

18115 – 105 RALEIGH ROAD
BASEMENT IMPACT ASSESSMENT – REV P1

March 2025

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DOCUMENT REVIEW SUMMARY

Revision	Date	Filename	Author
Rev P1	11/05/18		Dr C. J Brown MEng, PhD, CEng, MIStructE 
Rev P1	10/03/25		Dr C. J Brown MEng, PhD, CEng, MIStructE 

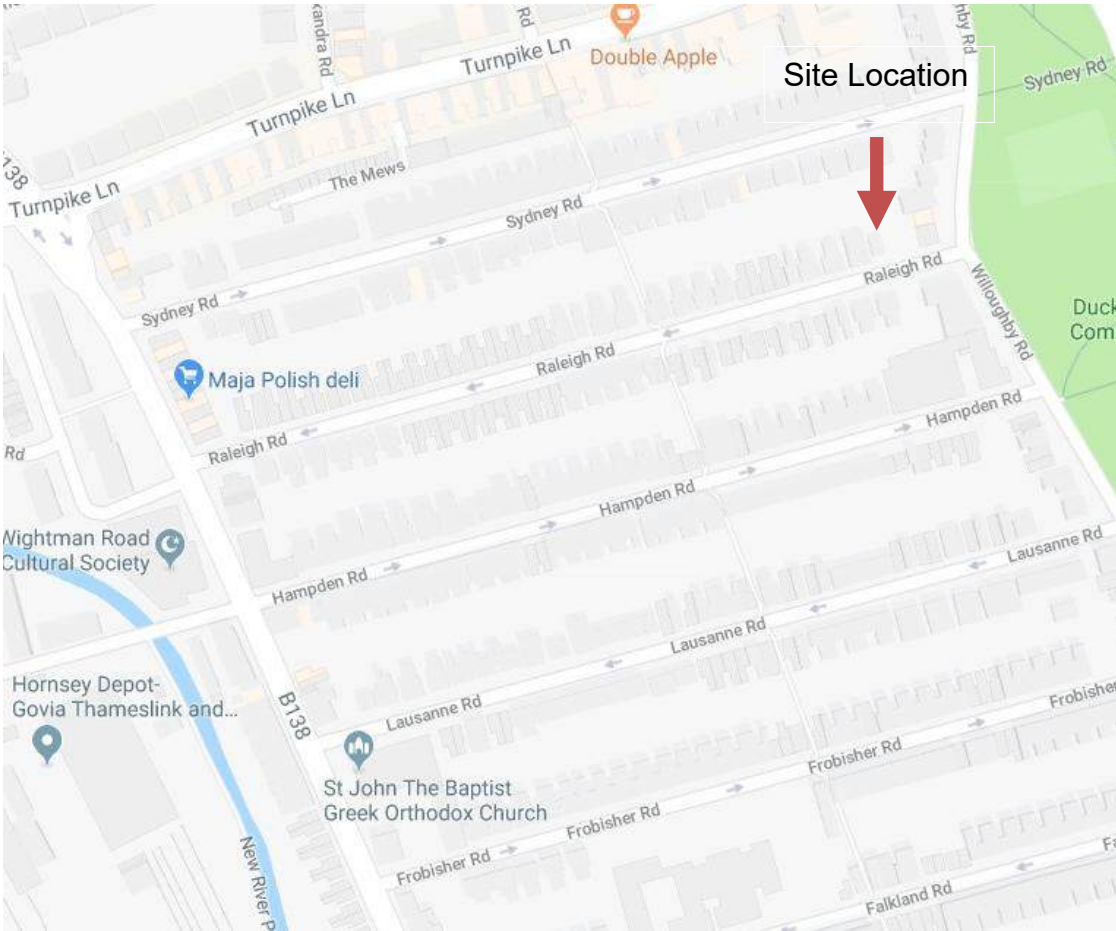
PROJECT OVERVIEW

Project Details

Name: 105 Raleigh Road

Address: 105 Raleigh Road
London
N8 0JD

Location map:



Participants

Architect: Scott & Sampson Architects

Project Description

1. Chris Brown Structural Engineering Ltd was appointed in April 2018 to provide a Basement Impact Assessment to support the Planning Application for the proposed replacement dwelling at 105 Raleigh Road, London, N8 0JD.
2. This document has been prepared by Dr.Chris Brown, MEng, PhD, CEng, MStructE who is a chartered structural engineer.
3. A two storey detached building is currently located on the site with a further single storey building at the rear. Both buildings are constructed using masonry walls with timber upper floors and roof. The date of construction is unknown but estimated to be mid 20th Century.
4. The remaining external area at the rear has been paved and was previously used as a storage area.
5. The existing building is not listed or located within a conservation area.
6. Access to the site is gained from Raleigh Road at the front. It is neighboured by a Victorian semi-detached house at 103 Raleigh Road although is not attached to No. 105. An existing single brick garage is located on the opposite side with abutting gardens to the rear on the adjacent Sydney St and similarly to the side from Willoughby Road.
7. Details of the proposed replacement dwelling are shown on drawings by In House Design Associates.
8. The proposed works comprise of the demolition of all buildings on the site and replacing with a four-storey dwelling including a single storey basement. The basement is proposed to extend beneath the full extent of the building above ground level and project beyond the front and rear facades to form external courtyards. The area towards the front will be immediately behind the footpath on Raleigh Road. (Figure 1).
9. This document will address the specific issues relating to the basement construction as described in the Harringey Basement Development Guidance Note dated June 2012 and adopt the approach given in Camden Planning Guidance document CPG4 in relation to the assessment impact of a proposed basement construction.
10. The construction of a single storey basement located directly opposite the site was underway at the time of inspection. Excavations revealed the presence of Clay and no ground water was present.

