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Basement Impact Assessment

154 Royal College Street, London, NW1 0TA

Project Ref: L24/055/02

Preamble

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Revisions & additional material

Document Guidance Documents

This report has been prepared in accordance with the statutory policies and technical procedures as outlined the following listed documents.

- Guidance for Subterranean Development (GSD). Issue 01. November 2010. Ove Arup & Partners.
- Camden Planning Guidance (CPG) Basements (January 2021)
- Camden Local Plan 2017: Policy A5 Basements and Policy CC3 Water and Flooding

Document History and Status

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-	24.07.2024	First Issue
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APPENDIX

1.0 Executive Summary

1.1.1. The site location is 154 Royal College Street, London, NW1 0TA. The site falls within the London Borough of Camden. Grid Reference: TQ 29264 84099 (Easting: 529264; Northing: 184099)

1.1.2. The existing / current site arrangement consists of an end terrace residential property, composed of basement level, ground, first and second accommodation with pitched roof over. The general construction is of solid loadbearing brickwork external walls with timber internal floors and roof structure covered in slate tiles; construction is in keeping the adjoining property of No.158 to the North West.

1.1.3. The proposed development compromises of deepening the existing basement from a general clearance of 1.950m floor to ceiling heights to 2.500m (an increase of approximately 600mm based on final finishes) The basement is also to be extended to the rear, the proposed footprint is to be enlarged approximately 1.50m beyond the existing basement level lightwell/ access stairs to the rear elevation and increased in width to the party walls either side; please refer to AJs Planning drawings extracts contained in Appendix 2&3 of this report.

1.1.4. A small rear extension is to be provided situated over the proposed rear basement alongside general refurbishments/ internal layout alterations to all floors including loft conversion.

1.1.5. The report is based on the information produced by the clients Architects, borehole data provided by British Geological Survey (BGS) and is intended to provide the basis for planning and may be subject to further design discussion and development with the successful Contractor.

1.1.6. The following assessments are presented:

- Site Geology
- Site Hydrology (By Others Via Secondary Appointment)
- CPG Basement Screening Flowcharts
- Construction Methodology
- Outline Temporary and Permanent Works Proposal
- Ground Movement and Damage Assessment

1.1.7. Refer to Architect drawings for:

- Existing floor plans and elevations.
- Proposed floor plans and elevations.

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 standard underpinning construction technique. This is shown in Appendix 4 & 5 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 154 Royal College Street, London, NW1 0TA. 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.

This report is for the exclusive use of the Client and should not be used in whole or in part by any third parties without the express permission of JMS Engineers in writing.

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 for the deepening of and existing basement under the footprint of the proposed ground floor with a small extension to the rear

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 Camden. 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:

- Current/historical mapping provided by Google Maps and Online Historic Maps resources.
- Association of Specialist Underpinning Contractors (ASUC), Guidelines on safe and efficient basement construction directly below or near to existing structures.
- 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 occupied and compromises of a basement, ground floor, first and second floor accommodation. Refer to drawings in the Appendix.

2.2.2. The property appears to be and end terrace adjoining No.156 Royal College Street, which is similar in age and construction to 154 Royal College Street, London, NW1 0TA. The remainder of the row of terraces have been historically demolished to allow for a much newer residential block extending from 158, 160-164.

2.2.3. It should also be noted that a property similar in age and construction was present to the South (No.152 which has subsequently been demolished, leaving a plot which is empty at present.

2.2.4. The property at 154 Royal College Street, London, NW1 0TA, and adjacent properties are not in the Listed Building Register.

2.2.5. Underground infrastructures are not present beneath/close to the site. Refer to Transport for London Property Register in Appendix 1.

2.2.6. Thames water assets i.e. Lateral public sewer run is located in the existing garden and may require a relocation agreement. See Thames Water Asset register in Appendix 2.

2.2.7. Existing and Proposed development drawings are provided by AJS Architect. Refer to relevant Architect's drawings for details, extracts are contained within Appendix 2&3.

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

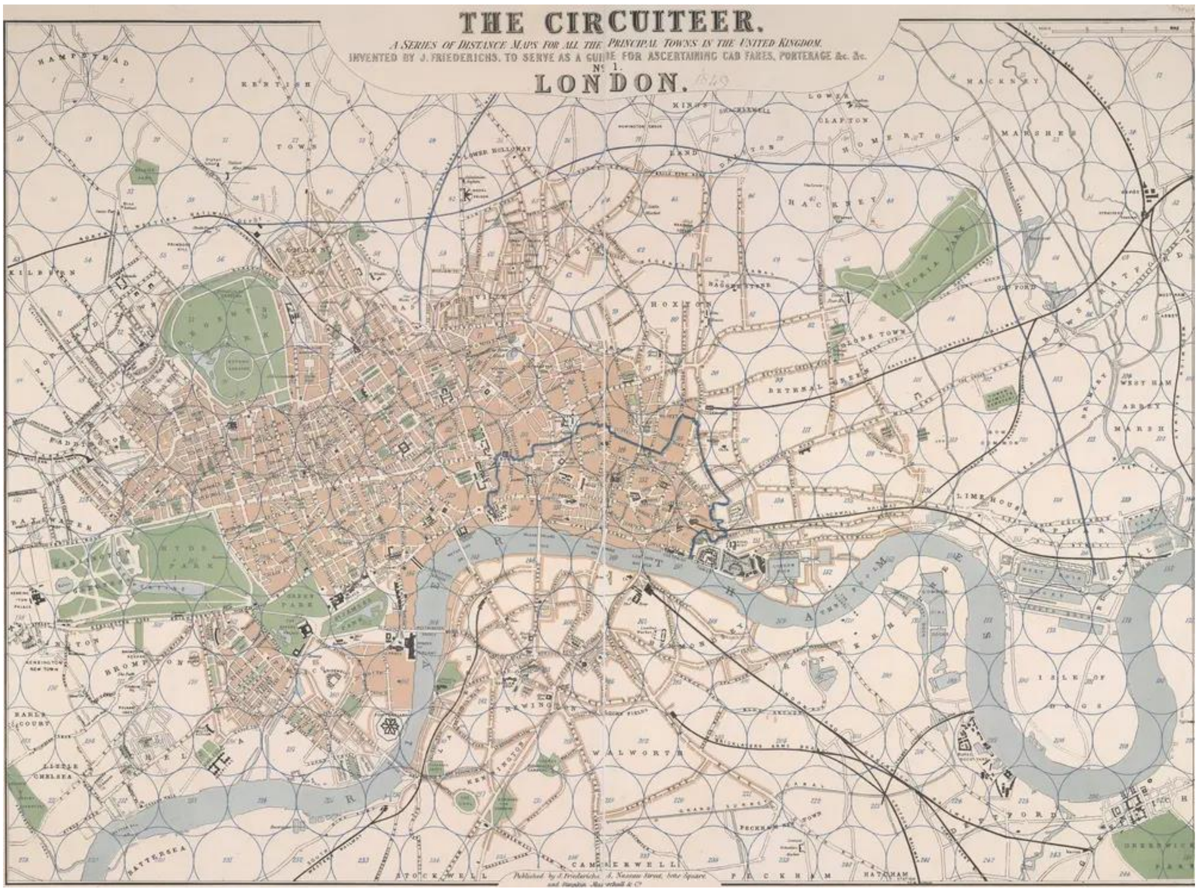
2.2.9. The outline construction programme for the proposed development, shown as indicative only in appendix 4 & 5, is to be agreed with successful contractor.

2.2.10. The full extent of the proposal will see the existing basement increased in depth by approximately 600mm (internal dimension) and extended to the rear approximately 3.0m with a single storey extension at ground floor over. Whilst the majority of works are limited to within the existing footprint, there is a marginal increase in impermeable surfaces to the rear which must be considered.

2.2.11. <u>London Borough of Camden</u>

2.2.12. Camden Town is laid out as a Residential District from the year 1791. The land was previously used for Agricultural purposes.

2.2.13. In 1816, Regents Canal was constructed, precipitating Camden Towns expansion into a major centre.



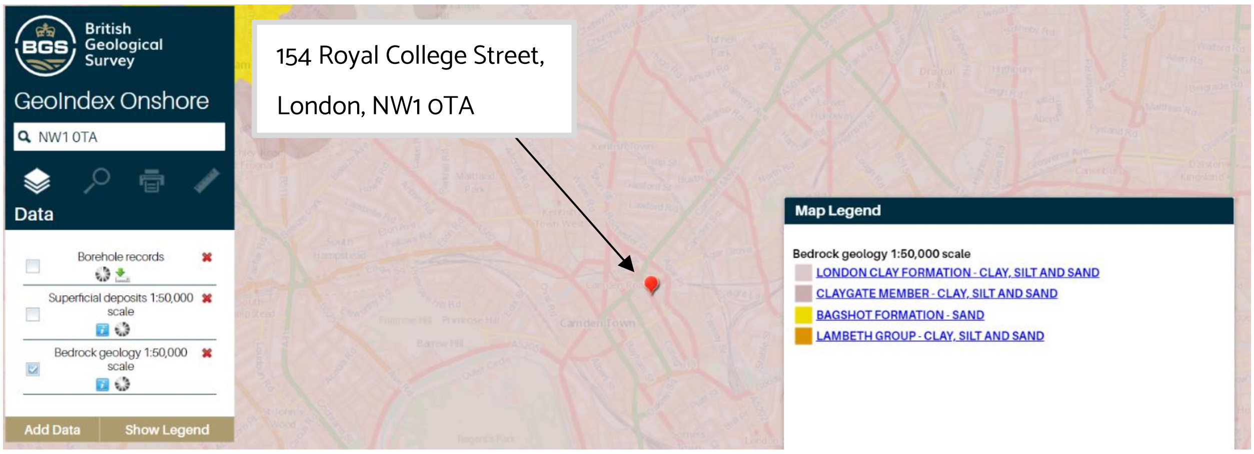
1850 - THE CIRCUITEER. A SERIES OF DISTANCE MAPS FOR ALL THE PRINCIPAL TOWNS IN THE UNITED KINGDOM (Fredericks, J.)

