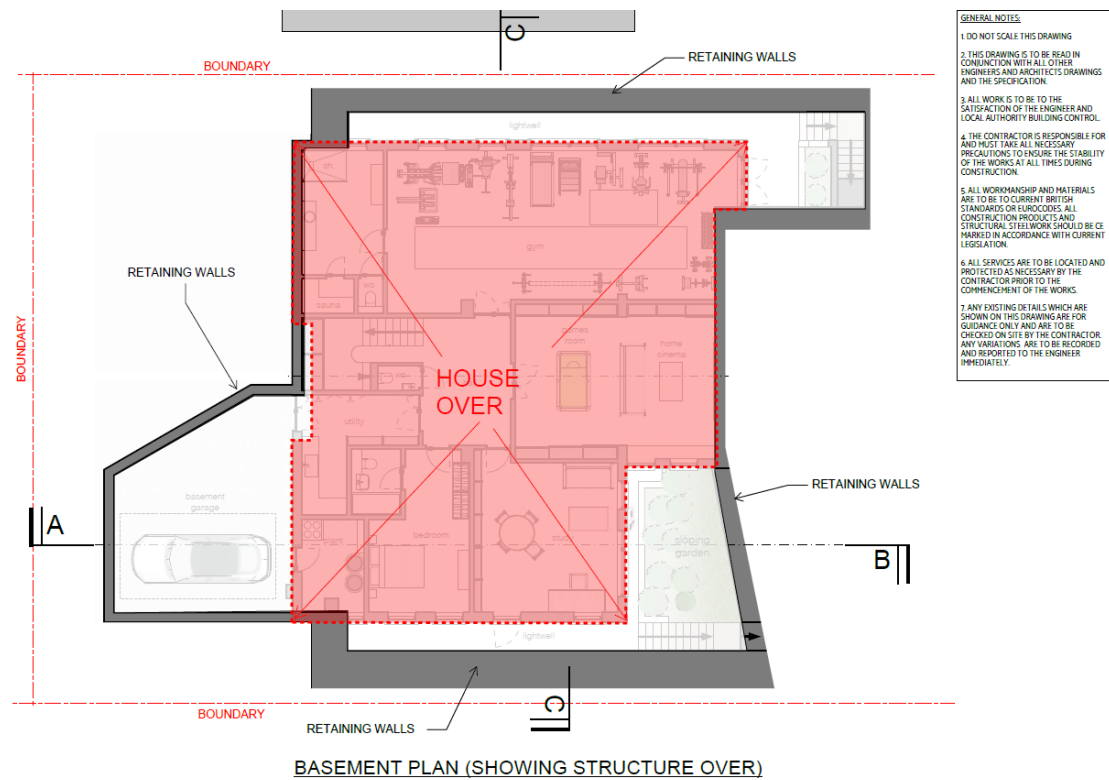
- 7.2.1. Establish site access & hoarding.
- 7.2.2. Investigatory works as required for full detailed design.
- 7.2.3. It is presumed that all the temporary works to ensure stability to adjacent properties are provided during demolition as designed and specified by contractor.
- 7.2.4. It is the contractor's responsibility to take all necessary steps to ensure that the structure is adequately propped, shored and braced to ensure that during the progress of the works excessive deflections and deformation of the structure do not occur. Therefore, the contractor shall discuss with the engineer any proposals for temporary works.
- 7.2.5. The sequence of works shall be based on a maximum leg length of approx. 1.0m. and max. of 1.2m. The agreed sequence of operations shall be strictly adhered to. In case the contractor wishes to alter any

sequence, it must be discussed in prior with the engineer and/or local authorities and any amendment must be confirmed in writing.

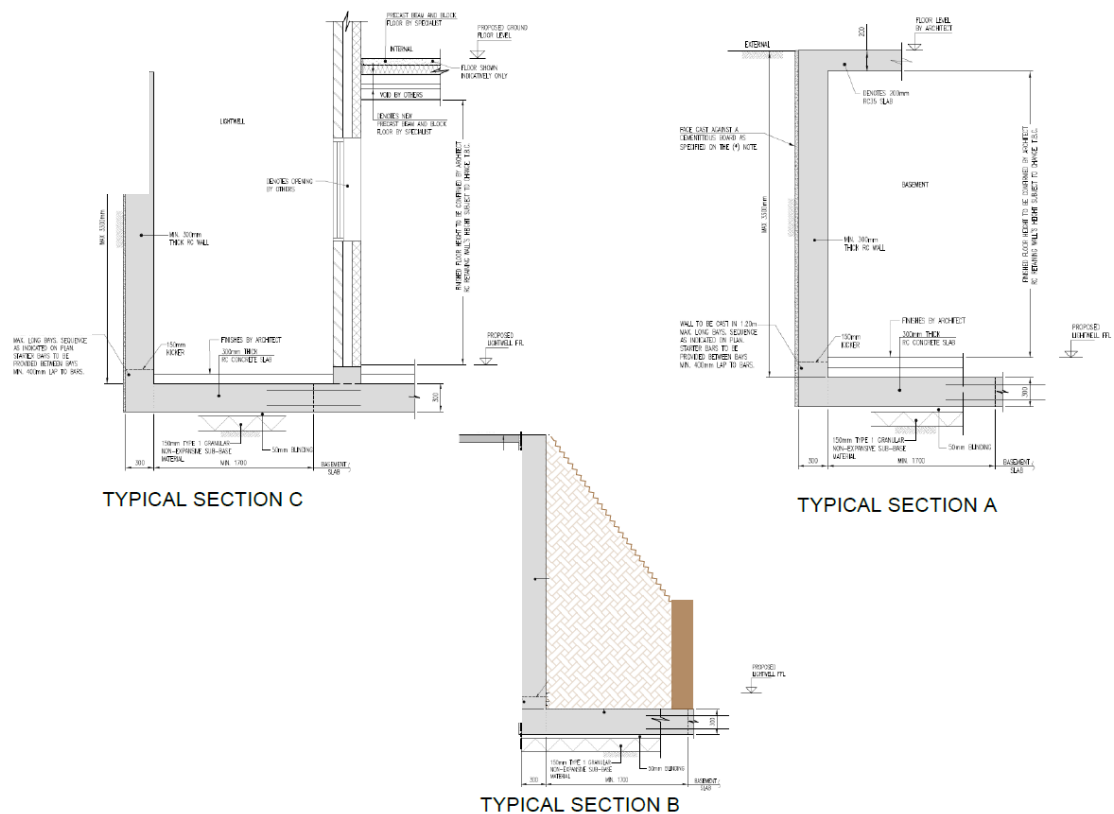
7.2.6. Sequenced construction sections or straight sections can take place as per indicative sketch below.



7.2.7.



7.2.8.



7.2.9.

7.2.10. During the excavation, the contractor shall take all the necessary steps to prevent softening of the ground. The contractor shall also ensure that the base of the excavation shall not become contaminated by loose material falling into the excavation. The contractor shall take steps to ensure that the size of the excavation loosely matches the required size agreed with the engineer /local authorities. Excessive overbreak will not be permitted and the contractor shall provide all necessary trench sheeting and strutting to prevent overbreak.

7.2.11. Prior to concreting, the contractor shall incorporate shear keys to permit shear transfer between adjacent retaining wall legs. Where necessary, projecting dowel bars should be cleaned of all loose dirt prior to concreting.

7.2.12. All concrete shall be grade RC35 (unless specified otherwise) and strictly operated according to the concrete specifications contained in BS8110:Part 1:1985. It should be noted that the concrete should be adequately compacted with a vibrator poker to ensure adequate density.

7.2.13. Mix proportions for the dry concrete are to be by weight 1:3 (cement:zone 2 sharp sand) with combex non-shrink admixture added in accordance with manufacturers recommendation. The constituents are to be mixed dry and small volume of water is to be added that such that when compressed, a small bar of the mixture retains its shape..

7.2.14. Internal waterproofing membranes, screeds and finishes are to be placed at completion of the retaining wall boxes and ground floor slab.

- 7.2.15. The final sequence of working in detail will be agreed with the successful main contractor and any variations reported accordingly. It is worth mentioning that retaining wall legs may be punctured by the services entering the building. The means of “sleeving” these services shall be agreed with the engineer during the progress of the works.
- 7.2.16. Based on the size of the proposed development, it is presumed that it is likely that the bays construction will be undertaken on “top down” construction method, to be confirmed by the successful contractor.
- 7.2.17. Refer to Appendix for typical details and notes for construction in one pour. (Note: details are INDICATIVE only, shown only for illustrative purposes.) where necessary, multi-stages pouring must be undertaken, contractor to advise.
- 7.2.18. It is to the successful contractor’s discretion to finalise appropriate methodology based on site accessibility and resources.

7.3. Establish Access & Hoarding

- 7.3.1. The hoarding will be located around the property to enclose all works.
- 7.3.2. A plywood hoarding will be erected with vertical standards, anchored to the ground. The hoarding will be fully secure with a lockable door for access. Suitable heights and colours will be in accordance with the Local Authority requirements.

7.4. Waterproofing System and Screed

- 7.4.1. For all basement areas, the Architect will prepare design details in conjunction with a specialist contractor. The waterproofing system will be installed in accordance with the Architects details in conjunction with the specialist contractor technical specifications once the basement slab is complete.
- 7.4.2. The floor finishes, which may include insulation and under floor heating, can then be laid in accordance with the Architects details. A cement and sand screed will be applied on the slab surface.
- 7.4.3. The height of the basement and relative level of the water table determines that Types A (barrier), B (structurally integrated) or C (drained) protection against ingress of water will be satisfactory, as defined by BS 8102:2009. The basement will be constructed and detailed to achieve a Grade 3 Level of Performance, as defined by BS 8102:2009.

Table 2 Grades of waterproofing protection

Grade	Example of use of structure ^{A)}	Performance level
1	Car parking; plant rooms (excluding electrical equipment); workshops	Some seepage and damp areas tolerable, dependent on the intended use ^{B)} Local drainage might be necessary to deal with seepage
2	Plant rooms and workshops requiring a drier environment (than Grade 1); storage areas	No water penetration acceptable Damp areas tolerable; ventilation might be required
3	Ventilated residential and commercial areas, including offices, restaurants etc.; leisure centres	No water penetration acceptable Ventilation, dehumidification or air conditioning necessary, appropriate to the intended use
^{A)} The previous edition of this standard referred to Grade 4 environments. However, this grade has not been retained as its only difference from Grade 3 is the performance level related to ventilation, dehumidification or air conditioning (see BS 5454 for recommendations for the storage and exhibition of archival documents). The structural form for Grade 4 could be the same or similar to Grade 3.		
^{B)} Seepage and damp areas for some forms of construction can be quantified by reference to industry standards, such as the ICE's <i>Specification for piling and embedded retaining walls</i> [1].		

7.4.4.

Figure 7: Grades of waterproofing protection

7.4.5. To achieve Grade 3 Performance, we propose either a drained cavity installed in front of the concrete wall; or an applied waterproofing membrane applied and bonded to the internal faces of the pins. Waterproof concrete will also be employed.

7.5. Existing Drainage

7.5.1. Existing foul and surface water public sewers are located to the front of the property (See Appendix 14). The existing sewers are not affected by the changes in the basement area, therefore a diversion is not required.