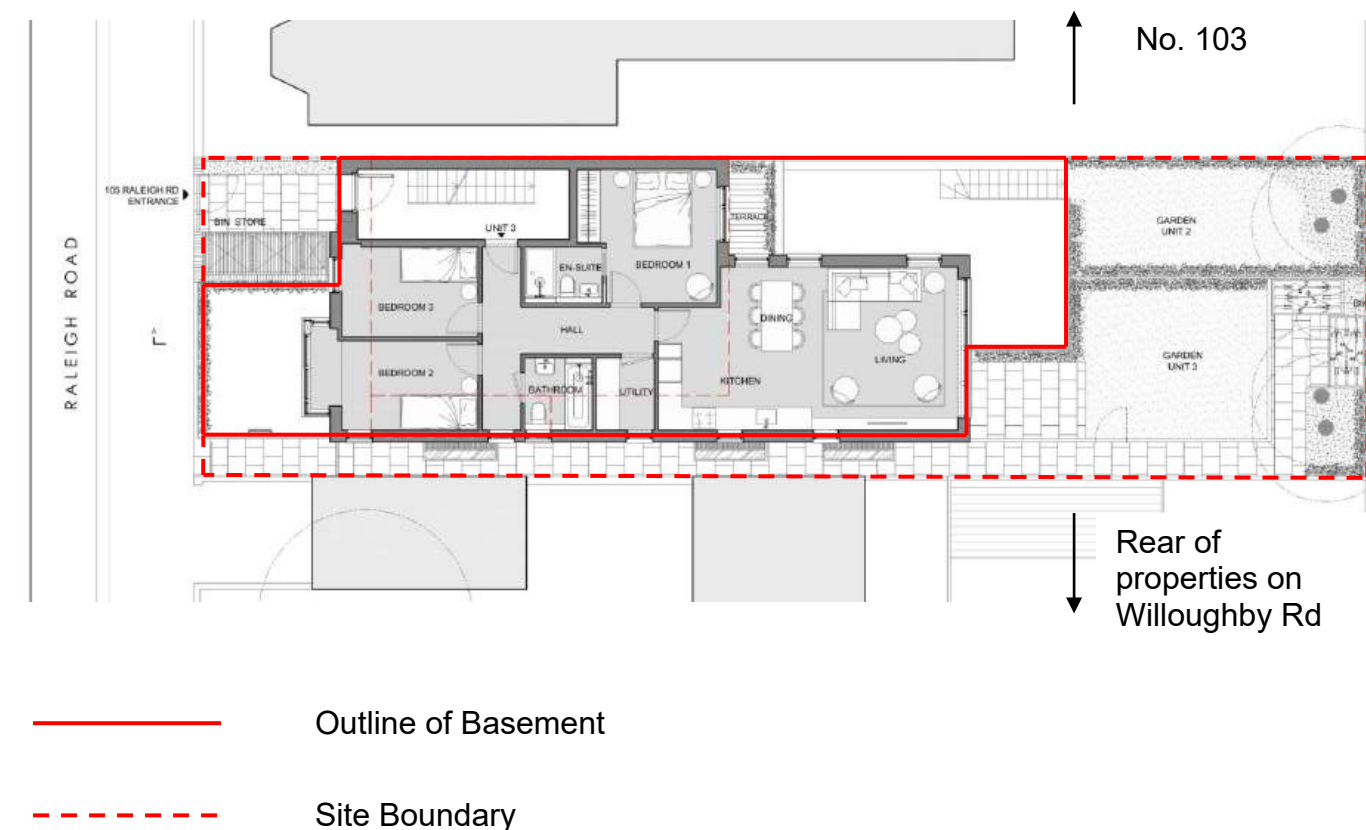


Figure 1 – Extract from Architect's proposed basement plan

SUBTERRANEAN (GROUND WATER) FLOW

Stage 1: Screening

The impact of the proposed development on ground water flow is considered here as outlined in Haringey Basement Development Guidance Note.

- Q1a *Is the site located directly above an aquifer?*
No. With reference to the extract of the DEFRA Magic Map available online (Figure 2) the site is not located above an aquifer.
- Q1b *Will the proposed basement extend beneath the water table surface?*
Unknown. It is not considered likely since the new basement excavation will extend only approximately 2.9m below the existing ground level and the area is not known for a high water table.
- Q2 *Is the site within 100m of (i) a watercourse, (ii) a well (used or disused) or (iii) a potential spring line?*
From reference to British Geological Society (BGS) online Geoindex maps:
(i) The nearest surface water feature is the New River located over 400m away to the west of the site. (see Location Map).
(ii) Reference data indicates a cluster of wells adjacent to New River approximately 700m to the west of the site. (Figure 3).
(iii) Geological information indicates that London Clay is the shallowest strata without any superficial deposits with the nearest change in geology over 2.5km away to the west. (Figure 4). Notes accompanying CPG4 Slope Stability Screening flowchart states that aquifers are not present in London Clay ground conditions. Environment Agency (EA) maps also confirm that the site is in an unproductive aquifer zone.
- Q3 *Is the site within the catchment of the pond chains of Hampstead Heath or similar?*
No. The site is located approximately 4.5km away from the Hampstead Heath ponds. No other similar feature is located nearby.
- Q4 *Will the proposed basement development result in a change in the proportion of hard surface/paved areas?*
Yes. Currently the entire site outside the footprint of the existing building is paved to form a hardstanding. The replacement dwelling will include an area of permeable garden at the rear. Therefore the proportion of hard surface will be reduced.