2.2.14. The London Borough of Camden was contained within the Metropolitan Borough of Saint Pancras between 1900 – 1965.

2.2.15. The general topography of the aera is flat, with a slight fall from Regents Park to Camden High Street.

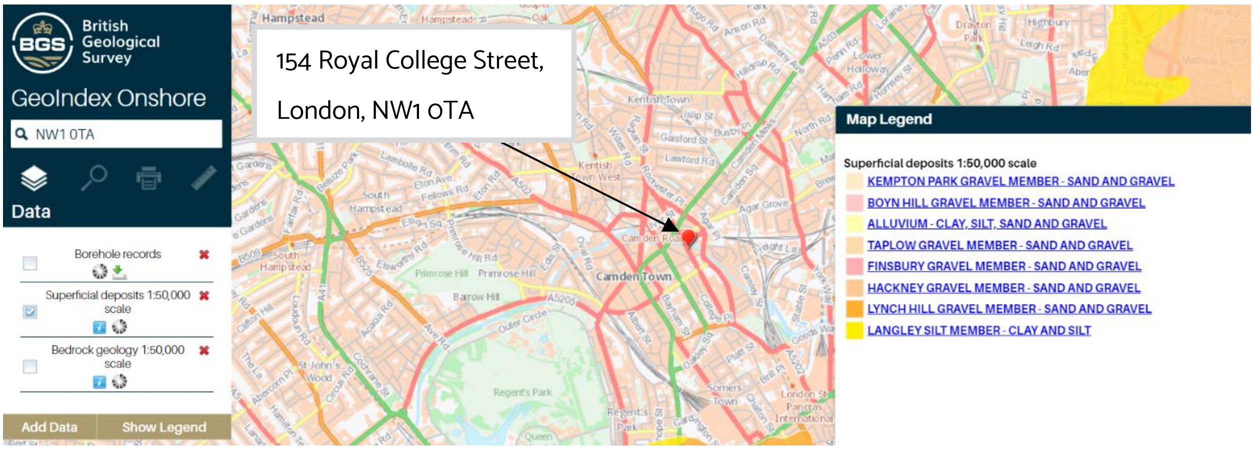
3.0 Site Geology

3.1. Bedrock Geology



3.1.1. 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 and Sand.

3.2. Superficial Geology



3.2.1. A review of British Geological survey mapping does not indicate a specific superficial deposit record for the site, as such a deeper search of local records has been undertaken by Stephen Buss Environmental Consulting as part of their hydrology submission; 154 Royal College Street: Subsurface Flow Basement Impact Assessment; Screening and Scoping Document (25th July 2024). This document highlights historic planning records relating to the two adjacent plots which contain soils information gathered from intrusive testing at the respective properties (152 & 156).

3.3. Boreholes

3.3.1. See Appendix 7 for Borehole details collected from recent planning submissions for 152 and 156 and their associated references, an illustrative summary of ground conditions is provided below in the extract from Stephen Buss Environmental Consulting Subsurface Flow Basement Impact assessment.

3.3.2. Extract as summarised above.

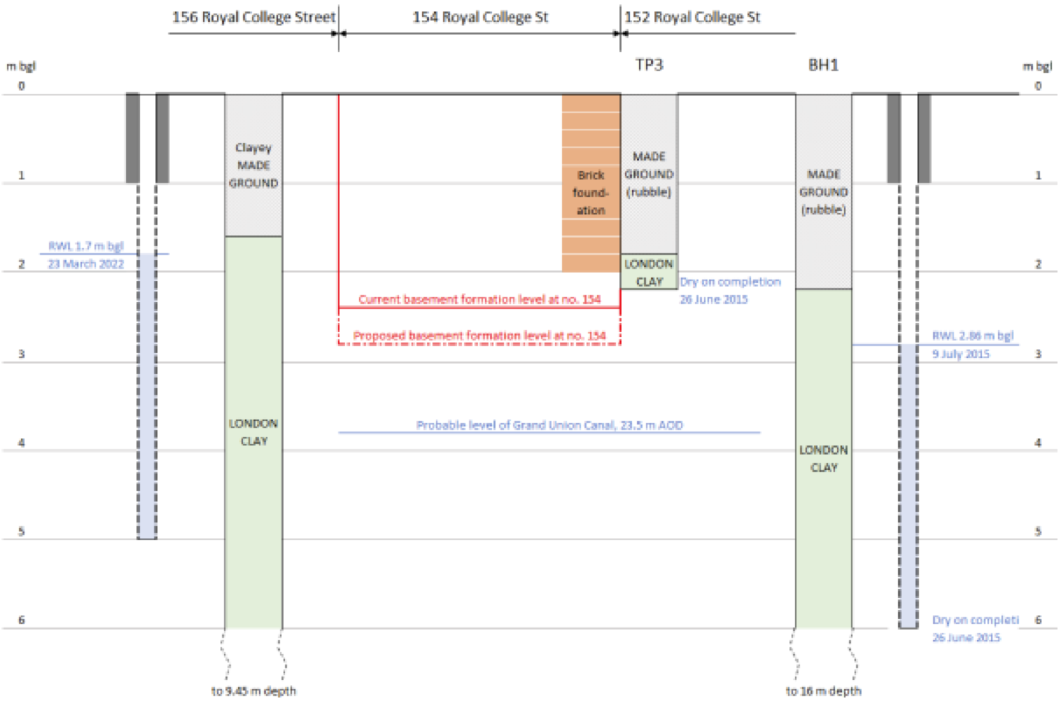


Figure 2.1 Borehole logs from 152 and 156 Royal College Street (looking north-eastwards)

3.3.3 It would appear from borehole records that there is potential for made ground overlaying the site. The increased stratum depth to No 152. It is attributed to the historic demolition and remaining basement on the vacant plot. That being said it would be prudent to anticipate a minimum depth of 1.50-1.80m depth BGL of loose/ weak made ground when carrying out the basement extension excavations to the rear.

3.3.4 An overall basement excavation depth of 3.0m is expected based on the proposals to allow for the formation of the base slab and architectural finishes, as such the basement will extend into the firm to Stiff London clay at depth. Engineering Parameters as detailed in section 6 of this document are therefore advised for design.

3.3.5 Existing investigations also implicate a possible risk of encountering ground water at the very base of excavations (Circa 2.80m BGL). It would therefore be prudent to consider temporary dewatering measures as a precautionary measure during construction.

4.0 Hydrology (By others via Secondary Appointment)

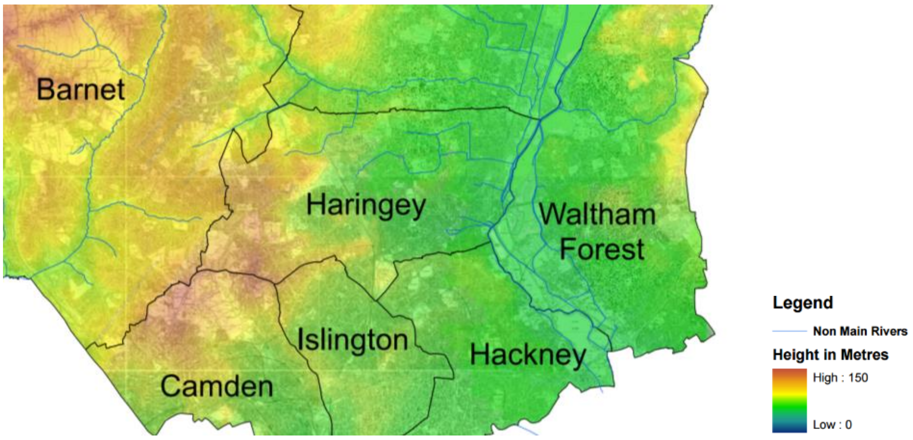
5.0 CPG Basement Screening Flowcharts

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 Camden.



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. No, a varying depth of made ground is known to be present estimated to be in the region of 1.50-1.80m BGL overlaying London Clay – 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, trees are not to be felled. No, the proposed works are not within a tree protection zone.

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. Yes. Watercourse is Regent's canal, Carry forward to the scoping stage.

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 17th 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– It is understood that the site is not sat within an aquifer, that being said ground water has been observed within the excavation depth (Circa 2.80m), likely attributed to undocumented perched ground water which may require temporary dewatering during construction. Carry forward to the scoping stage.

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 may abut adjacent properties basements. 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 TfL 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, a small increase in impermeable roof area is present over the rear extension which will need to be addressed as part of the surface water drainage strategy.

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 extended basement area will increase the impermeable area, however the basement is covered by the ground floor extension.

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. No. Whilst there is a small increase in surface water runoff from the proposed flat roofed area, this will be captured/addressed as part of the surface water drainage strategy and discharged into the existing Thames Water connection, albeit with a controlled/ agreed flow rate.

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 no change in the surface water flow off-site 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 site falls outside any floor risk zone.

5.3. Surface Water (Flood Risk Assessment)

5.3.1 The National Planning Policy Framework (NPPF) includes government policy on development and in this case meeting the challenge of climate change and flood risk. The policy states: *"Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk….".*

5.3.2 The location of new developments should consider climate change by planning to avoid increasing the vulnerability on development from the impacts of climate change. Where locations are considered vulnerable from the impacts of climate change, these risks should be managed and where possible mitigated to limit the risk.

5.3.3 Development in areas at risk of flooding should be made safe without increasing the flood risk elsewhere. Local Plans should be based on evidence, through a Sequential Test, in selecting the appropriate location for new development within the plan period and thus avoiding where possible flood risk to people and property.

Flood Zones	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	**This zone comprises land where water must flow or be stored in times of flood.** Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Figure 1 - Flood Zone Definitions

5.3.4 Development priorities are based on the specific flood risk zones outlined within Table 1 of the technical guidance, as per *Figure 4* below. For Flood Zone 1 – Low Probability, where land having a less than 1 in 1,000 annual probability of river flooding, as defined by the Environment Agency Flood maps.