8.0 Conclusion

- 8.1.1. The proposed re-development of 27 Aylmer Road, Highgate, London N2 OBS can be achieved using standard construction techniques and materials.
- 8.1.2. Where mechanical means are necessary to construct permanent works, these can be of a type that generates low vibrations to which the surrounding buildings have a form and construction that is robust and resistant to.
- 8.1.3. We can therefore conclude with confidence that the construction of the proposed development generally, and the subterranean basement in particular, will not affect the integrity of the surrounding building stock or overload the near-surface geology.
- 8.1.4. There are no critical utilities beneath the site that cannot be relocated easily to accommodate the construction and, as there is no change in use proposed there will be no significant increase in foul discharge to the sewer despite the increase in level of accommodation.
- 8.1.5. The techniques proposed for the subterranean element of the building and the nature of the underlying geology minimises the risk of instability, ground slip and movement.

Appendix 1: Transport for London Property Asset Register

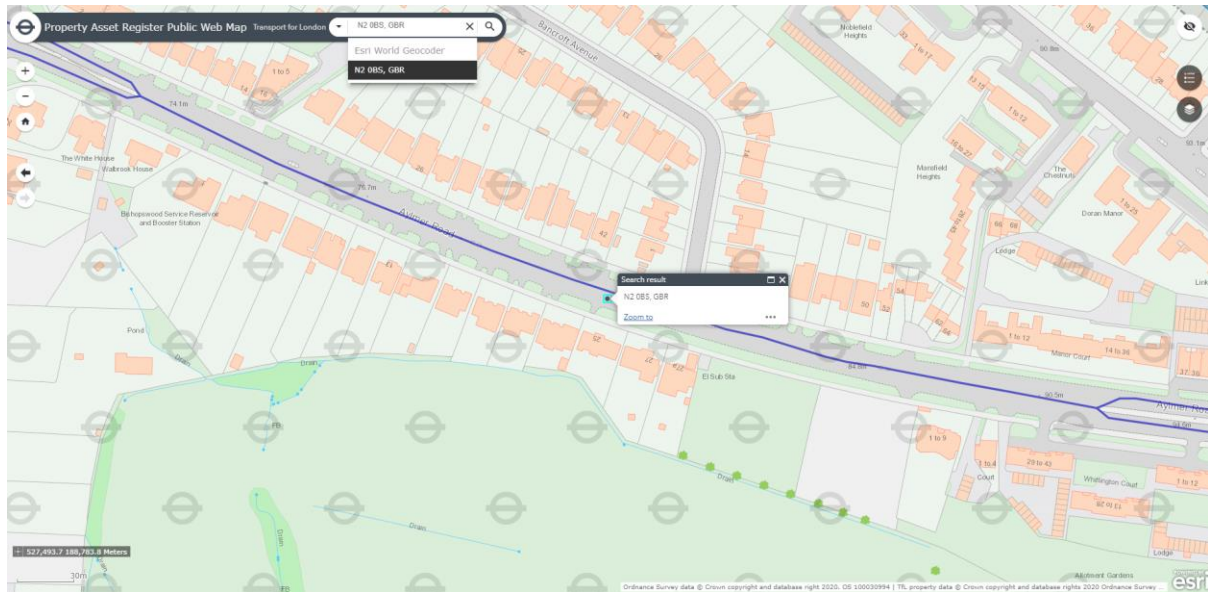
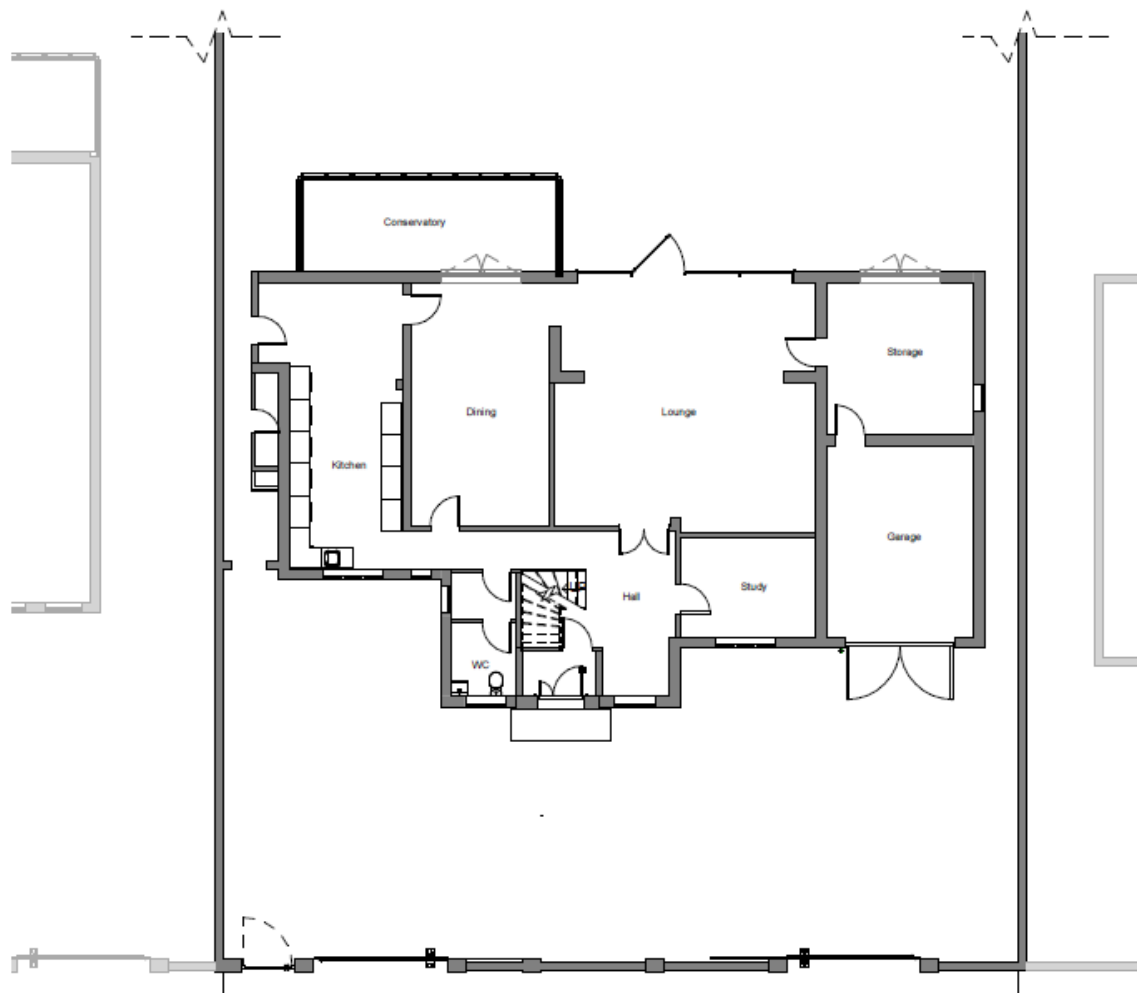


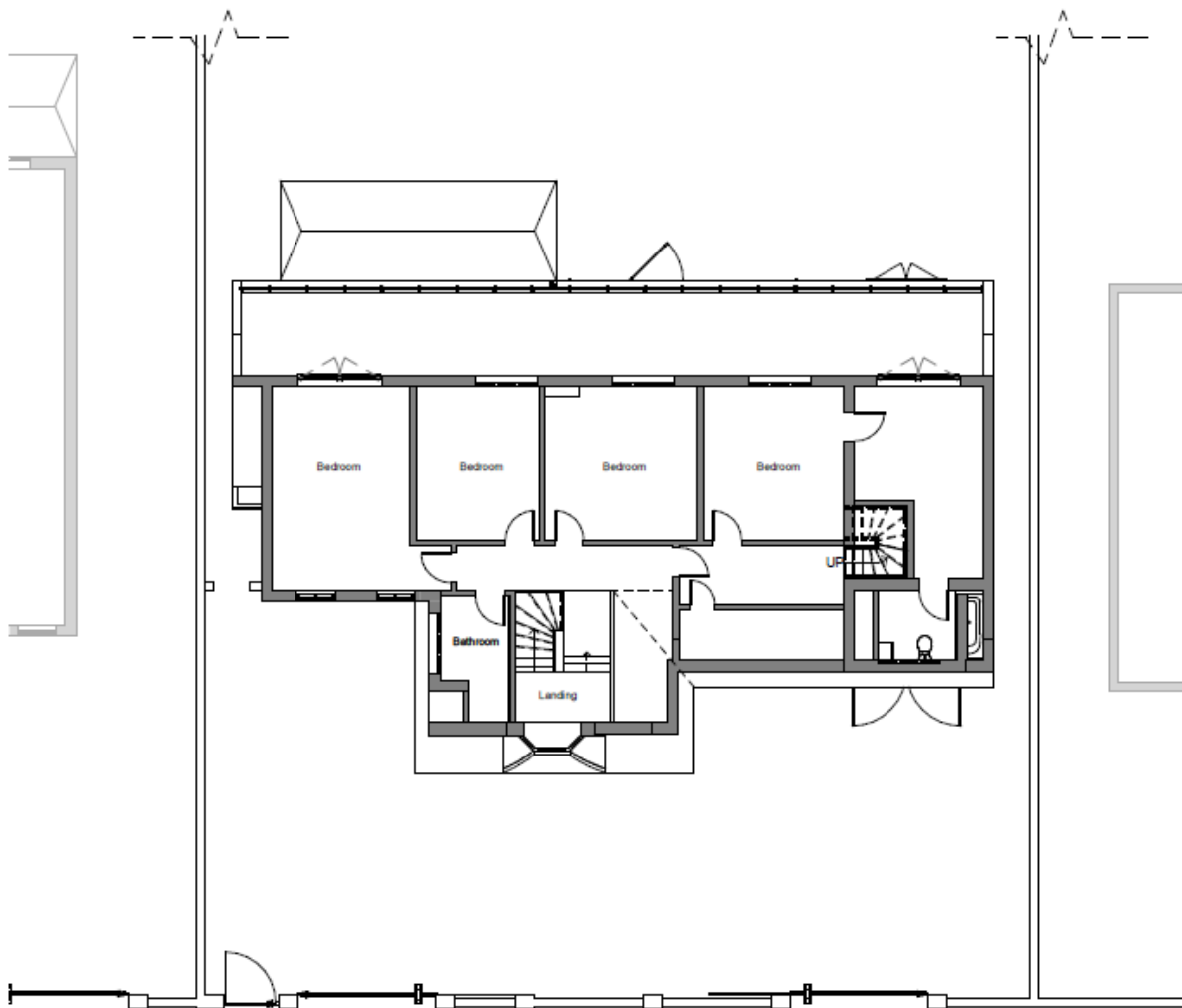
Figure 8: Property Asset RegisterPublic Web Map