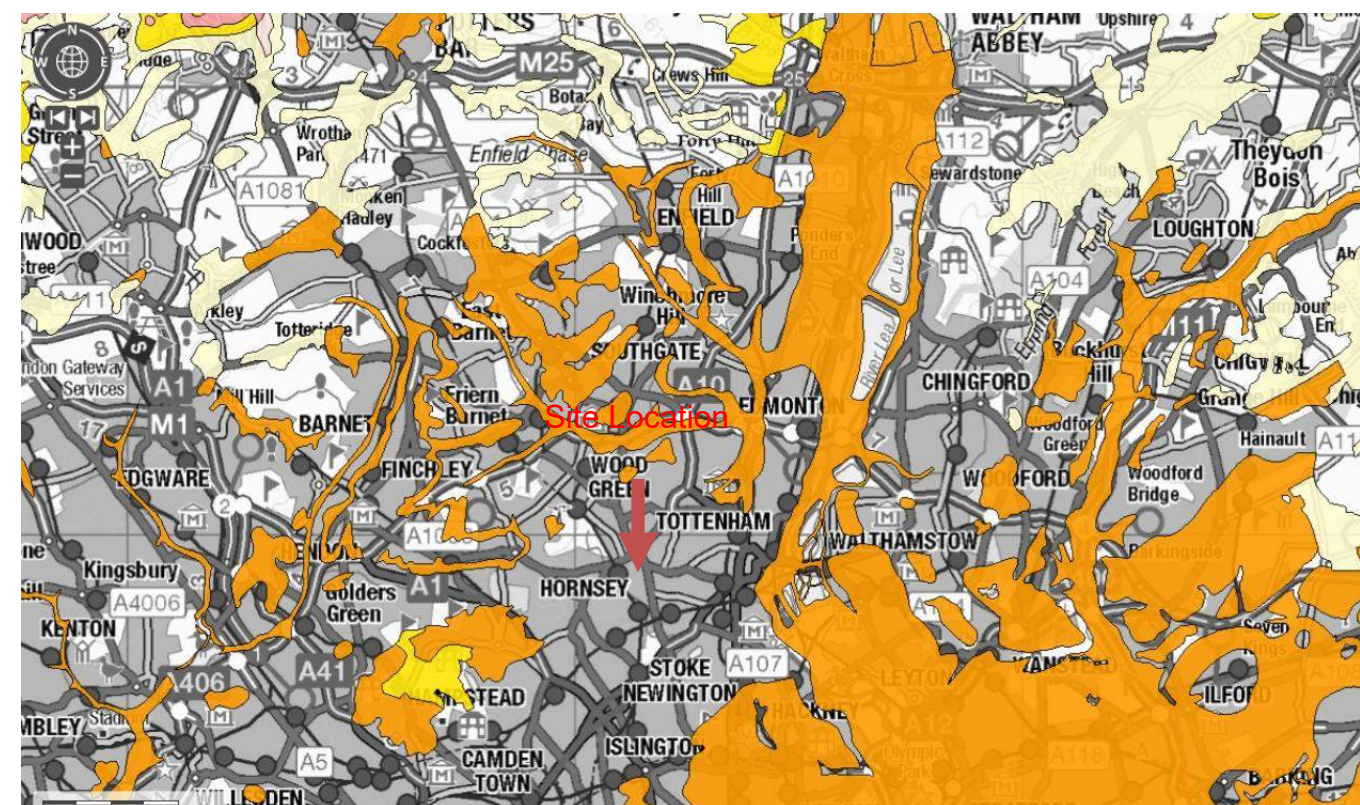


Figure 2 – Aquifer map (from DEFRA Magic Map)



Figure 3 – Waterwell Locations (from BGS GeoIndex)

▲ Well Location

Q5 *As part of the site drainage, will more surface water (eg rainfall and runoff) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?*

No. All the surface water discharged to the ground will be collected as before.

However, SUDS measures will be adopted such as permeable paving as far as possible.

Q6 *Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond or spring line?*

No. The property is not located in close proximity to any local pond or spring line.

Stage 2: Impact Assessment

1. Prior to commencement of excavation works a trial excavation will be carried out to check for the presence of ground water. If perched ground water is encountered then care will be taken during the excavation works to direct it towards sumps to be pumped away.
2. The shallow nature of the excavation works is not expected to have any significant effect on the ground water flow regime in the wider area. If any ground water is encountered it is considered that it would be able to flow around and under the proposed basement.

GROUND STABILITY

Stage 1: Screening

The impact of the basement construction on the stability of the surrounding ground is considered in this section.

- Q1** *Does the existing site include slopes, natural or man-made, greater than 7 degrees (approximately 1 in 8)?*
No. From an inspection of OS maps, a site walkover and inspection of the wider area the site slope does not exceed 7 degrees.
- Q2** *Will the proposed re-profiling of the landscaping change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)?*
No. The proposed basement construction will not affect the landscaping of the site. The ground slope angle will remain unchanged around the site boundary which is to remain generally level.
- Q3** *Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?*
No. The nearest railway is located 500m to the west of the site.
- Q4** *Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately 1 in 8)?*
No. From OS maps and a walkover of the wider area the general slope is no greater than 7 degrees.
- Q5** *Is the London Clay the shallowest strata on the site?*
Yes. BGS maps indicate the area is located on London Clay without any superficial deposits. The nearest change in geology is located over 2.5km towards the west. (Figure 4 & 5)
- Q6** *Will any tree/s be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?*
No. No trees are present on the site although two mature deciduous trees are located in the neighbour's garden at the rear. These are the only tree located in close proximity. Although the trees overhang the site boundary the basement will not project underneath the canopy.