5.3.5 The Environment Agency (EA) website confirms the site location to be within Flood Zones 1.

5.3.6 Further guidance in NPPF classifies residential development schemes to be a 'more vulnerable' land class use in terms of flood risk.

Flood Risk Vulnerability Classification: More Vulnerable
Hospitals
Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non-residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste
Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuations plan.

Figure 2 - Flood Risk Vulnerability Classifications

5.3.7 NPPG Table 3 (para 67 ID 7-067-20140306) determines the appropriate uses by flood zone, in this case a less vulnerable use is appropriate for a Zone 1 as summarised in PPS25, table D.1.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	√	√	√	√	√
Zone 2	√	Exception Test Required	√	√	√
Zone 3a	Exception Test Required	x	Exception Test Requires	√	√
Zone 3b	Exception Test Required	x	x	x	√
√ Development is appropriate x Development should not be permitted					

Figure 3 - Flood Risk Vulnerability and Flood Zone 'Compatibility'

5.3.8 Therefore, given the land use and Flood Zone, it is concluded that it meets the requirements of NPPF.

5.3.9 Consideration for the EA document *Rainfall runoff management for developments* report SC030219 has been made.

5.4. Fluvial Flood Risk

5.4.1 Fluvial flooding is a result of the capacity of rivers being exceeded by river flow. In general, rivers have a natural flood plain which can be encroached upon by development in specific circumstances.

5.4.2 Tidal flooding is a result of high tides and storm surfaces that raise water levels above the shore or riverbank. These can be sudden and severe.

5.4.3 In the case of the proposed development, the developable site is located within flood zone 1, therefore no resilience or mitigation measures are proposed to the buildings

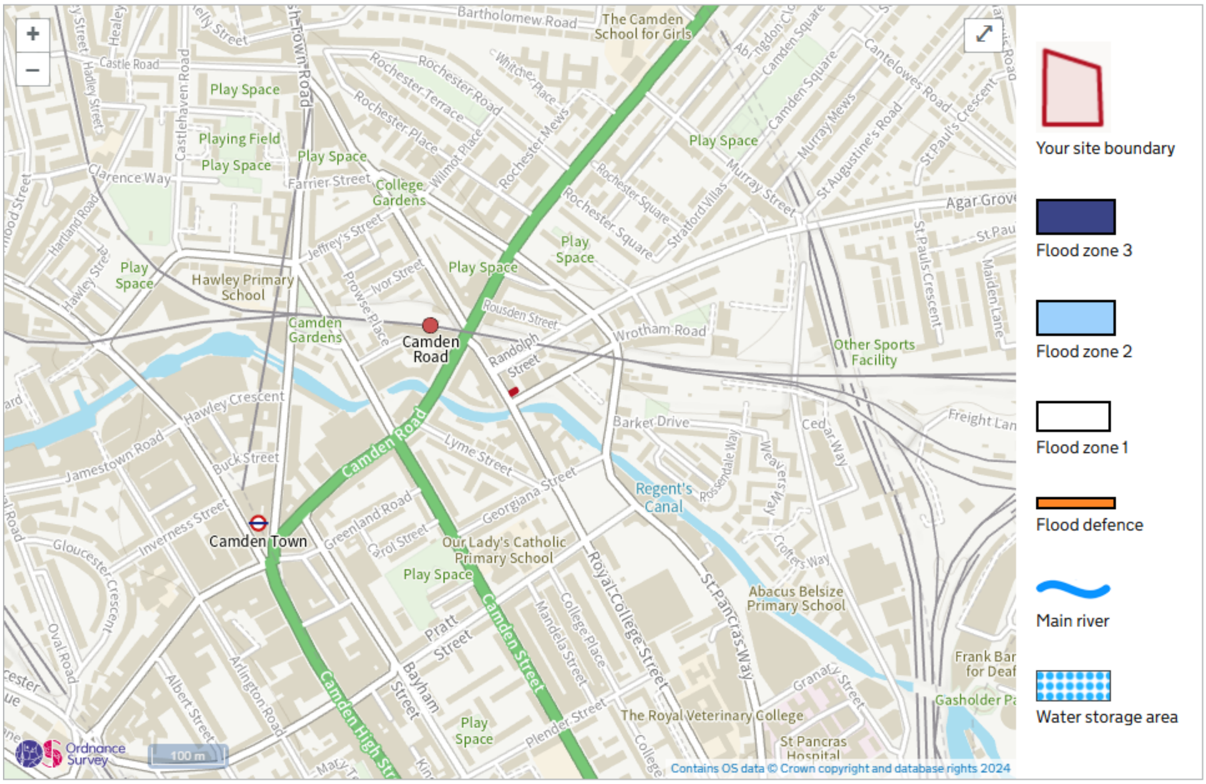


Figure 4 Flood map for planning

5.5. Pluvial Flood Risk

5.5.1 Pluvial flooding refers to the flooding event of extreme rainfall which cannot be absorbed within the ground, or when urban drainage systems become overwhelmed. Overland flooding is present at the site as shown in the Figure below.

5.5.2 As displayed on *Flood map for planning;* surface water flood risk is low within the developable area of the site.

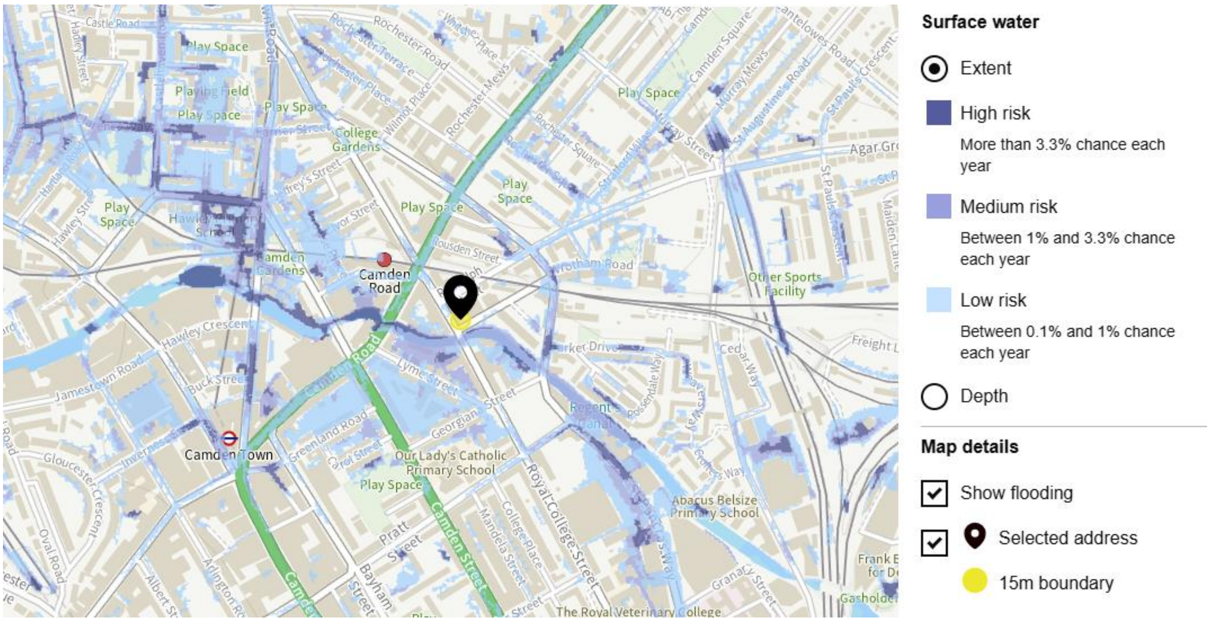
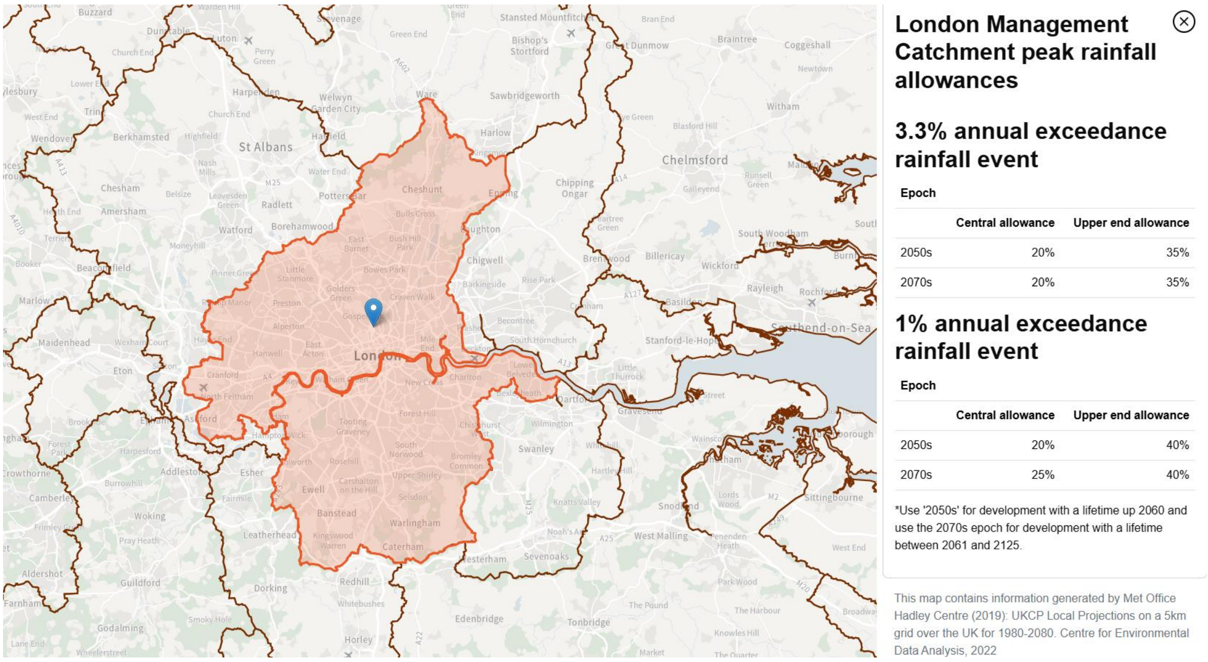


Figure 5 Extent of surface water flooding

5.5.3 It can be concluded that flood risk is low, the site location is outside of the recorded at risk areas as above.

5.6. Climate Change

5.6.1 The appended drainage calculation allows for a 1:100-year storm plus 45% climate change, this has been sourced from the DEFRA Hydrology Data Explorer for Climate Change Allowances, as below.



London Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	35%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

Figure 6 climate change allowances for peak rainfall in England by catchment area

5.7. SUDs Considerations

5.7.1. 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.

5.7.2. 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.

5.7.3. For this development the London Borough of Camden 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 Camden guidance document. In accordance with the guidance, the surface water design follows the criteria and incorporates SuDS wherever practicable.

5.8. SUDs Incorporation and Maintenance

5.8.1. The site geology is generally impermeable Clays; therefore, it is unlikely that surface water can be disposed of via infiltration.

5.8.2. Given the comparatively minor increase in surface area associated with the proposals, the requirement for uprated drainage systems is minimal. It is likely, given detailed design that additional water storage capacity/ SuDS features can be introduced to remove the requirement for ground storage/ attenuation tanks. However, should attenuation tanks be required, these will be sufficiently limited and will sit within the upper layer of made ground at shallow depth, entirely remote of established ground water levels, as such will not negatively impact or give cause for concern for local hydrology.

5.8.3. The final system design 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.

5.8.4. 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.

5.9. Surface Water Strategy

5.9.1. The surface water strategy is based upon the SuDS implementation as outlined above and the hierarchy for surface water disposal as follows:

- Store rainwater for later use - rain water storage to be utilised where possible.
- Use infiltration techniques, such as porous surfaces in non-clay areas - infiltration is 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 - although attenuation is proposed for this scheme the approved planning layout does not provide sufficient area for open water features.
- Surface water runoff is restricted before discharging to the public sewer at a reduced rate. The equivalent greenfield runoff rate found is minimal and therefore impractical to restrict to such a rate, mainly due to blockage potential. Therefore, proposals are to reduce flows to a rate which is considered reasonably practical which can be determined by using a typical SUDs Evaluation Sheet. Flow rate will be controlled by the rump rate with chamber sized to attenuate flows for the worst case duration of the 1:100 year storm event, 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. Its is understood from nearby borehole logs associated with adjacent developments that whilst the main aquifer is located at a level far below the development depth, there is a potential risk of encountering perched water at the base of the excavation circa 2.80m BGL. It is recommended that a dewatering strategy be put in place by the appointed contractor as a precautionary measure to ensure ground water levels can be controlled during construction.

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. It is evident that the adjacent water course is sufficiently remote, and associated water levels

6.2.4. The existence of basements in adjoining buildings is presumed to be absent. However, the structural engineering proposal for this scheme involves the use of underpinning to form the structural box below ground which should have no negative effect on neighbouring properties.

6.2.5. Due to the soils information provided by the adjacent borehole logs available the following parameters are to assumed within the designs: Using ko, the earth pressures are considered 'at rest'. Active pressure (ka) will be mobilised if the wall moves 0.25-1% of the wall height, while passive pressures (kp) will require movements of 2-4% in dense sand or 10-15% in loose sand/fill.

ko values adopted:

- 0.50-0.60 for normally consolidated clay,
- 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)

6.2.5 The presence of potentially loose/ weak made ground at shallower depth places increased importance of slope stability during the excavation phase of the rear basement. It should be noted given the depth of existing foundations that this does not present risk for adjacent structures, but will require robust shoring procedures to protect the stability of soil underlying the neighbouring garden plots.

6.3. Surface Flow and Flooding

6.3.1. As detailed in paragraph 5.8.2 there will be a slight increase in impermeable paving associated with the proposed addition of the rear basement extension. It is understood that this can be effectively addressed using standards SuDS techniques without detriment to structures onsite and/ or the the prevailing hydrology.

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.

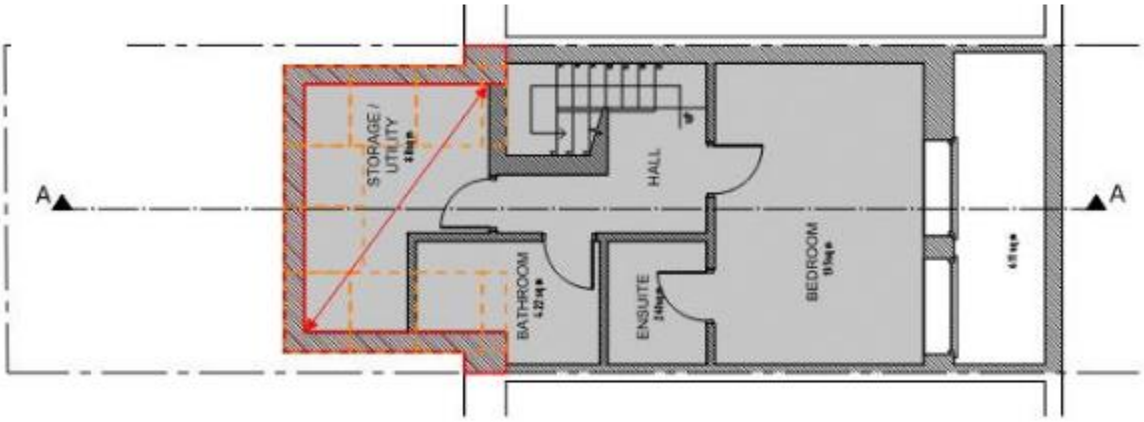
7.2.3. It is presumed that all the temporary works to ensure stability to adjacent properties are provided during demolition as designed and specified by contractor.

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. It is frequently necessary for the contractor to brace or prop existing openings so that isolated load bearing piers may be underpinned. The contractor is to allow in his tender price for all propping, shoring and bracing to ensure that the works may be safely undertaken with no undue disruption to the structure.

7.2.5. In addition, no floors are to be removed to allow the excavation of the basement until adequate propping has been provided to ensure continuity of support of opposing walls. Propping system to remain insitu until new floor has been fully installed and strapped. Design of propping is a contractor designed item, unless instructed otherwise.

7.2.6. 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.

7.2.7. Sequenced underpinning/sequenced construction sections can take place as per indicative sketch below. Underpinning to be connected to central slab and existing basement slab with dowel bars (to SE specification).



7.2.8. During the excavation, the contractor shall take all the necessary steps to prevent softening of the ground. The contractor shall also endure 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. The contractor might be required to provide sheeting and strutting to prevent any ingress of loose material beneath the existing floor.

7.2.9. It is advised that the contractor prepare a methodology and have measures in place prior to commencement of work to facilitate dewatering of excavations should ground water be encountered at depth.

7.2.10. 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.

7.2.11. The underside of all existing footings (where exposed by excavation in preparation for underpinning) shall be cleaned of all loose soil and fragments. Any major projections or inclusions such as bricks, broken concrete or boulders shall be broken away from the underside of the existing footing. Prior to concreting the underpinning leg, the existing footing should be clean and firm and level, so the dry packing may be accomplished satisfactorily.

7.2.12. All concrete shall be grade C35 (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. The concrete for the retaining wall legs should be brought up to 75mm from the underside of the existing footing.

7.2.13. Once the retaining wall legs have set (at least 3 days after concrete placement) the gap between the underside of the existing footing and the top of the new footing is to be packed with dry concrete. 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. The dry packing concrete is then to be rammed solid into the gap between the underside of the existing footing and the top of the new footing using a steel bar.

7.2.14. A sufficient time should elapse between the completion of dry packing and the excavation of any retaining wall legs in the vicinity. The curing time shall be 72h between adjacent bays, unless stated otherwise.

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

7.2.16. 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.

7.2.17. Based on the size of the proposed development, it is presumed that is it likely that the bays construction will be undertaken on “top down” construction method can be constructed in one pour, to be confirmed by the successful contractor.

7.2.18. Based on the size of the proposed development, and the proposed levels, the underpinning depth is between 2.4m-3.0m which is likely to be constructed in one pour. This is to be confirmed by the successful contractor and by the finalized architectural layouts.

7.2.19. Refer to Appendix 3 for typical details and notes for underpinning construction in multi-stages pouring. (Note: details are INDICATIVE only, shown only for illustrative purposes.) contractor to advise.

7.2.20. 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.

7.4.4.

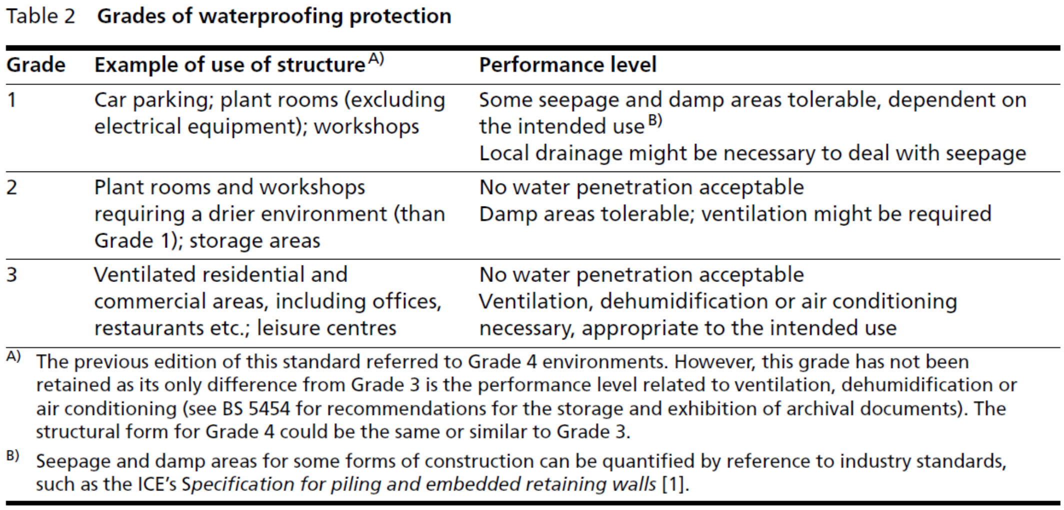


Table 2 **Grades of waterproofing protection**

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 *Specification for piling and embedded retaining walls* [1].