Appendix 2: Existing/Proposed Plans

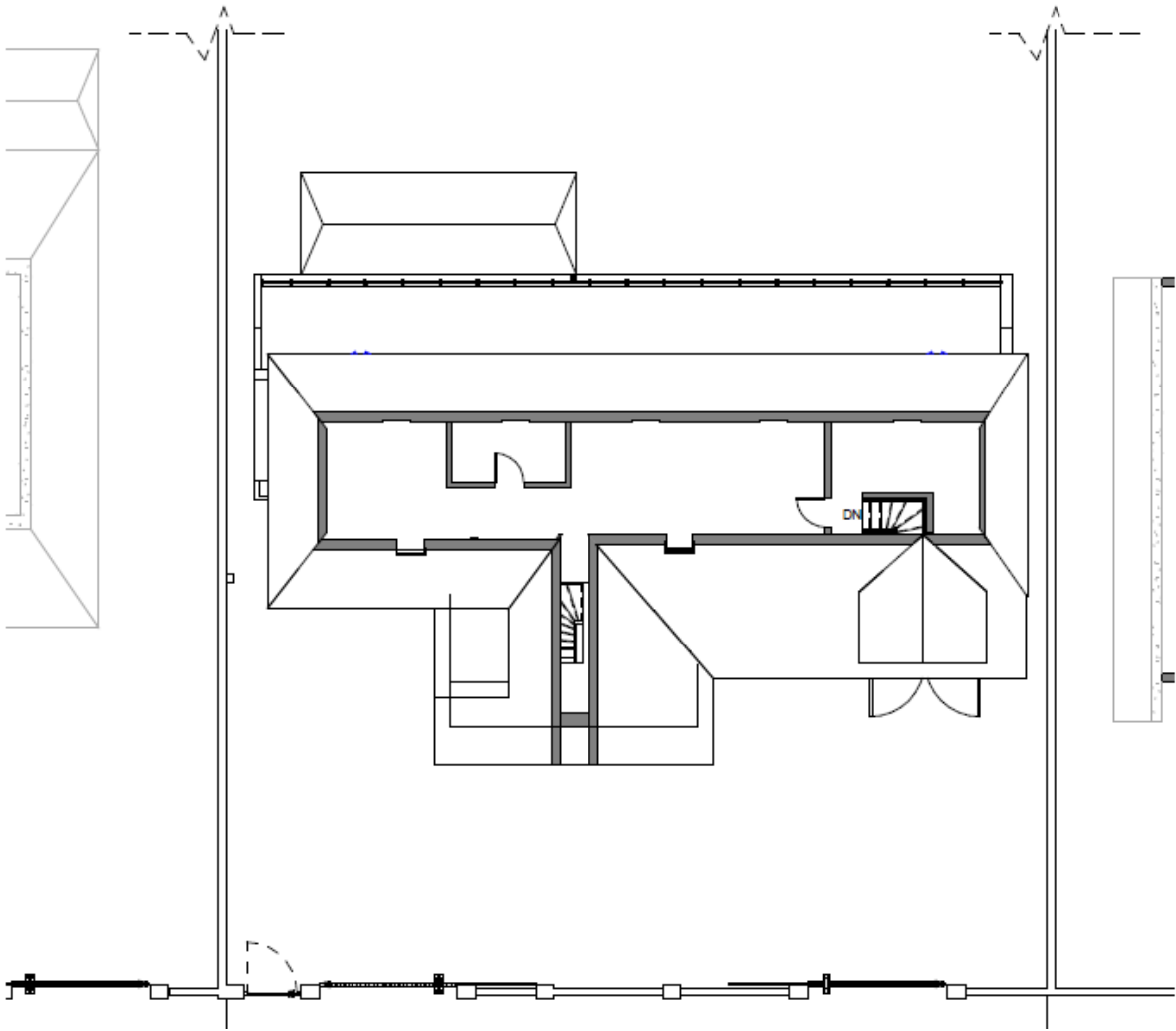
EXISTING GROUND FLOOR PLAN



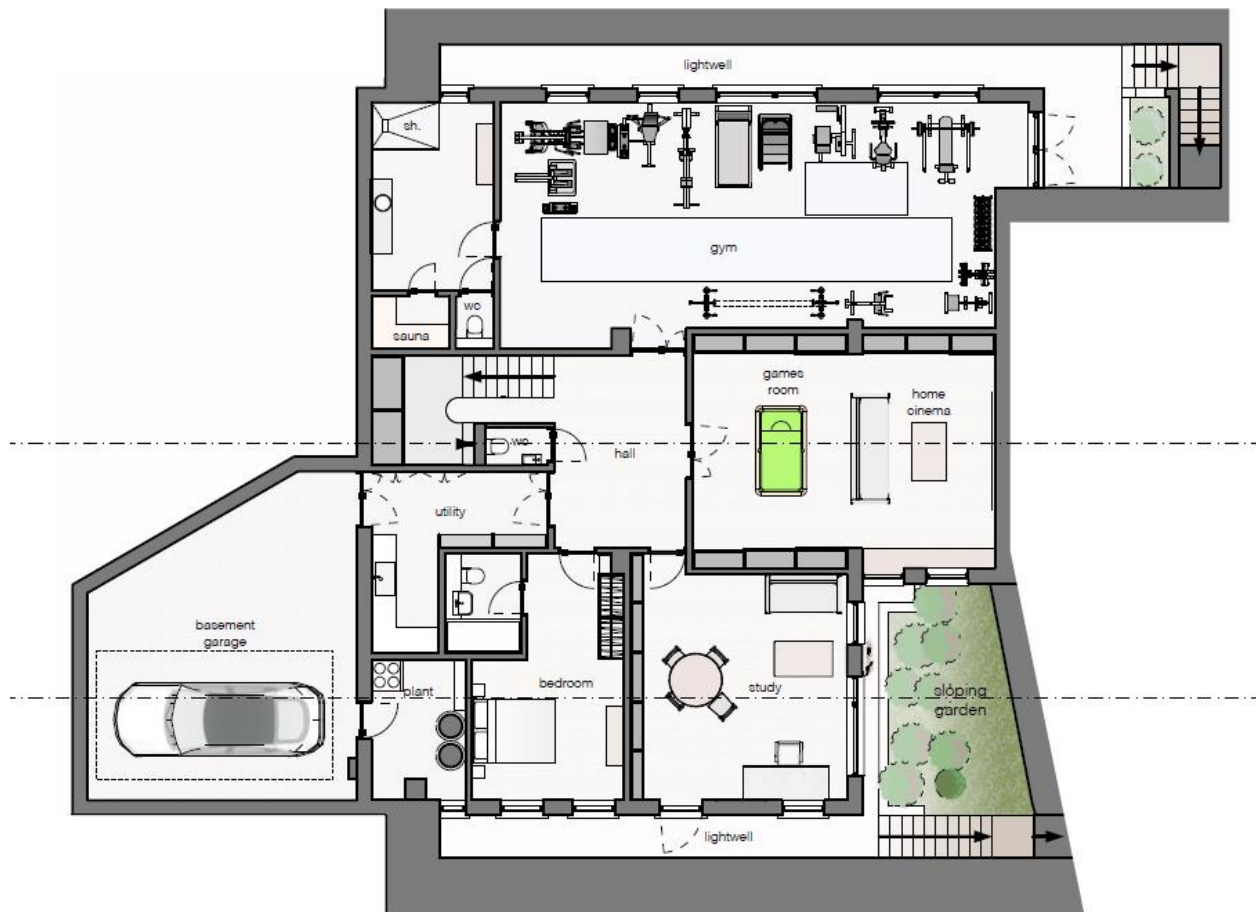
EXISTING FIRST FLOOR PLAN



EXISTING LOFT FLOOR PLAN



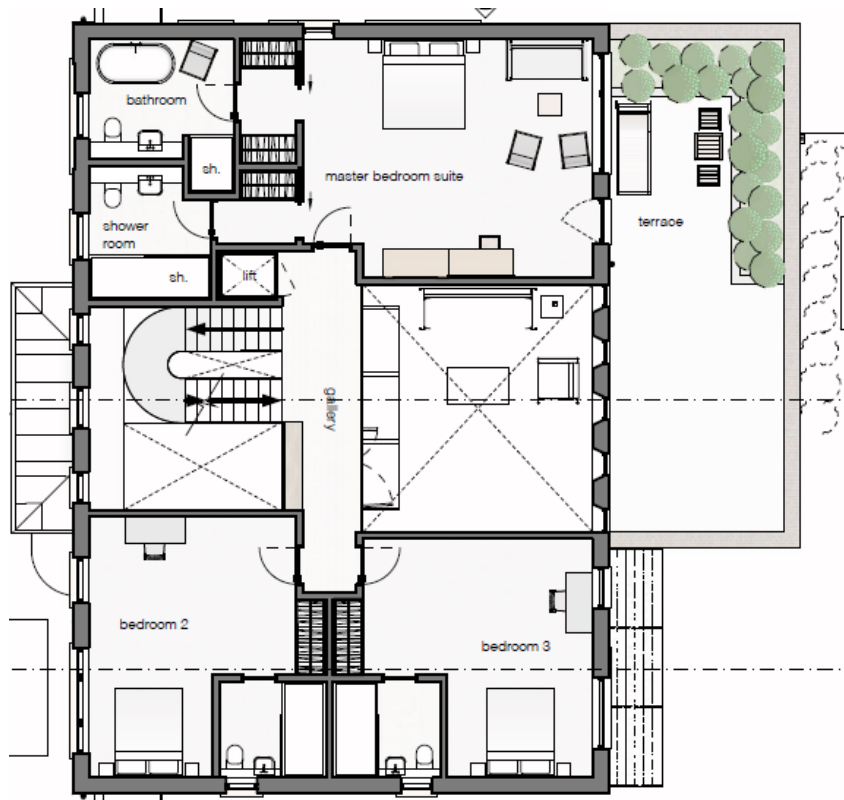
PROPOSED BASEMENT FLOOR PLAN



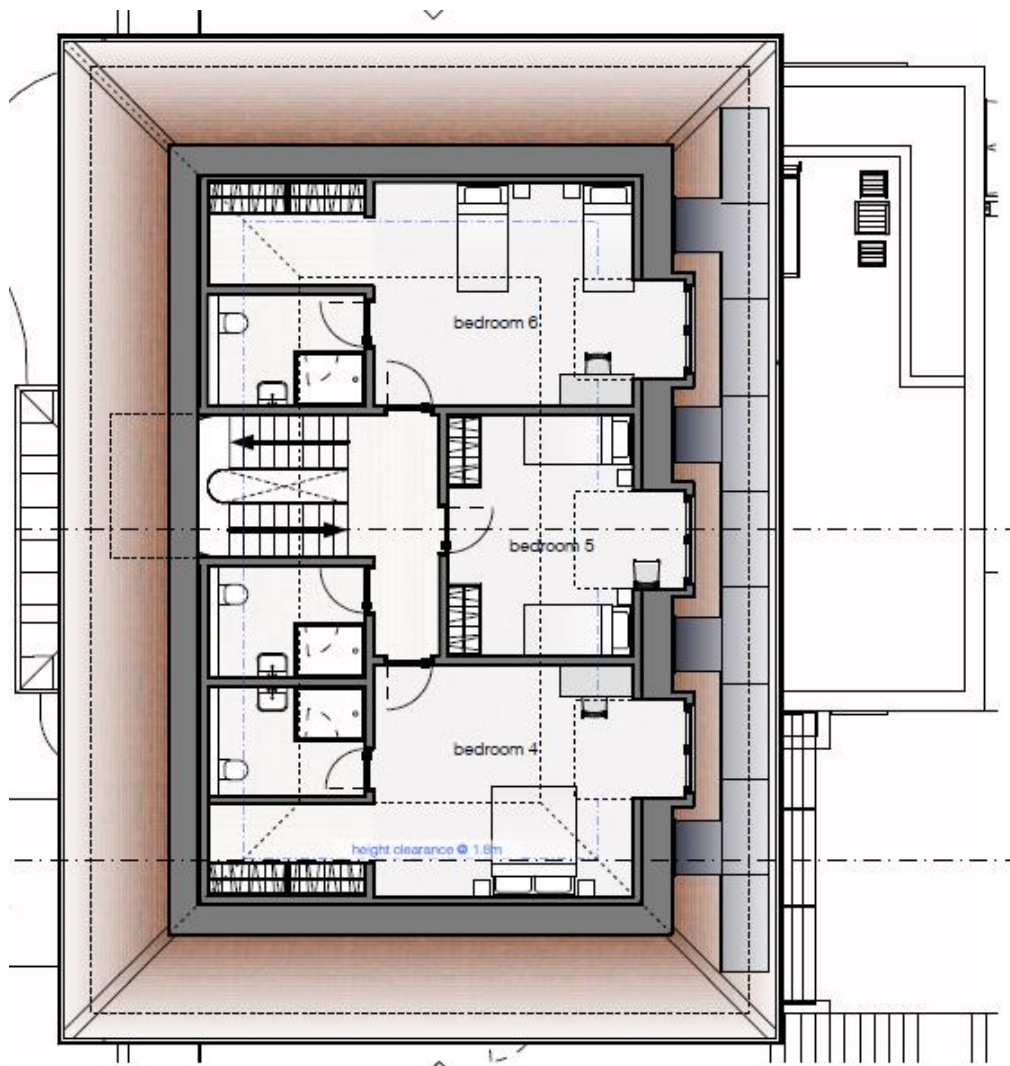
PROPOSED GROUND FLOOR PLAN



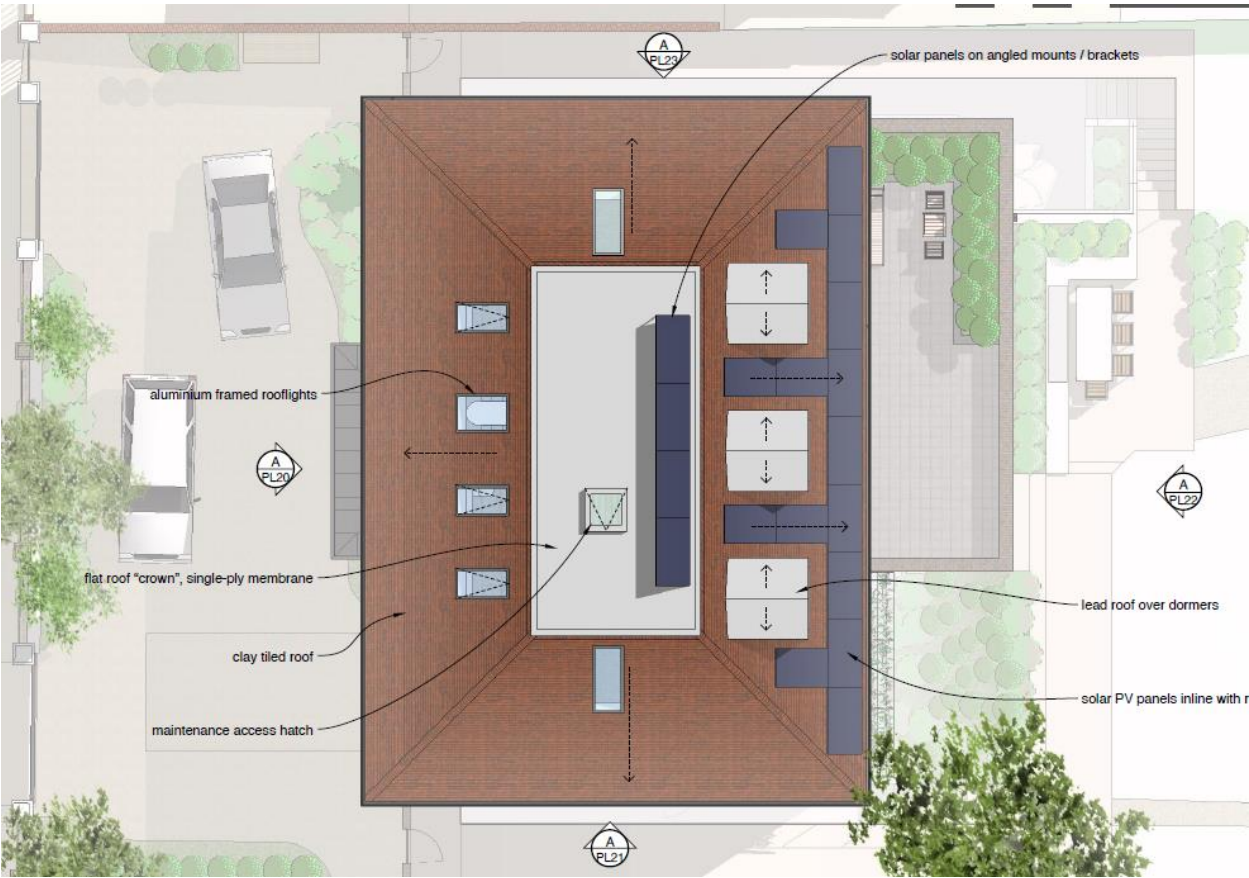
PROPOSED FIRST FLOOR PLAN



PROPOSED LOFT FLOOR PLAN