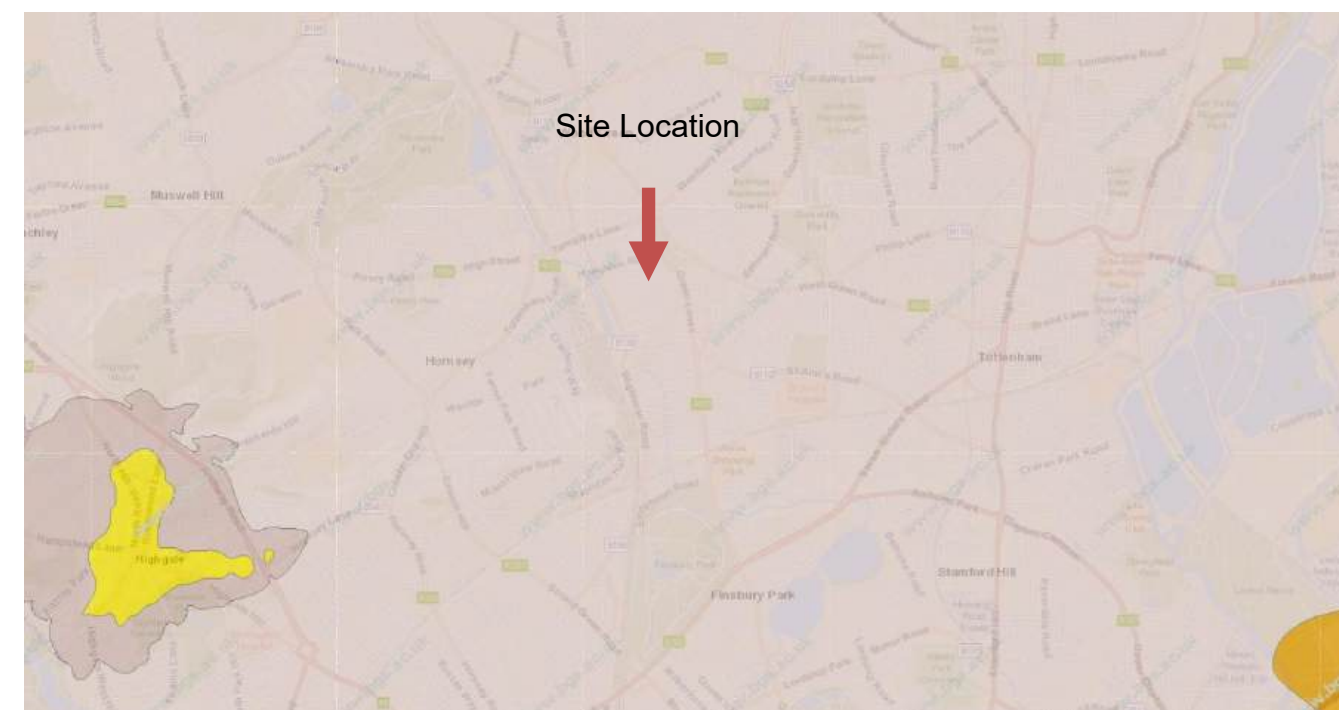


Figure 4 – Bedrock Geology showing London Clay (BGS Map Viewer)

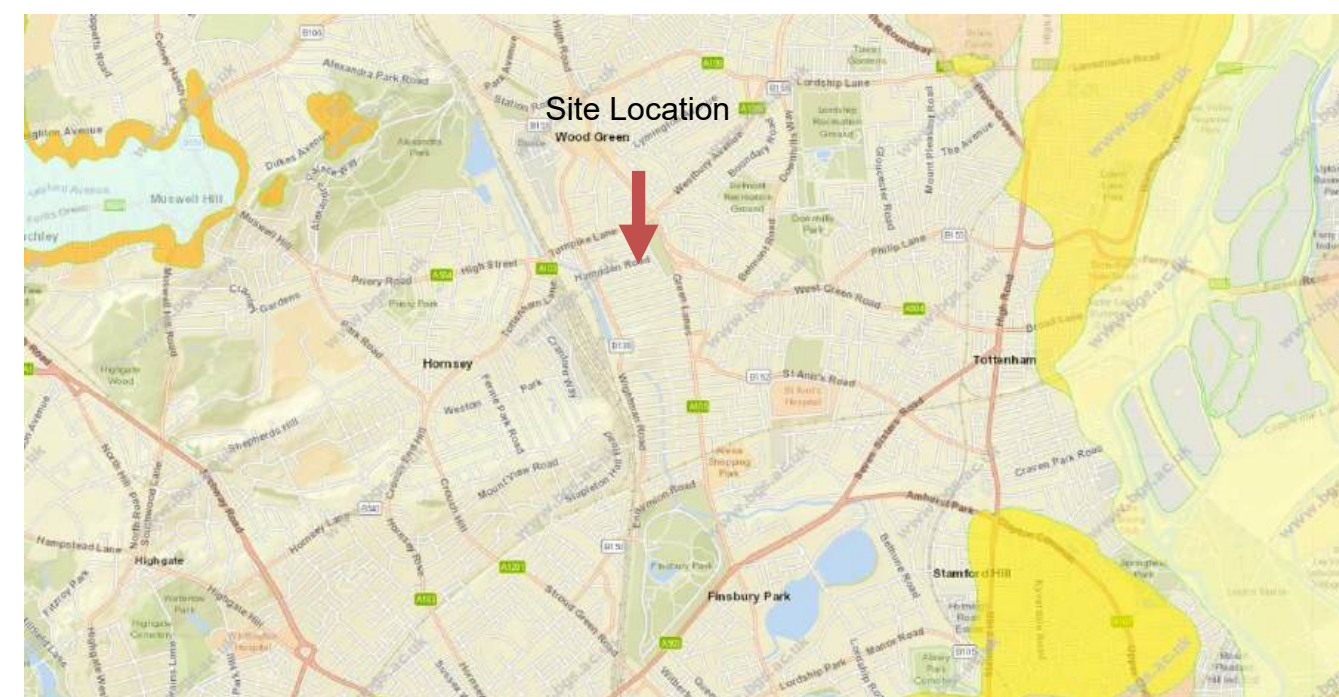


Figure 5 – Superficial Deposit Geology showing none recorded (BGS Map Viewer)