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. Ground Movement and Damage Impact Assessment

7.5.1. It is evident that the proposed basement excavation to the existing building extends into the prevailing stratum of London Clay underlying the site, based on typical reference documentation for firm clays a bulk density of 17-20kN/m^2 can be expected.

7.5.2. Given the age and construction of the property it is understood that historic heave movements associated with the existing basement have largely settled with minimal stress to be considered from historic loading, as such future heave behaviours can be considered reactive to the removal of overburden as part of the increased excavation depth of soils i.e. typically 18kN/m^3 x 1.0m = 18kN/m^2 internally and 18kN/m^2 x 3.0m = 54kN/m^2 to the rear extension.

7.5.3. Based on a typical 300mm thick concrete slab build up an effective over burden of 7.5kN/m^2 can be achieved through self-weight alone. It is therefore recommended that the ground bearing basement slab be designed to resist and uplift pressure in excess (18.0 -7.5) = 10.5kN/m^2 to ensure an equilibrium between proposed structural loading and existing overburden stress to reduce potential for long term structural movement associated with heave behaviours.

7.5.4. It is noted that the uplift pressure applied to the slab will be resisted by the vertical load on the external walls. i.e. an uplift of 10.5kN/m^2 x 4.6m/2 = 24.15kN/m presuming single span. This is significantly less than the typical line loads associated with the proposed construction which can be calculated in the region of 70-80kN/m resulting in a net overburden pressure in keeping with the historic stresses applied to the clay soils at depth. The likely hood of long-term vertical settlements beyond the serviceable limits of the structure are therefor considered to be negligible.

7.5.5. To the rear extension the basement is likely to experience slightly increased long-term settlements resulting from the increased removal of overburden associated with the larger excavation. However, this is considered to be outside the influence of the adjacent external structures, as the proposed foot pint abuts the boundary of the rear gardens remote from neighbouring properties.

7.5.6. Short term heave during the excavation phase is considered to be minimal as the temporary unloading phase will not be sufficient for pore water pressures to develop.

7.5.7. The sequenced methodology of construction will ensure that yielding of adjacent soils during the excavation phase will be kept to an absolute minimum, given the existing basement to No. 156. In order to make an accurate assessment it is essential to review the susceptibility of the adjacent structures to such movement. It is observed that the principal load bearing walls of the adjacent property are subject to the proposed basement underpin, as such loadbearing support will be maintained at all times, it is therefore only the ground bearing elements of basement which may be minimally affected.

7.5.8. In the absence of well documented procedures/ literature for estimating ground movements associated with underpinning operations, typical observed parameters for ground movement have been calculated based on table 6.1 of Ciria C760 (2017) for diaphragm wall installation is stiff clays. These predict vertical movement in the region of 1.50mm (0.05% of 3.0m) and horizontal movement in the region of 3.0mm (0.1% of 3.0m).

7.5.9. Note that these predictions are based on the presumption of the quality of the work and the construction tolerances adopted on site will comply with BS8000: Workmanship on construction site, in addition to a robust site specific scheme of temporary works/ propping to ensure stability of excavations during construction.

7.5.10. Subsequently, it is predicted that the damage to the adjoining and nearby structures would generally be Category 1 (Very Slight), with limited areas of Category 2 (Slight) damage due to differential movement from inconsistent loadings in accordance with CIRIA C760 (2017) classification. On this basis, the damage that would inevitably occur as a result of such an excavation would fall within the acceptable limits.

It is understood that appropriate party wall agreement will be in place with the neighbouring properties, to document accurately existing structural condition and include adequate provision for structural monitoring to measure potential structural movement and damage during the construction process.

7.6. Existing Drainage

7.6.1. Should existing public sewers be found within 3m of the development then a formal build-over/diversion application will be made. All necessary documentation required to form the application will be compiled. Submission will be made to Thames Water and consultation undertaken so secure Technical approval.

8.0 Conclusion

8.1.1. The proposed re-development of 154 Royal College Street, London NW1 0TA 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.

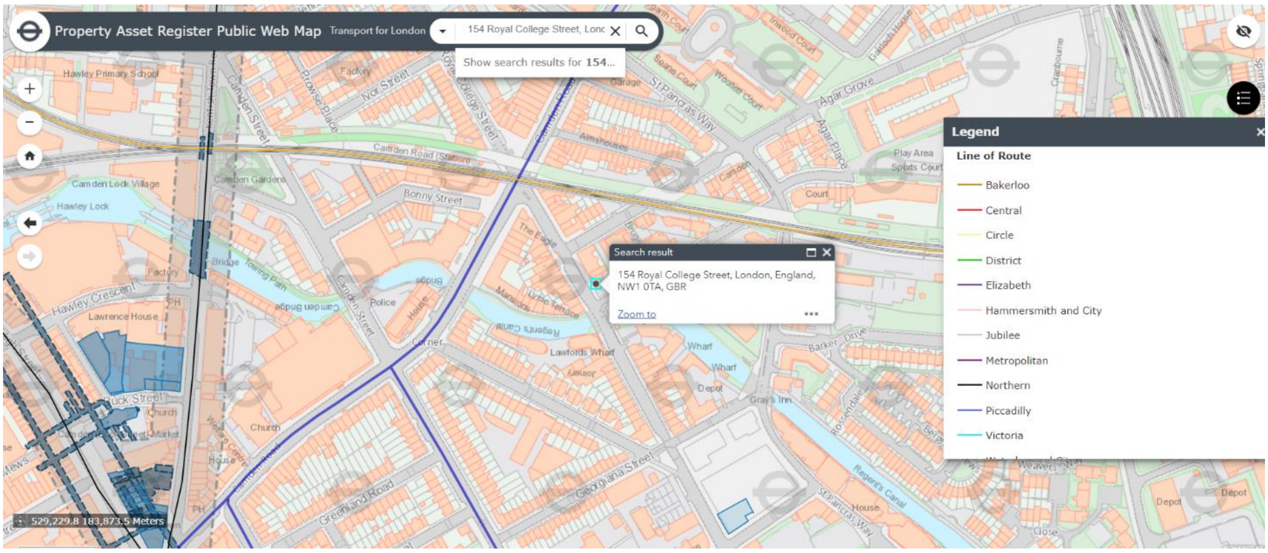
8.1.6. The review of the proposals has concluded that the predicted damage to the neighbouring properties would generally be 'Negligible', with some limited areas of 'Very Slight'.

8.1.7. On this basis, the damage that would inevitably occur as a result of such an excavation of the proposed basement, will in practice be separated by a number of weeks during which time construction will take place. This will provide an opportunity for the ground movements during and immediately after excavation to be measured and reviewed so that propping arrangements can be adjusted if required.

8.1.8. Given the development lies outside any flood zone and is not subject to overland flooding, no special construction features are required to mitigate fluvial flooding.

8.1.9. The proposal increases the coverage of impermeable areas and therefore contributes to increased overland flows. As part of a site specific FRA for new developments, an assessment of surface water runoff and temporary flood storage on the site should be undertaken. Development should seek to reduce surface water runoff rates through the appropriate application of Sustainable Drainage Systems (SuDS).

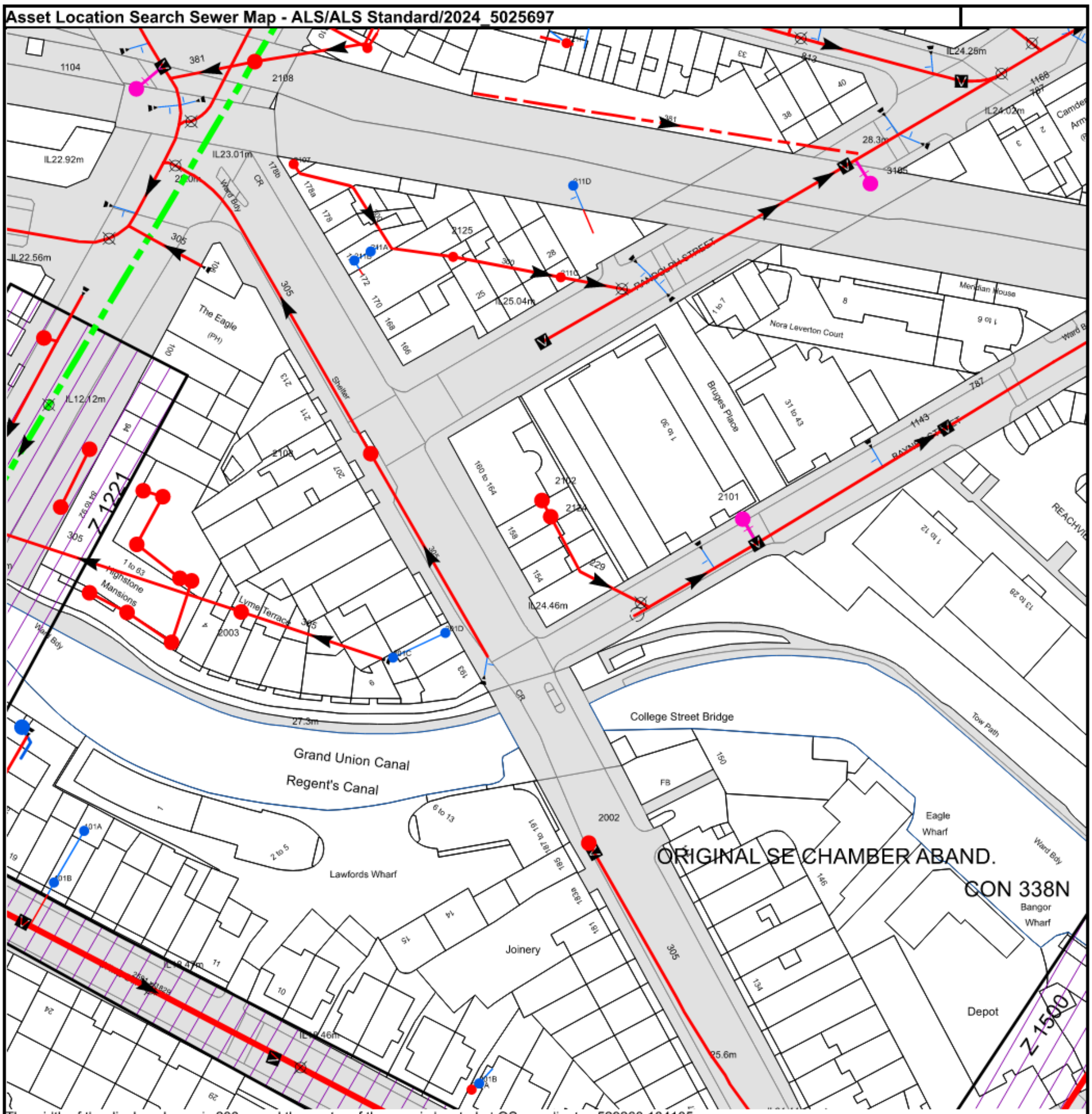
Appendix 1: Transport for London / Thames Water Property Asset Register