PROPOSED ROOF PLAN



EXISTING FRONT ELEVATION



PROPOSED FRONT ELEVATION



Appendix 3: Existing/Proposed Sections

PROPOSED SECTION A3



PROPOSED SECTION A2



Appendix 4: Flood Risk Maps

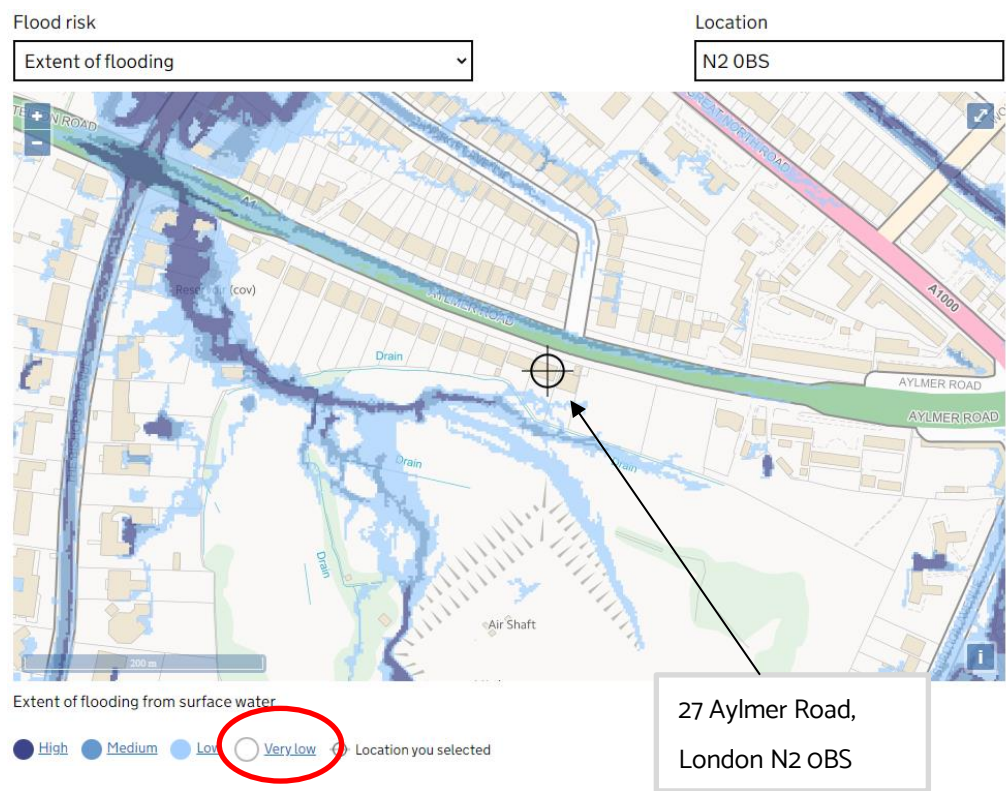


Figure 9: Flood risk Risk Map from Surface water at 27 Aylmer Road, London N2 OBS

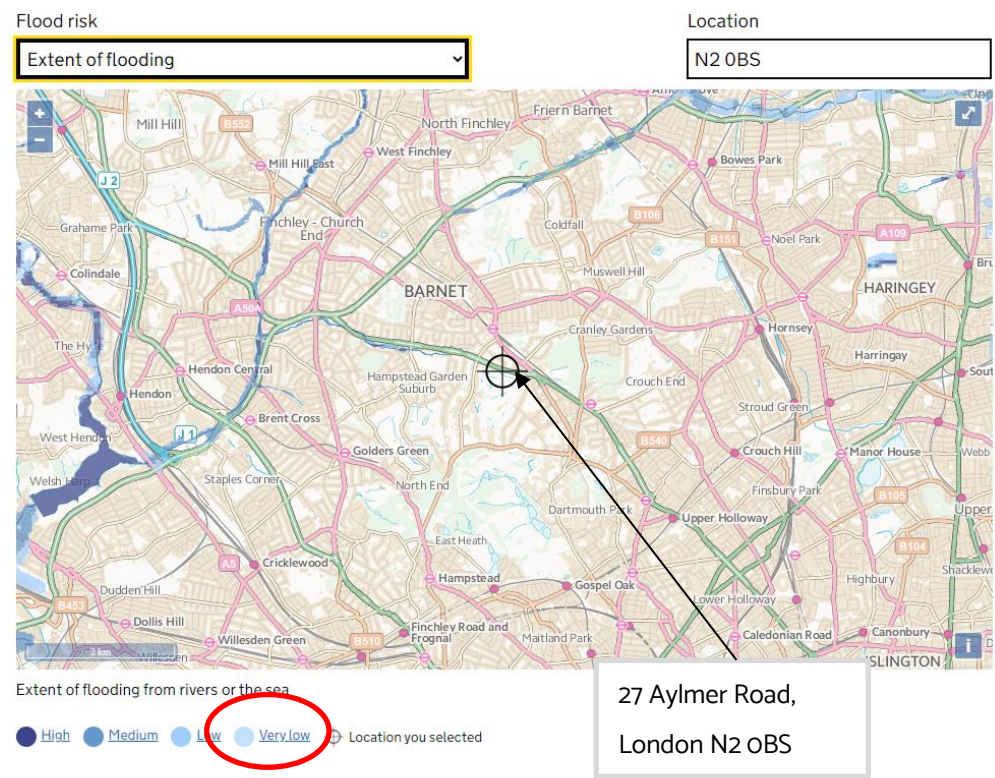


Figure 10: Flood risk Risk Map from rivers or the sea at 27 Aylmer Road, London N2 OBS