- Q7 *Is there a history of seasonal shrinkage-swell subsidence in the local area, and/or evidence of such effects on the site?*
No. Mature deciduous trees are located approximately 10m away from the rear of the existing building yet no evidence of any cracks are apparent in the existing building fabric or subsidence of the ground level.
- Q8 *Is the site within 100m of a watercourse or a potential spring line?*
No. The nearest watercourse is New River over 400m away to west and a potential spring line is located 2.5km to the east at the change in geology to the Claygate Member.
- Q9 *Is the site within an area of previously worked ground?*
No. With reference to historical maps the area was previously farmland prior to the part construction of the Harringey Ladder as recorded on maps dated 1896.
- Q10 *Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?*
No. Geological information indicates that London Clay is the shallowest strata. Notes accompanying CPG4 Slope Stability Screening flowchart states that aquifers are not present in such ground conditions. BGS maps also confirm that the site is in an unproductive aquifer zone.
- Q11 *Is the site within 50m of the Hampstead Heath ponds?*
No. The site remote from this feature or anything else similar.
- Q12 *Is the site within 5m of a highway or pedestrian right of way?*
Yes. The proposed external courtyard at the front of the proposed dwelling will be immediately adjacent to the public footpath.
- Q13 *Will the proposed basement significantly increase the differential depth of foundations relative to the neighbouring properties?*
Yes. Although the two buildings will not be connected either at foundation or superstructure level. There is also an external passageway to the side of No. 103 approximately 800mm wide.
- Q14 *Is the site over (or within the exclusion zone of) any tunnels, eg railway lines?*
No. Reference to maps indicate the nearest tunnel to be the Piccadilly Line of London Underground Ltd. This is broadly aligned with Green Lanes located 150m to the east.



Figure 6 – Historical Map - 1873

Stage 2: Impact Assessment

1. The construction of the basement has the potential to undermine the neighbouring foundations of No. 103 and the cause subsidence in Raleigh Road. Provided a suitable construction method is used with appropriate method of propping the stability of the ground can remain unaffected.
2. It is proposed that the new basement will be constructed using 300mm diameter minipiles to form a contiguous piled wall covered internally with a shotcrete lining. A capping beam will be formed at the top of the piles to enhance rigidity. The ground floor slab, where present, will also assist with propping the basement walls.
3. This will enable a stable structure to be completed prior to excavating the basement. This will limit the extent of temporary propping required and removes the need for any props at the base of the excavation. It provides the simplest form of construction with the least scope for error. This method therefore mitigates the risk of ground movement affecting neighbouring buildings.
4. A monitoring schedule will be developed to measure any movement of the neighbouring buildings with remedial measures in place if predetermined thresholds are exceeded. Such proposals will be included in the party wall awards with the adjoining owners.
5. The excavation is likely to cause a degree of heave at the base of the excavation over time as the weight of the ground above is removed. This will be accommodated by using a compressible material underneath the basement slab.
6. Utility services located in the footpath in front of the building will be identified and marked as part of the enabling works prior to piling and excavation. The design of the retaining wall at the front of the site will be designed to accommodate a surcharge of 10kN/m² from vehicle loads.

SURFACE FLOW AND FLOODING

Stage 1: Surface Flow and Flooding Screening

- Q1 *Is the site within the catchment of the pond chains on Hampstead Heath?*
No. The site is remote from this feature or anything else similar.
- Q2 *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?*
No. On completion of the development, the surface water flows will be routed in the same way as the existing condition, with rainwater run-off collected in a surface water drainage system and ultimately discharged to the public sewer.
- Q3 *Will the proposed basement development result in a change in the proportion of hard surface/paved external areas?*
Yes. The entire site is currently entirely covered with an impervious surface. The proposal allows for the creation of a small permeable garden area at the rear which is outside the footprint of the basement. This will reduce the proportion of hard surface than exists at present.
- Q4 *Will the proposed basement result in changes to the profile of inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?*
Yes. It is anticipated that the volume water carried to the neighbouring properties will reduce due to the creation of a garden at the rear using a permeable surface. SUDS measures will also be adopted as far as possible which will be beneficial to the neighbours. At the very least, the volume of run-off water collected and discharged to the public sewer system will be no greater than the existing condition.
- Q5 *Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?*
No. The surface water quality will not be affected by the development. Surface water will be collected from the roof and areas of external hardstanding which will be similar to existing.

- Q6 *Is the site in an area known to be at risk from surface water flooding, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?*

With reference to the Environment Agency (EA) Flood Map for Planning Service (Figure 7), the site is not located within a flood risk zone. The EA Reservoir flood risk map (Figure 8), shows that the site is not at risk of flooding from reservoirs. The level of risk of surface water flooding is classified as low to medium in the vicinity of the site (Figure 9).