154 Royal College Street, London, England, NW1 0TA, GBR

TFL Property register

Asset Location Search Sewer Map - ALS/ALS Standard/2024_5025697

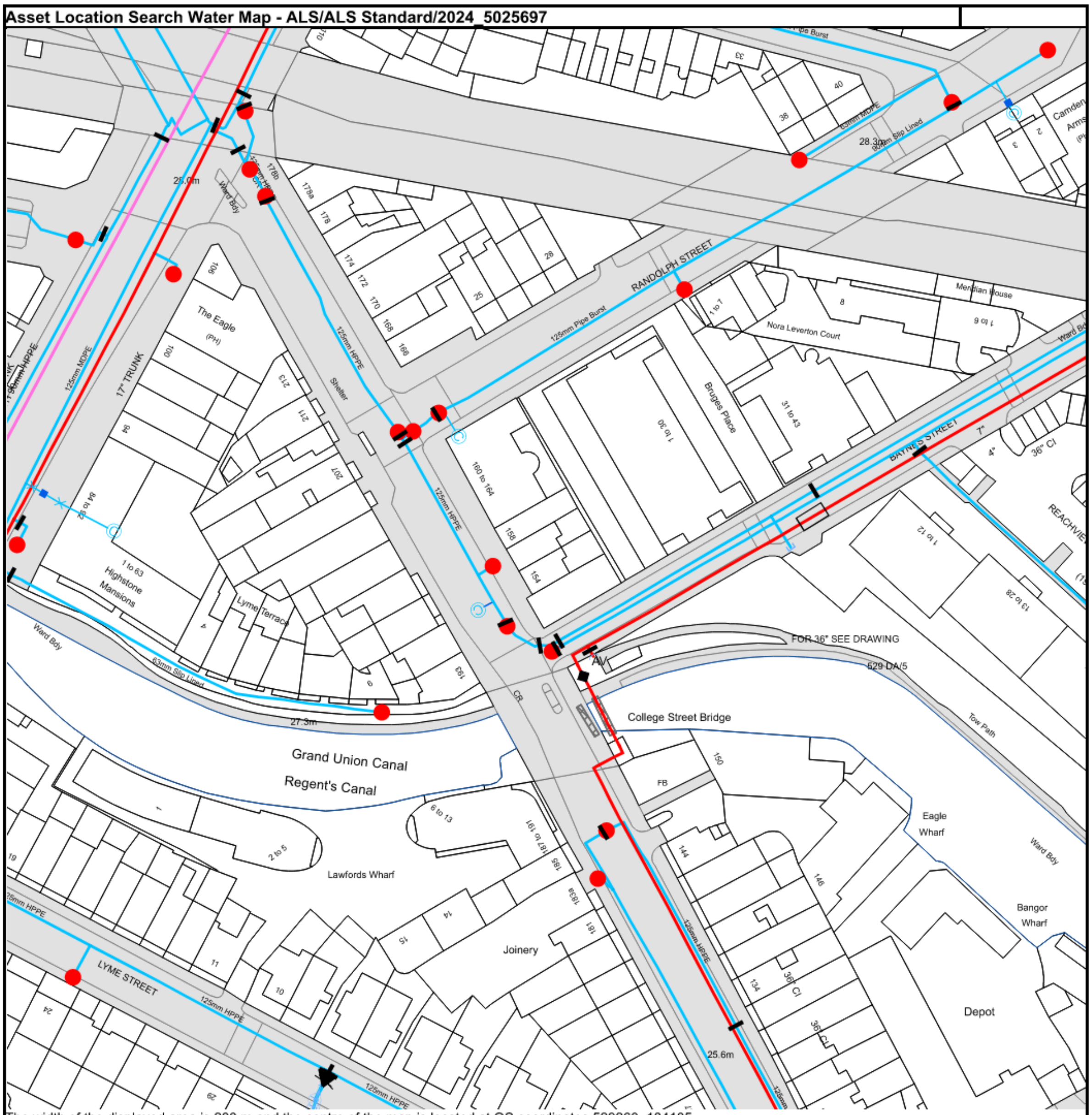


The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 529260,184105

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

Asset Location Search Water Map - ALS/ALS Standard/2024_5025697



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 529260, 184105.

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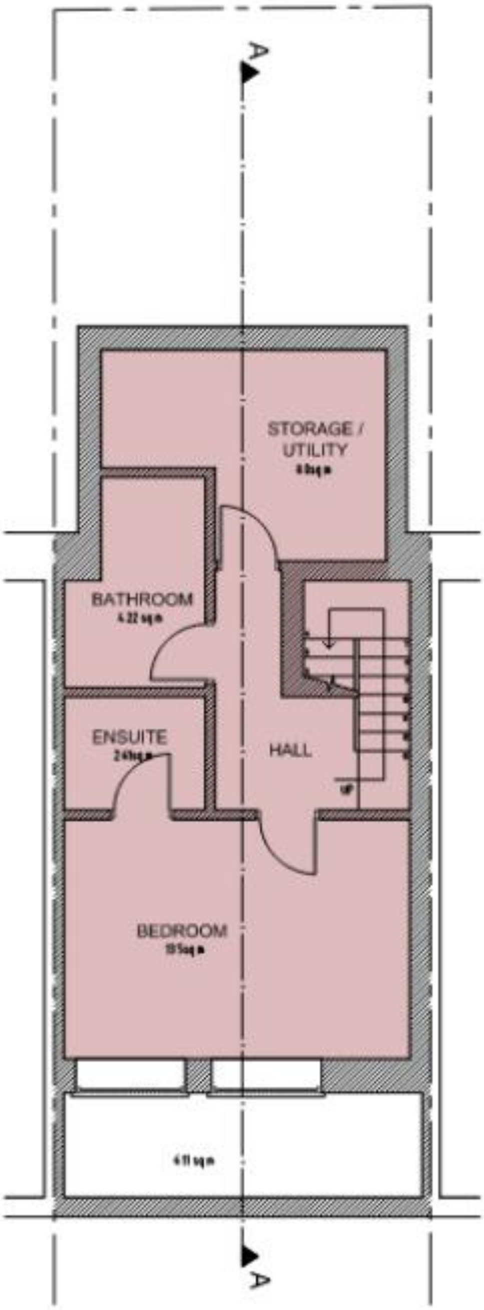
Thames Water Asset Maps