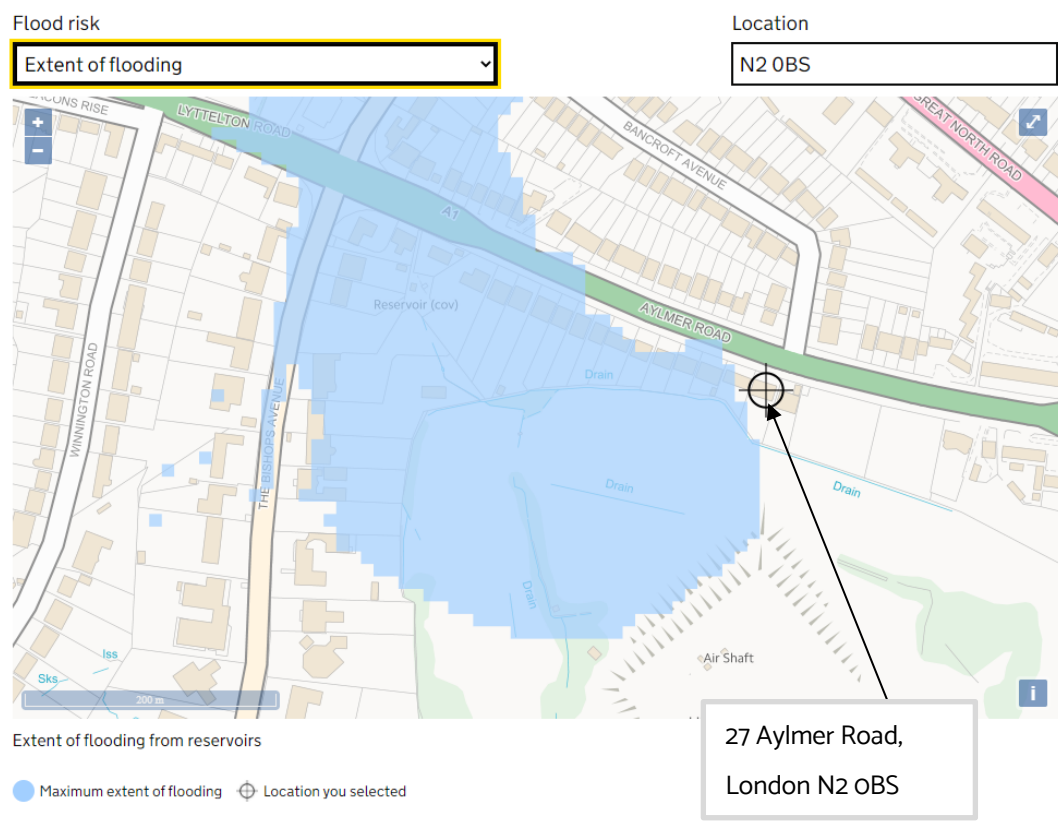
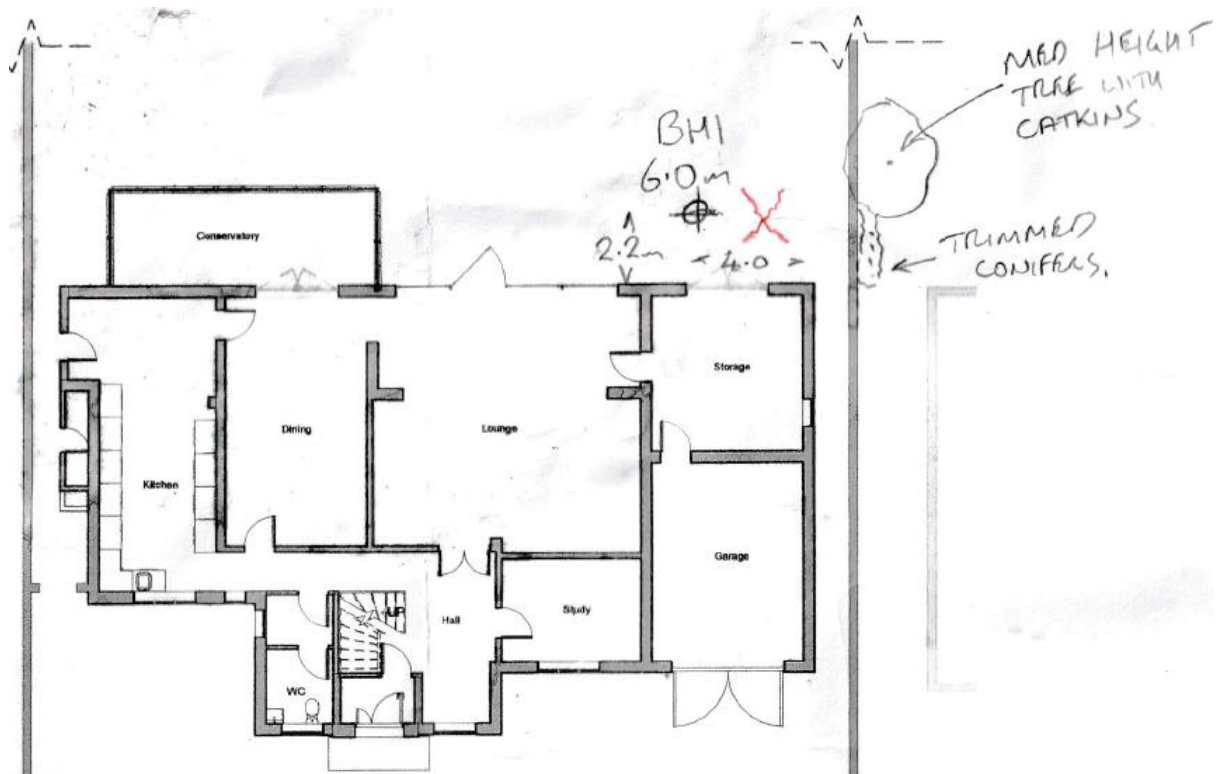


Figure 11: Flood risk Risk Map from Reservoirs water at 27 Aylmer Road, London N2 OBS

JSTATS Specialist Engineering, Materials and Environmental Consultants							BOREHOLE RECORD (Percussive)			Borehole Number:	
Site: 31 The Bishops Avenue							Location: London, N2			BH1	
Client: Upton McGougan Consulting Engineers							Ground Level: 0.70 GL not measured		Date: 2 Aug 05		Job No: 34763
GROUND WATER			SAMPLES/TESTS				STRATA RECORD				
Strike	Well	Depth (m)	Depth/Type (m)	'N' Values U Blows	Depth (m)	Level (mAOD)	Key	Description			Sheet 1 of 2
								MADE GROUND: Grey light brown slightly mottled slightly silty slightly sandy slightly gravelly CLAY. Gravel is medium to coarse, sub-rounded to rounded flint. Firm light brown to brown to light grey mottled slightly silty CLAY. (WEATHERED LONDON CLAY).			

¹ http://scans.bqs.ac.uk/sobi_scans/boreholes/845903/images/12519798.html [Accessed: 09.12.2020]



TELEPHONE: 01255 821004. MOBILE: 07771 533 402

SITE INVESTIGATION BORE HOLE LOG

DATE: 15.2.21

SITE ADDRESS:

27 AYLMEY RD. N2

BOREHOLE LOG REF:

DEPTH	DESCRIPTION	SOIL/ROOT SAMPLE	TEST RESULT	DEPTH OF TEST
0	SLAB OVER CEMENT & CONCRETE.			
320	COMPACT, SANDY HARDWARE.			
450	SOFT, DARK ORANGE/BROWN SILTY CLAY (OCC ROOTS 0.1m <u>seen</u> to 700m)			
550	SOFT, DARK ORANGE/BROWN MOTTLED SLIGHTLY SILTY CLAY.			
700	SOFT, KARKY SLIGHTLY SILTY CLAY, (OCC DEAD DECAYED ROOTS <u>seen</u> to 1.2m) (VERY SLIGHT WATER SEEPAGE 1.2m)		V 30, 40 36	1.0
1.2	SOFT, MID BROWN GREY VEIN, SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTINGS		V 48, 46 46	1.5
1.7	AS ABOVE (FIRM)		V 80, 80 82	2.0
2.4	AS ABOVE (STIFF)		V 110, 126 112	2.5
			V 130, 132 130	3.0
	(WATER SEEPAGE TAKEN UP BY 4.0 m OF DRIVING)		V 120, 110 118	3.5
4.5	VERY STIFF, DARK BROWN SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTINGS.		V 120, 136 140	4.0
			V 140+	5.0
6.0	BH END DRY & OPEN.		V 140+	6.0