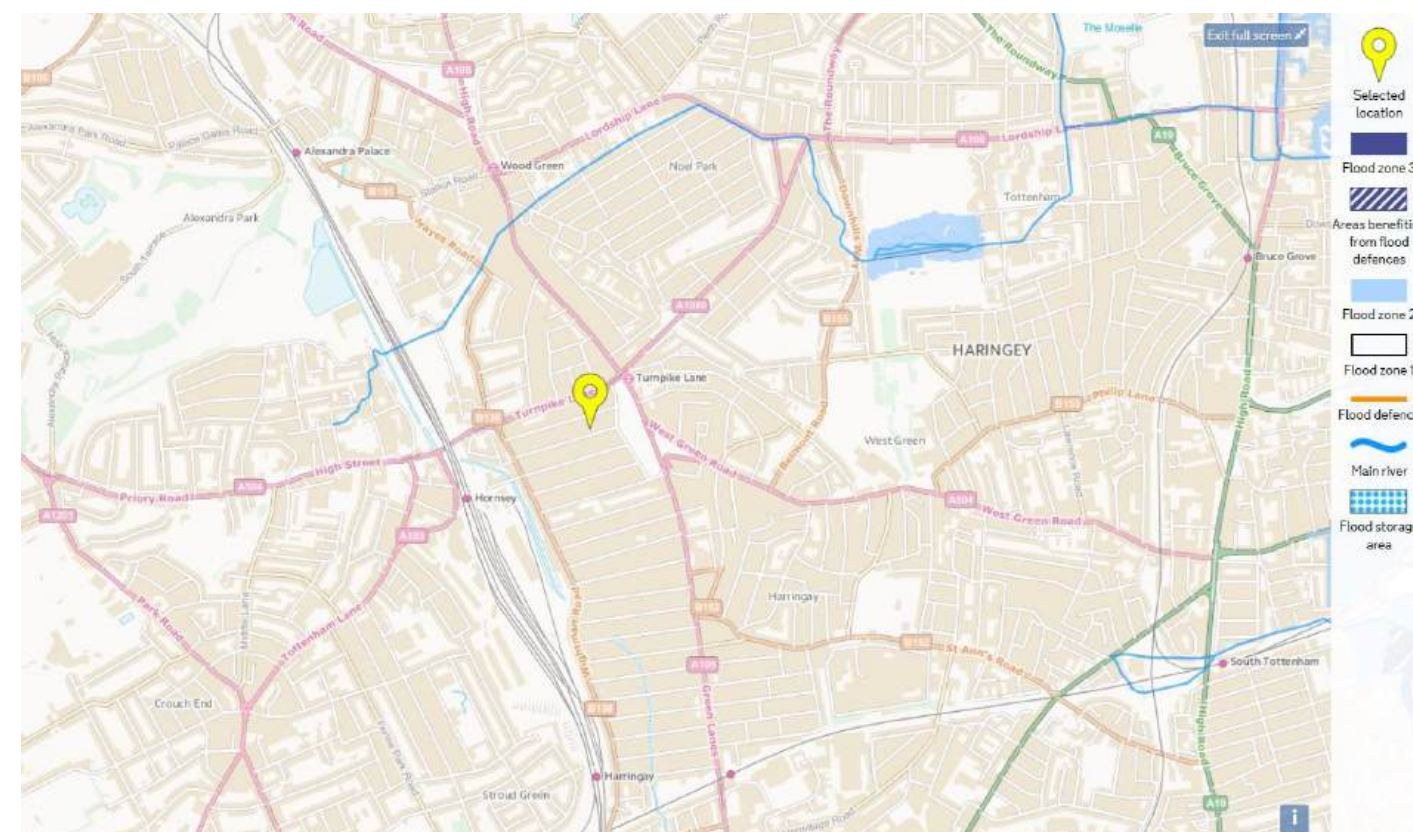


Figure 7 – Flood risk from Rivers or the sea (EA Flood Map for Planning Service)

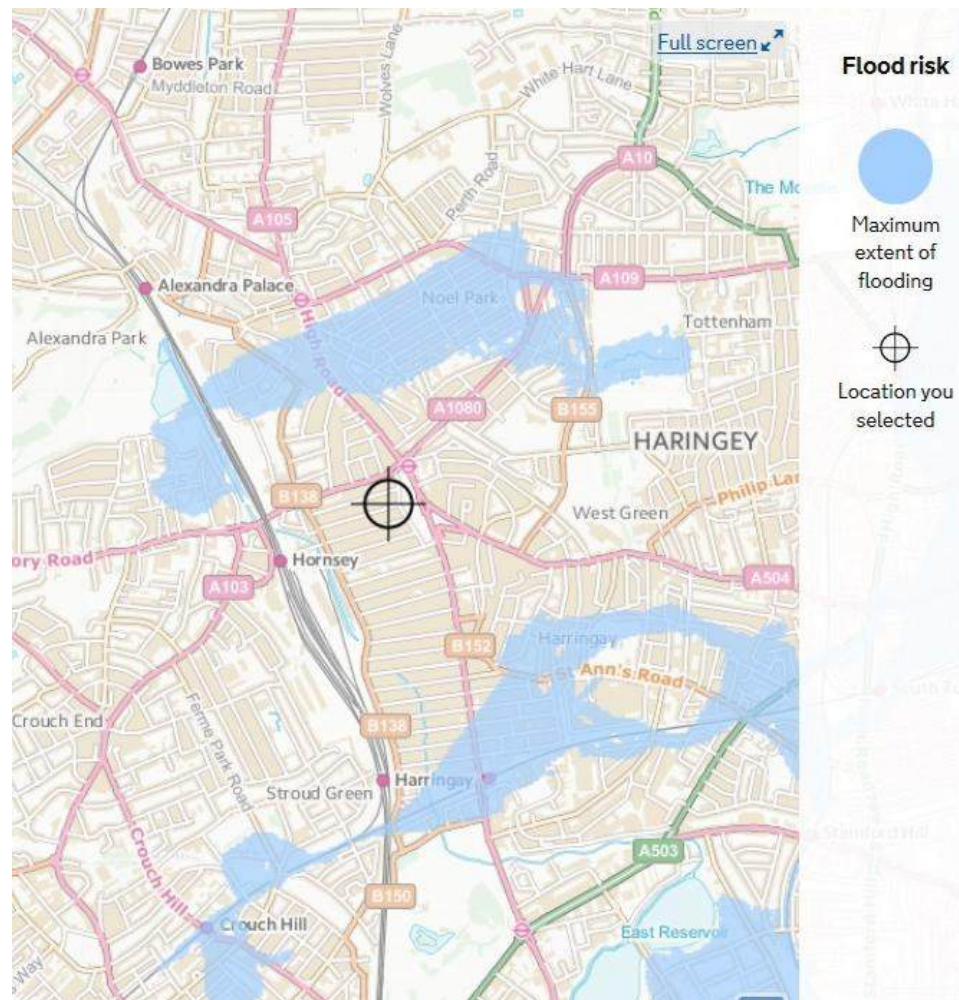


Figure 8 – Flood risk from reservoirs (EA Flood Map for Planning Service)