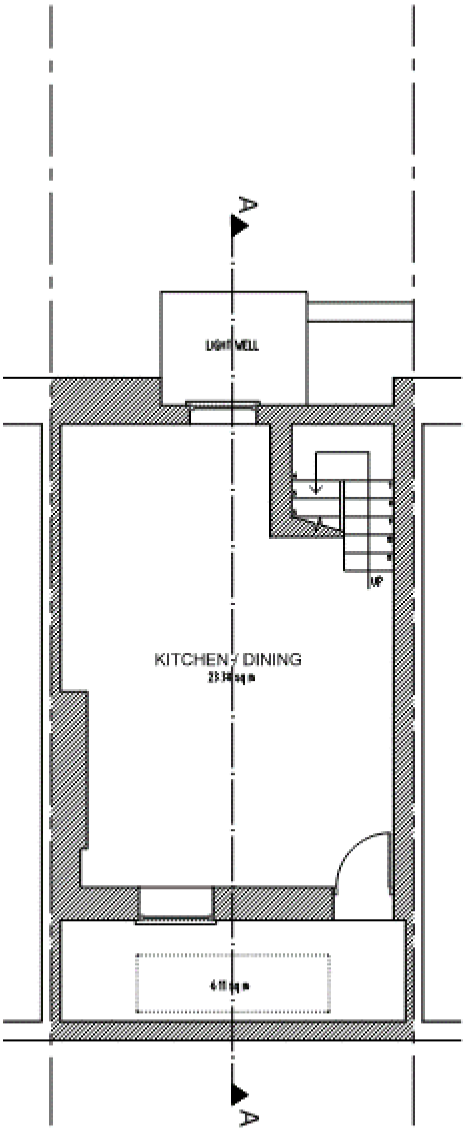
Appendix 2: Existing & Proposed Plans

Proposed Basement floor Plan



Proposed Basement Floor
Scale 1:100

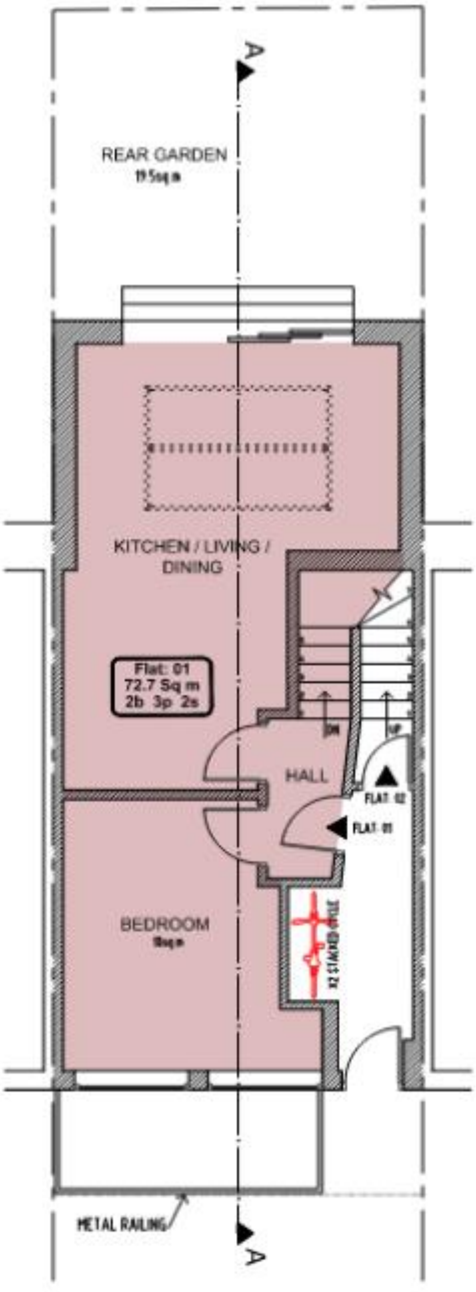
Existing Basement floor Plan



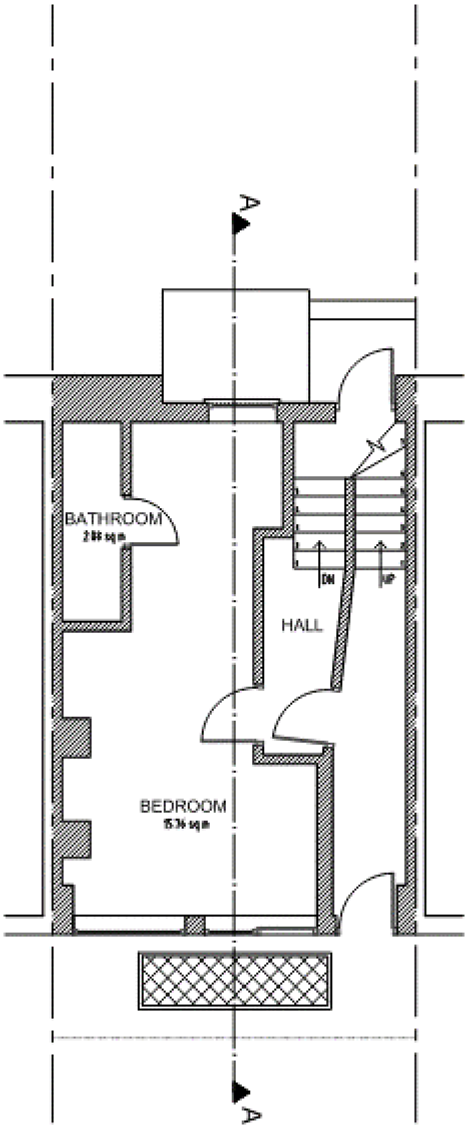
Existing Basement Floor
Scale 1:100

Proposed Ground floor Plan

Existing Ground floor Plan



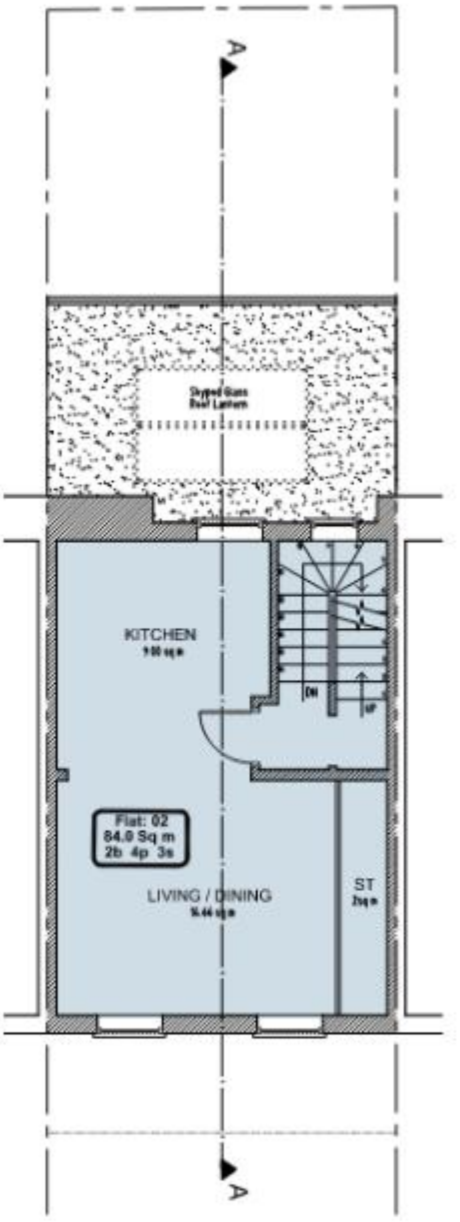
Proposed Ground Floor
Scale 1:100



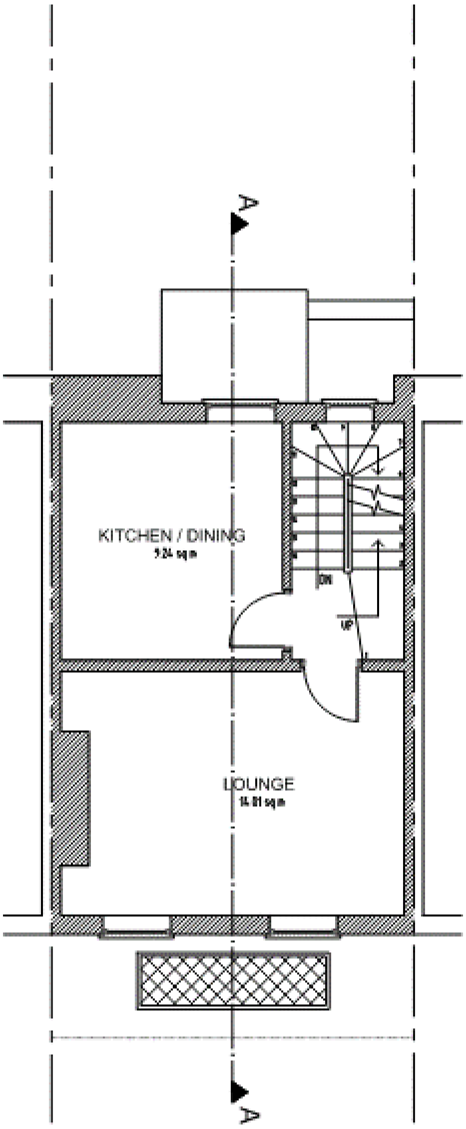
Existing Ground Floor
Scale 1:100

Proposed First floor Plan

Existing First floor Plan

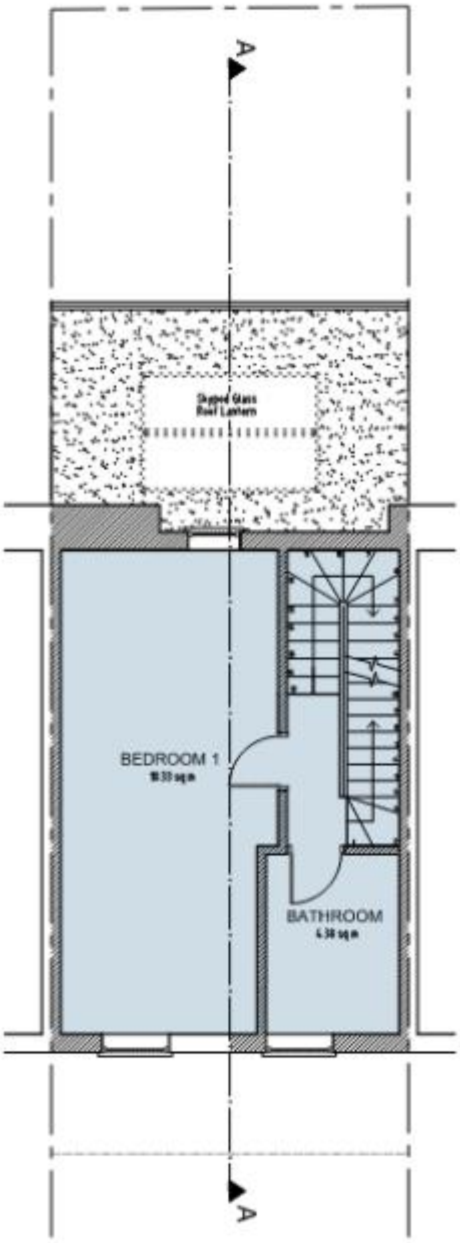