Appendix 6: Google Maps/Haringey Maps



Figure 12: Google Street Map

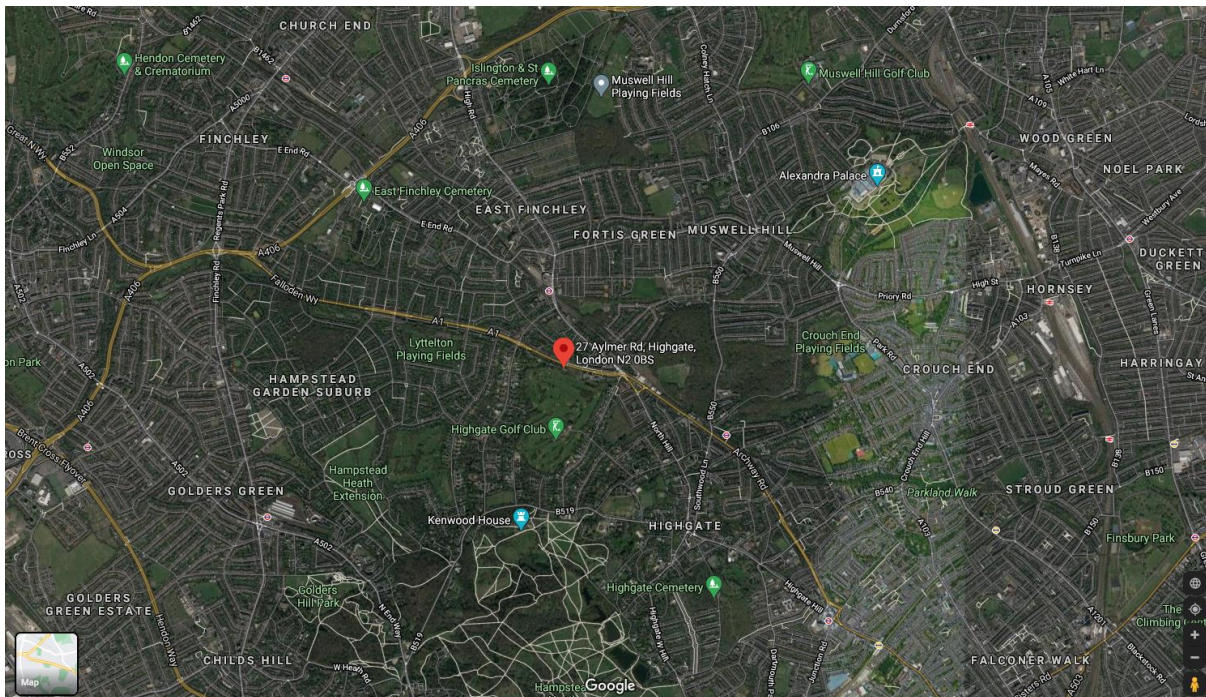


Figure 13: Google Satellite Map



Figure 14:Haringey District

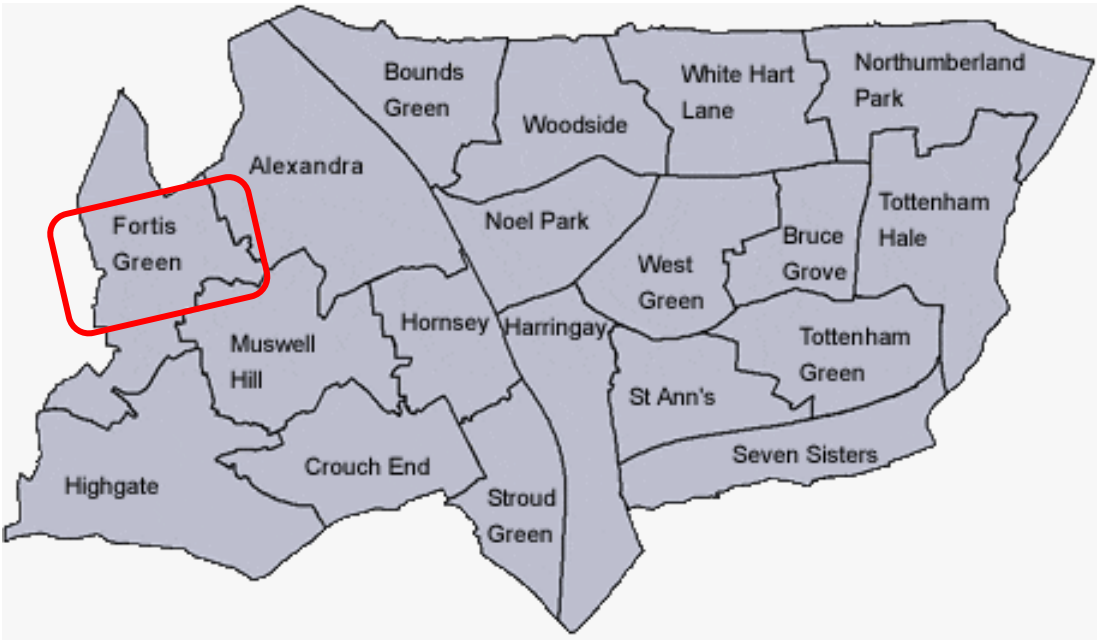
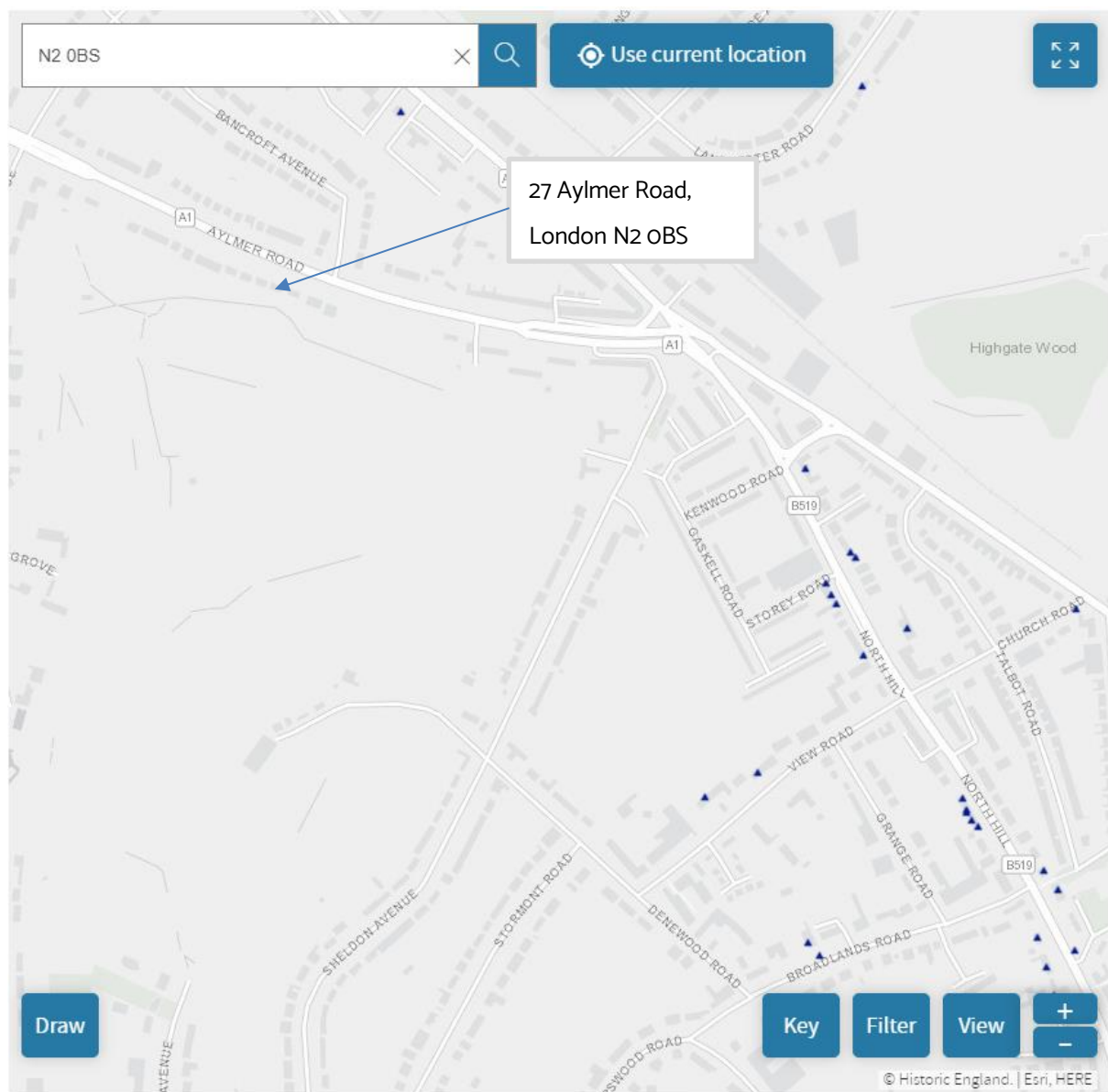
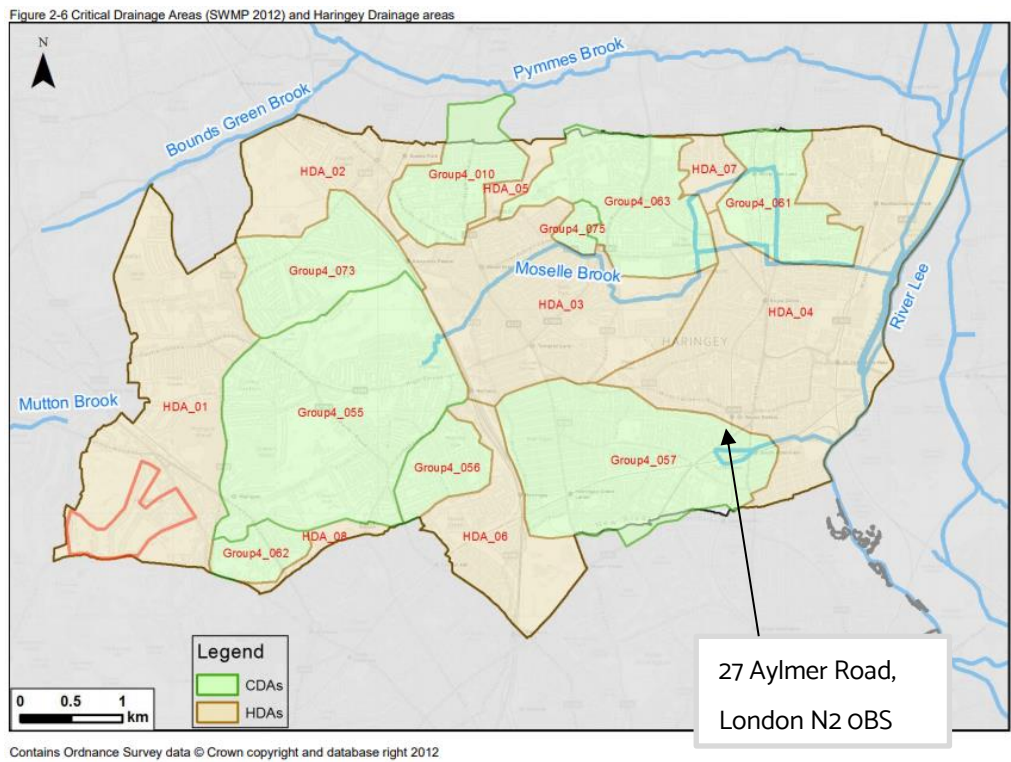
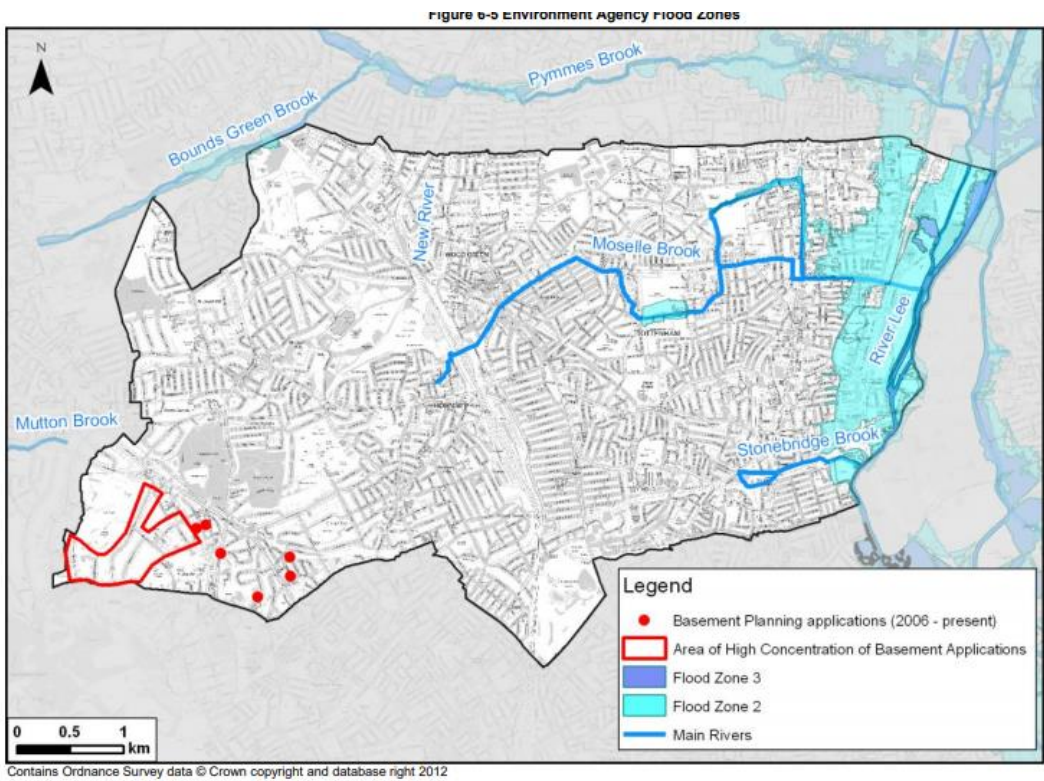