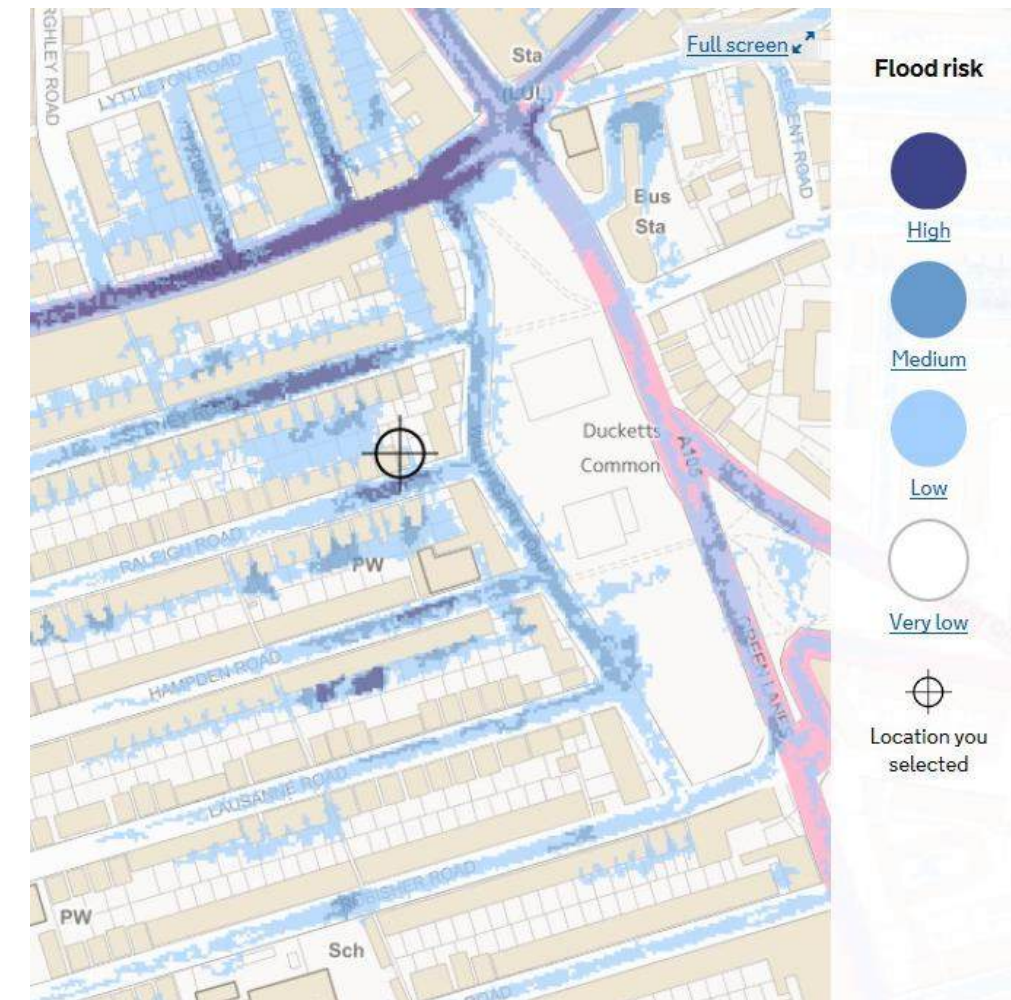


Figure 9 – Flood risk from surface water (EA Flood Map for Planning Service)

Stage 2: Impact Assessment

1. From the above assessment it is considered that the proposed basement construction and redevelopment of the site is likely to reduce the surface flow of water from the site. However, attenuation measures can be adopted to further control the flow rate during a storm event such as the use of permeable paving for external hard landscaped areas.
2. With reference to Environment Agency maps the site is not located in a flood risk area therefore an assessment of such risk will not be required.

CONCLUSION

The basement impact assessment has identified the following issues which will need to be addressed in the detailed design:

1. The level of the ground water is unknown although none was present in the basement excavation underway at the site directly opposite. Ground water depth will be established by trial pit excavation.
2. Foundations to the neighbouring structures are likely to be undermined by the construction of the basement. To avoid the risk of damage to neighbouring buildings it is proposed to adopt a contiguous piled wall around the perimeter of the basement using 300mm diameter minipiles lined with shotcrete. A reinforced concrete capping beam will be installed to further enhance the performance of the retaining structure. This form of construction will allow a stable structure to be formed prior to the excavation phase and therefore limit to risk of ground movement due to out-of-sequence works.
3. A surcharge load of 10kN/m² will be adopted in the design of the piles at the front of the site which are immediately adjacent to Raleigh Road.
4. Clay heave at the base of the excavation is expected therefore counter measures will be provided by adopting a compressible void former.
5. Surface water flow from the site is likely to be reduced owing to the inclusion of a permeable garden area at the rear of the site, although further attenuation measures will be adopted wherever possible.
6. Environment Agency maps indicate that the area is not prone to any risk of flooding. Therefore a further assessment of such events will not be required.
7. The shallow nature of the excavation works is not expected to have any significant effect on the ground water flow regime in the wider area. If any ground water is encountered it is considered that it would be able to flow around and under the proposed basement.