Figure 15:Fortis Greenward in Haringey Council

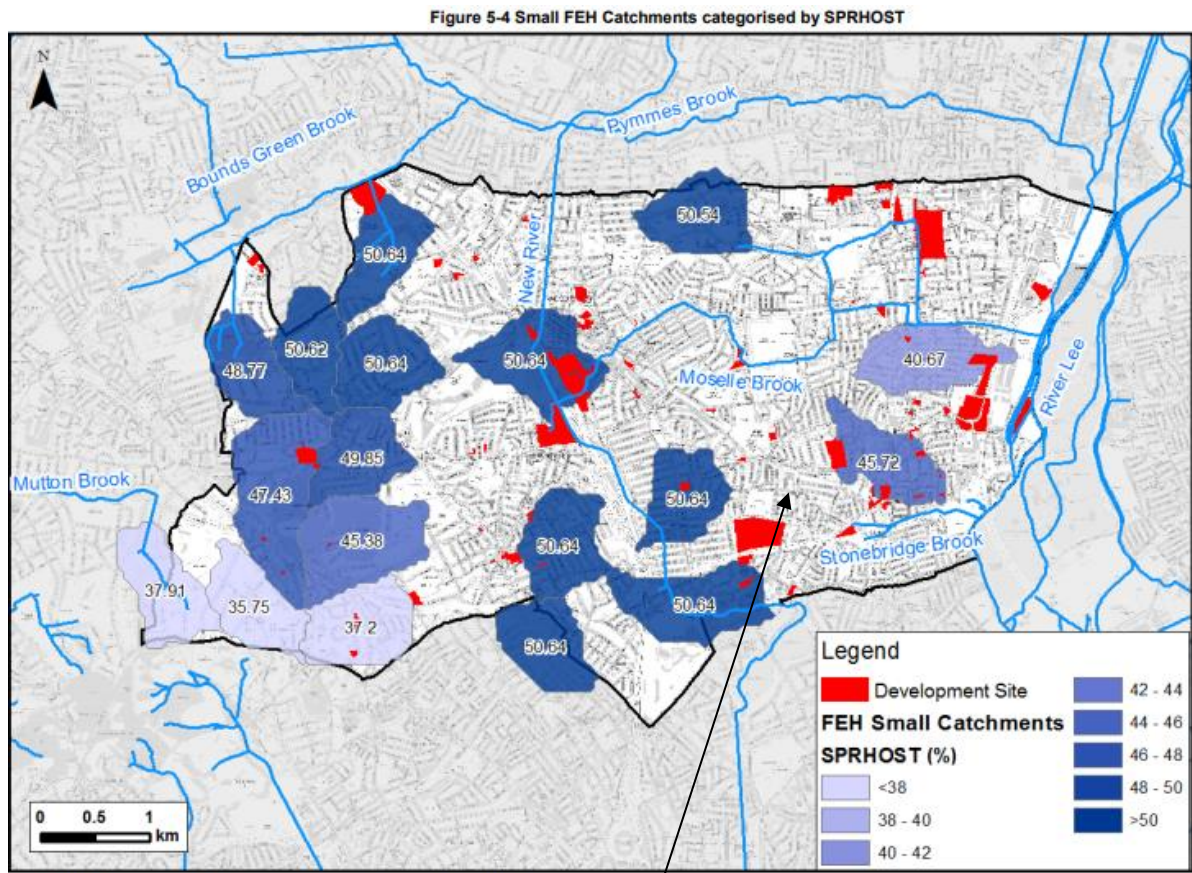
Appendix 7: Map of Listed Buildings (Source: HistoricEngland website)



Appendix 8: Map of Local Flood Risk Zones and Critical Drainage Areas



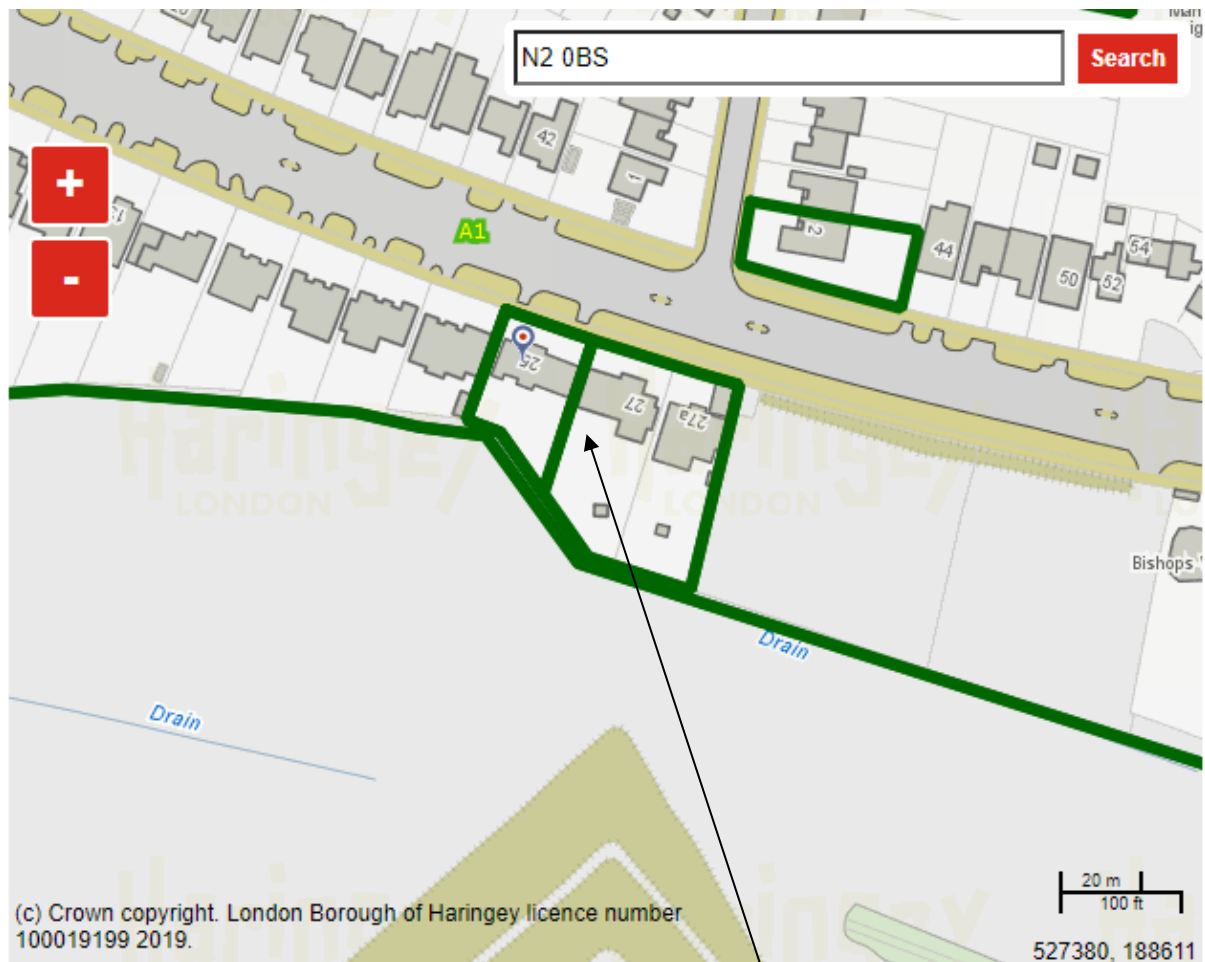
Appendix 9: Map of Areas with small catchments in Haringey



Contains Ordnance Survey data © Crown copyright and database right 2012

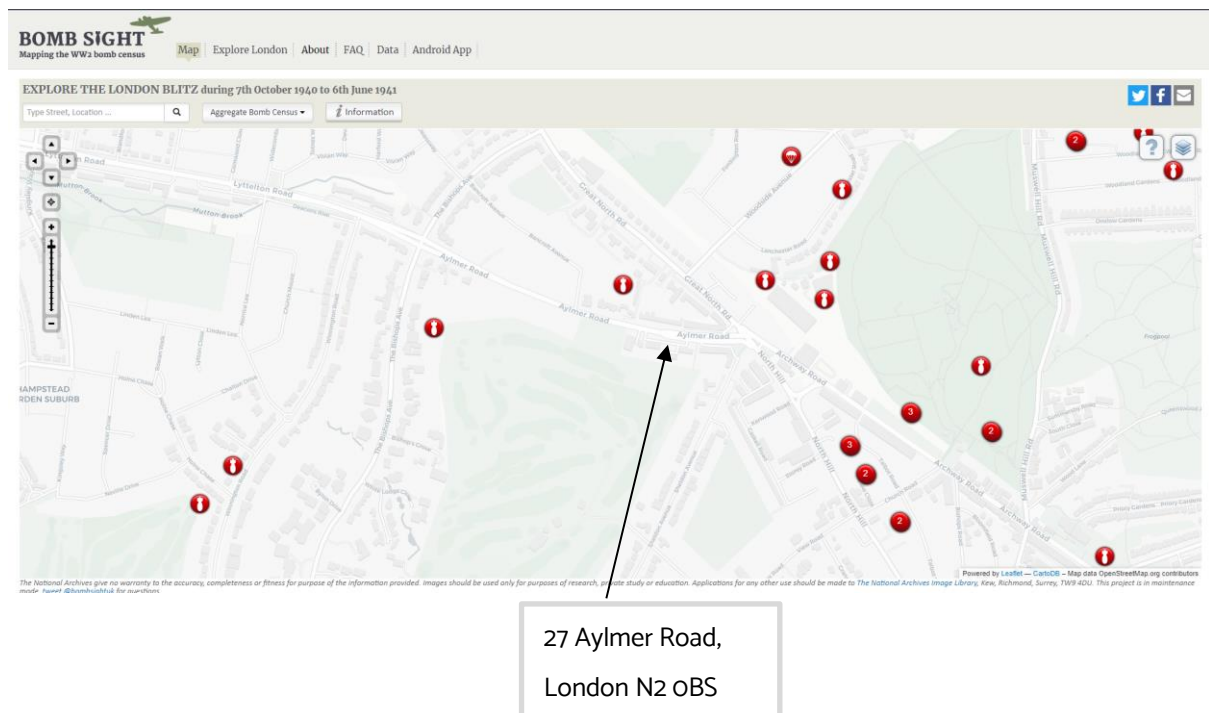
27 Aylmer Road,
London N2 OBS

Appendix 10: Map showing Trees Preservation Order (TPO)

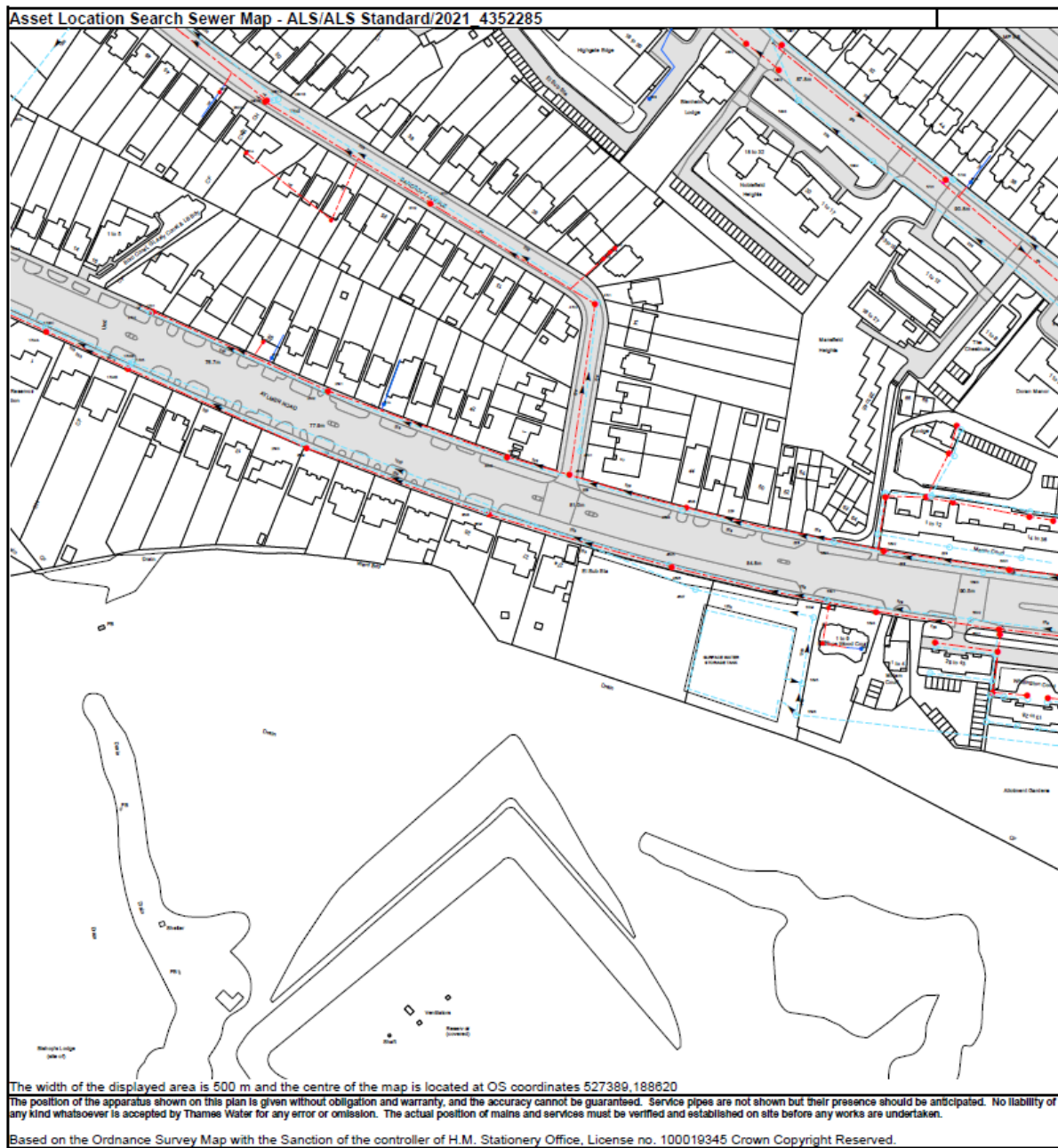


27 Aylmer Road,
London N2 OBS

Appendix 11: Map showing the recorded bomb location of WW2



Appendix 12: Asset Location Search Sewer Map by Thames Water



Basement Impact Assessment - 27 Aylmer Road, N2 OBS

Manhole Reference	Manhole Cover Level	Manhole Invert Level
66ZT	n/a	n/a
5506	84.65	71.07
5505	84.98	70.99
551C	n/a	n/a
55ZS	n/a	n/a
55ZR	n/a	n/a
65ZS	n/a	n/a
65ZR	n/a	n/a
65ZQ	n/a	n/a
65WY	n/a	n/a
65ZP	n/a	n/a
65WX	n/a	n/a
65YX	n/a	n/a
65ZT	n/a	n/a
65YY	n/a	n/a
65WZ	n/a	n/a
65YW	n/a	n/a
65XZ	n/a	n/a
65XV	n/a	n/a
65XY	n/a	n/a
551A	n/a	n/a
55ZQ	n/a	n/a
65WW	n/a	n/a
6501	91.94	89.21
5502	n/a	n/a
5504	86.5	70.84
5503	88.58	85.38
551B	n/a	n/a
5501	87.14	85.05
4607	82.73	70.6
5603	91.19	89.36
6601	91.84	89.28
4606	83.5	79.7
4605	83.43	80.27
66YZ	n/a	n/a
5602	88.45	85.32
56XZ	n/a	n/a
5601	87.2	85.09
56YQ	n/a	n/a
66ZS	n/a	n/a
66ZQ	n/a	n/a
4604	83.35	80.25
4603	83.42	79.74
56ZQ	n/a	n/a
56ZP	n/a	n/a
56YT	n/a	n/a
56YZ	n/a	n/a
56Y3	n/a	n/a
56YR	n/a	n/a
56XX	n/a	n/a
56YV	n/a	n/a
4601	80.81	78.83
56XY	n/a	n/a
56YW	n/a	n/a
4702	79.77	77.46
4701	79.73	78.01
471A	n/a	n/a
471B	n/a	n/a
471C	n/a	n/a
571A	n/a	n/a
5702	90.92	89.12
5701	90.76	n/a
5804	89.84	n/a
5803	88.6	86.48
5802	87.86	86.06
5801	87.51	n/a
4602	85.2	82.94
4601	87.14	85.45
2802B	74.82	72.49
271C	n/a	n/a
2801A	74.88	72.44
2801B	74.91	n/a
2603	77.78	76.53
2604	77.8	76.8
2602	77.66	76.62
2601	77.7	76.01
271B	n/a	n/a
3702	77.48	74.89
3701	77.55	74.94
3603	79.98	77.48
3604	80.02	78.88
3602	79.94	77.53
3601	79.98	76.91
4602	80.86	77.89
1703C	74.95	71.49
1704A	74.98	70.61
1704B	75.85	71.95
1703B	75.81	72.52
1705	75.79	68.14
2702	75.8	72.53
2701	75.84	72



Public Sewer Types (Operated & Maintained by Thames Water)

- Foul:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
- Surface Water:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
- Combined:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
- Trunk Surface Water
- Trunk Foul
- Storm Relief
- Trunk Combined
- Vent Pipe
- Bio-solids (Sludge)
- Proposed Thames Surface Water Sewer
- Proposed Thames Water Foul Sewer
- Gallery
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Sludge Rising Main
- Proposed Thames Water Rising Main
- Vacuum

Sewer Fittings

- A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.
- Air Valve
 - Dam Chase
 - Fitting
 - Meter
 - Vent Column

Operational Controls

- A feature in a sewer that changes or directs the flow in the sewer. Example: A hydrabreak limits the flow passing downstream.
- Control Valve
 - Drop Pipe
 - Auxiliary
 - Weir

End Items

- End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.
- Outfall
 - Undefined End
 - Inlet

Other Symbols

- Symbols used on maps which do not fall under other general categories
- Public/Private Pumping Station
 - Change of characteristic indicator (C.O.C.I.)
 - Invert Level
 - Summit

Areas

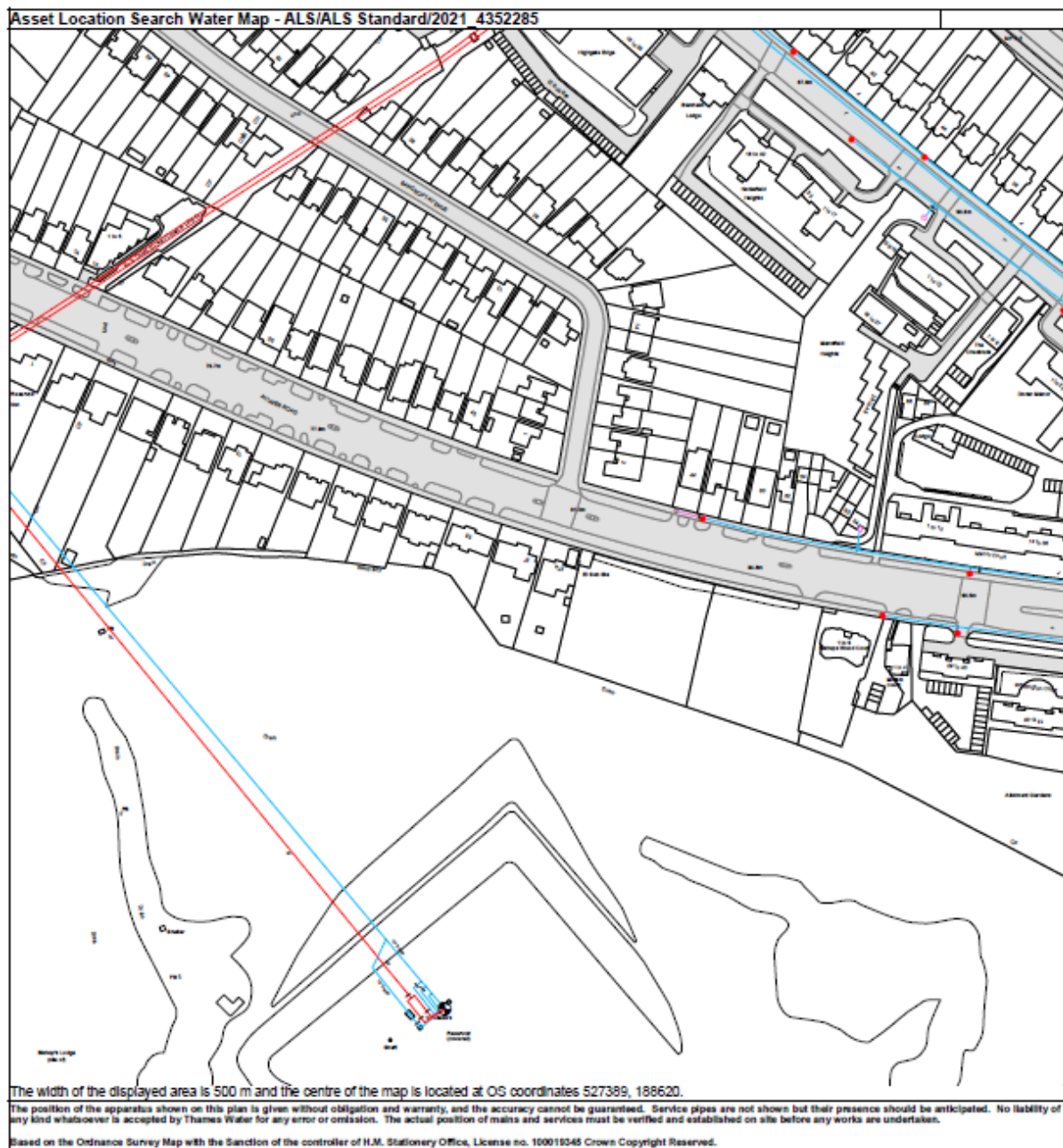
- Lines denoting areas of underground surveys, etc.
- Agreement
 - Operational Site
 - Chamber
 - Tunnel
 - Conduit Bridge

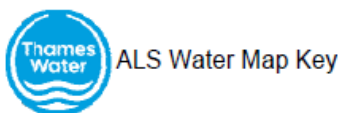
Other Sewer Types (Not Operated or Maintained by Thames Water)

- Foul Sewer
- Surface Water Sewer
- Combined Sewer
- Gully
- Culverted Watercourse
- Proposed
- Abandoned Sewer

- Notes:**
- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
 - 2) All measurements on the plans are metric.
 - 3) Arrows (on gravity fed sewers) or flacks (on rising mains) indicate direction of flow.
 - 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
 - 5) 'na' or 'Q' on a manhole level indicates that data is unavailable.

- 6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0300 009 4540.





Water Pipes (Operated & Maintained by Thames Water)

- Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

- Symbol indicating what happens at the end of a water main.
- Blank Flange
 - Capped End
 - Emptying Pit
 - Undefined End
 - Manifold
 - Customer Supply
 - Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

Other Water Pipes (Not Operated or Maintained by Thames Water)

- Other Water Company Main:** Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.