APPENDIX A – SUGGESTED CONSTRUCTION METHOD STATEMENT

PROJECT: 105 RALEIGH ROAD, LONDON, N8 0JD	JOB NO: 18115
WORK LOCATION: FRONT OF SITE	DATE: 10/03/25
WORK ACTIVITY: CONSTRUCTION OF RETAINING WALLS AND CREATION OF BASEMENT	PREPARED BY: CJB
OBJECTIVE: To form a stable basement structure capable of retaining the surrounding earth and surcharge loads without affecting the neighbouring buildings or road.	
TIMESCALE: Work to start as soon as approval granted. Duration TBC by contractor.	
GROUND CONDITIONS: - Existing buildings on site with hardstanding in remaining areas across. Entire site covered with impervious surface. Geological data and inspection of basement construction at site opposite indicate the presence of London Clay. - Made ground expected to a depth of approximately 1m. Ground expected to be unstable. - Raleigh Road located at the front of the site. - Depth of existing foundations to neighbouring buildings unknown but assumed to be shallower than the proposed basement. - Depth of proposed excavation to approximately 2.9m allowing for basement slab construction.	
RISKS IDENTIFIED: - Collapse of sides to an open excavation. - Risk of falls into open excavation. - Underground services. - Undermining existing foundations.	
SUGGESTED WORK SEQUENCE: - Identify any incoming and outgoing services and cap-off as necessary at the site boundary, apart from temporary supplies. - Scan footpath at front of site to identify services. - Erect site hoarding and display signs warning of open excavation. - Hand dig trench at front of site to confirm absence of any services to a depth of approximately 1m. Install close boarding running horizontally and soldiers running vertically. - Stop works if any incoming services are found and refer to relevant utility company for diversion.	

- Begin monitoring of movement of neighbouring buildings.
- Commencing piling works to install 300mm diameter minipiles around the perimeter of the basement to form a contiguous piled wall.
- Install additional tension piles in the centre of basement. Exact locations to be confirmed during detailed design.
- Reduce ground level by approximately 600mm around the perimeter.
- Form capping beam linking the tops of piles together.
- Break-out hard standing at rear of site and reduce level by approximately 300mm.
- Install temporary props across width of basement beneath the level of the proposed ground floor slab. Co-ordinate locations to avoid positions of any permanent structure. Props to remain in place until the ground floor slab has been cast and fully cured.
- Reduce level of basement to proposed formation level evenly in 1m lifts. Monitor movements of neighbouring building during excavation. Follow remedial measures in monitoring regime if threshold levels are triggered. All works to be supervised at depths greater than 1m. No lone working permitted.
- All spoil carried to skips on street level at the front of the site. Licences and disposal times to be agreed.
- Form sump to allow any perched ground water or rainfall to collect. Carefully pump out allow to drain away as necessary.
- Pour nominal 50mm blinding layer at base of excavation.
- Install anti-heave layer and fix reinforcement for basement slab. Ensure adequate lap with tension pile reinforcement into slab and starter dowels drilled and grouted into the perimeter piles.
- Install waterproof seals and pour basement slab with starter bars for any internal columns.
- Apply shotcrete lining to basement walls.
- Form ground floor slab and tie-in to capping beam.
- Allow ground floor slab to cure for a minimum of 14 days before removing temporary props.
- Install waterproofing including seals around incoming/outgoing services.
- Install permeable landscaping at rear of site in garden area.
- Complete construction of superstructure and remove site hoarding.

NAME:
Dr Christopher Brown
MEng, PhD, CEng, MStructE

SIGNED:



Note: The details above are a suggested method statement. The actual sequence of works will need to be confirmed by the contractor.

APPENDIX B – SUGGESTED CONSTRUCTION MANAGEMENT PLAN

PROJECT: 105 RALEIGH ROAD, LONDON, N8 0JD	JOB NO: 18115
WORK LOCATION: ENTIRE SITE	DATE: 10/03/25
WORK ACTIVITY: CONSTRUCTION OF RETAINING WALLS AND CREATION OF BASEMENT	PREPARED BY: CJB
OBJECTIVE: To form a stable basement structure capable of retaining the surrounding earth and surcharge loads without affecting the neighbouring buildings or road.	
TIMESCALE: Work to start as soon as approval granted. Duration TBC by contractor.	
24HR CONTACT DETAILS: Site Manager's details and contact No. to be clearly posted on site hoarding adjacent to entrance.	
SITE HOURS: Site only to be operational during daytime hours of 7.30am to 6pm Monday and Friday and 8am to 1pm on Saturdays. Contractor to be aware of religious holidays observed within the community. Any other limitations, such as hours of noisy working, to be observed.	
PARKING: Pay and display bays available nearby in Willoughby Road with further areas of resident's parking available along Raleigh Road subject to permit approval.	
LOADING AND UNLOADING OF PLANT AND MATERIALS: Loading and unloading from street at times to be agreed. Plant and materials to be stored at rear of site in vicinity of the proposed garden.	
STORAGE OF PLANT AND MATERIALS AREA: Located at rear of site on proposed garden. Further storage area possible in neighbouring unused garage subject to agreement.	
SECURITY HOARDING: 2m high close boarding hoarding to be located around all exposed sides of site. Hoarding to be painted in neutral colour.	

WHEEL WASHING: Vehicles attending site not to go beyond the front hoarding. Hose available to suppress any dust.	
DUST & DIRT OMISSION CONTROL: Hose to be available providing fine mist to suppress dust. Further hose/wheel wash & boot clean facilities to be made available.	
RECYLCING/DISPOSAL Dedicated skips to be made available to separate materials accordingly.	
NAME: Dr Christopher Brown MEng, PhD, CEng, MStructE	SIGNED: 

Note: The details above are a suggested construction management plan. All details will need to be confirmed by the contractor.