Proposed First Floor
Scale 1:100



Existing First Floor
Scale 1:100

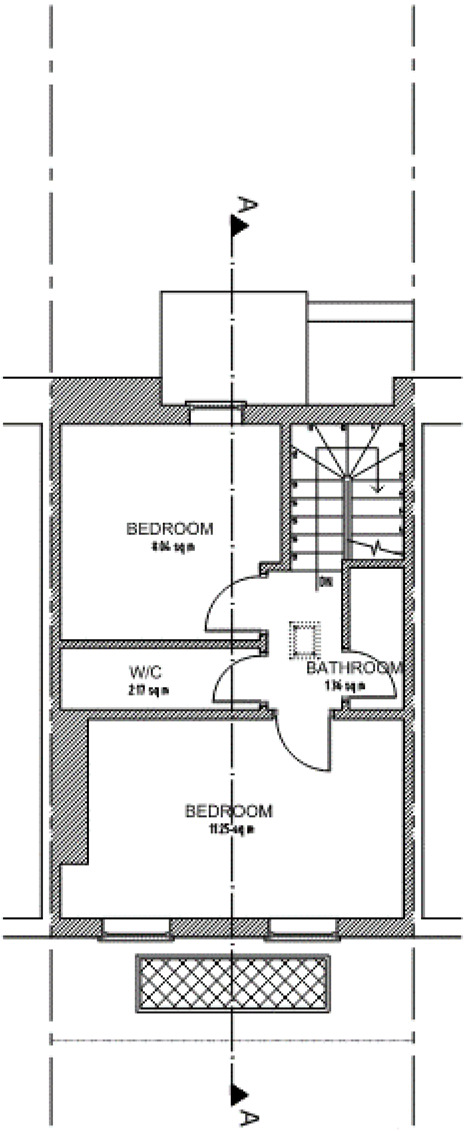
Proposed Second floor Plan



Proposed Second Floor

Scale 1:100

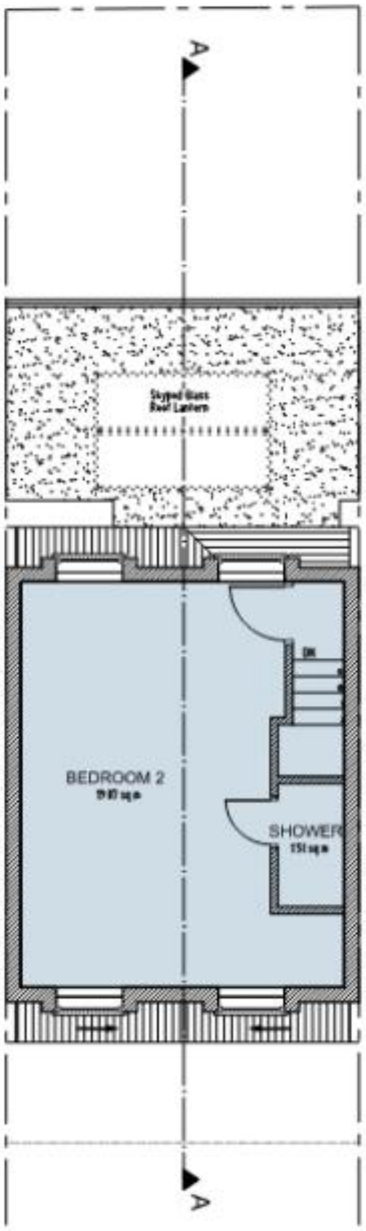
Existing Second floor Plan



Existing Second Floor

Scale 1:100

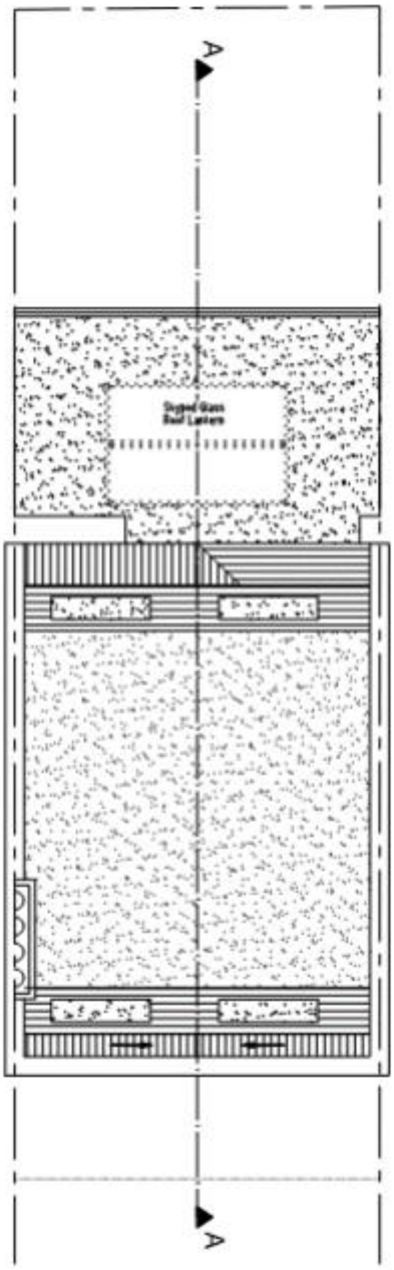
Proposed Loft Plan



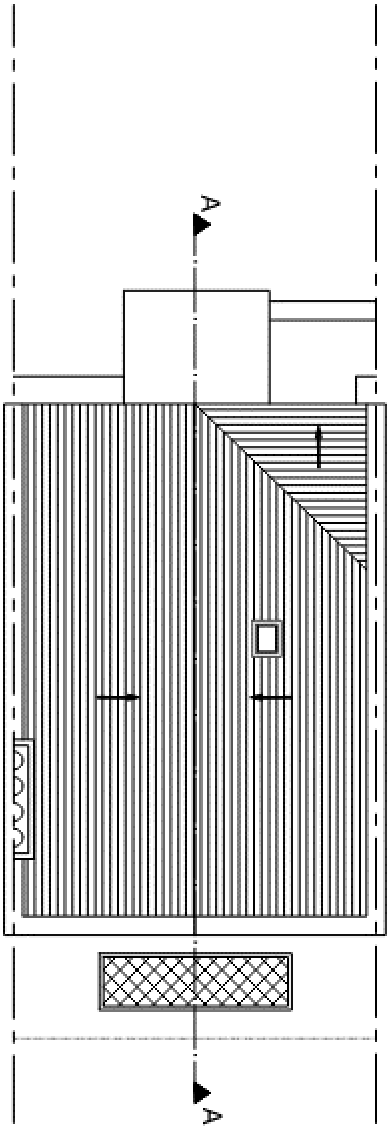
Proposed Loft Floor
Scale 1:100

Proposed Roof Plan

Existing Roof Plan



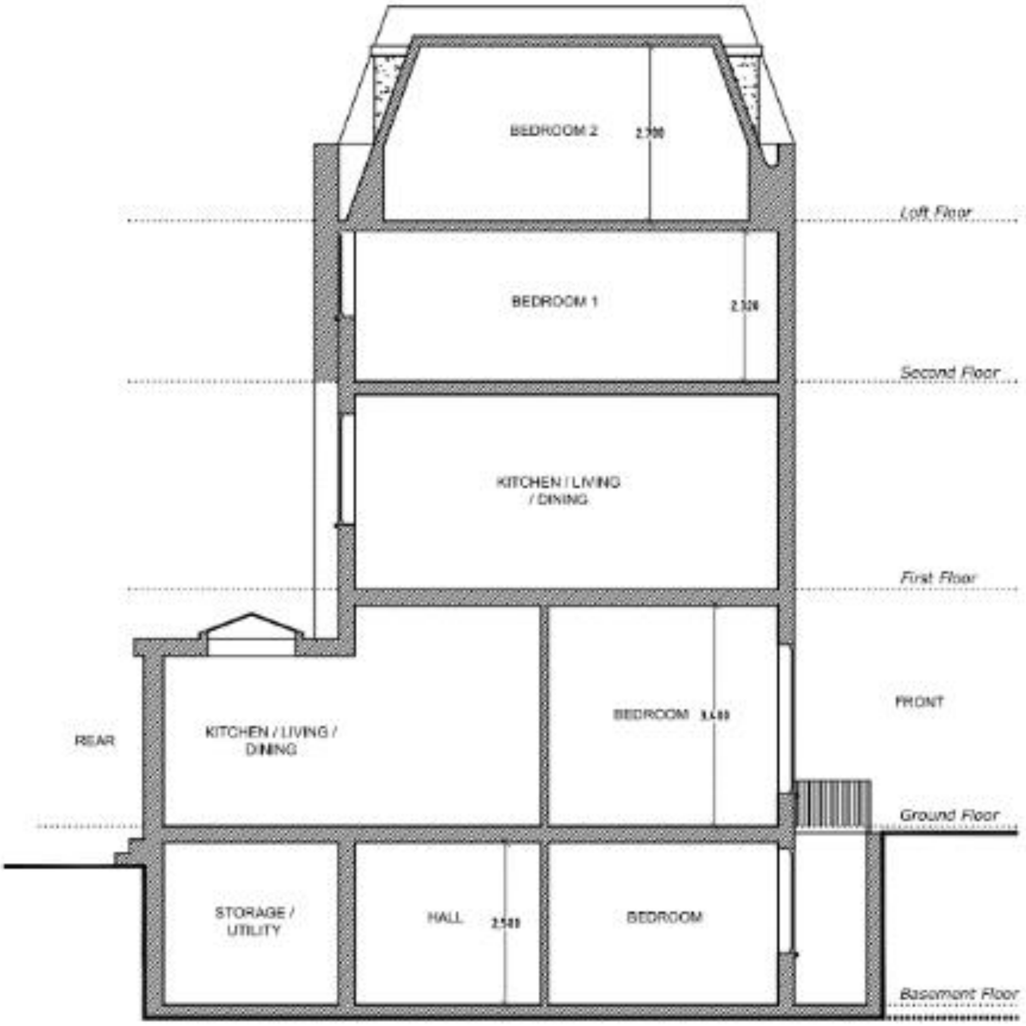
Proposed Roof Plan
Scale 1:100



Existing Roof Plan
Scale 1:100

Appendix 3: Proposed Sections and Elevations

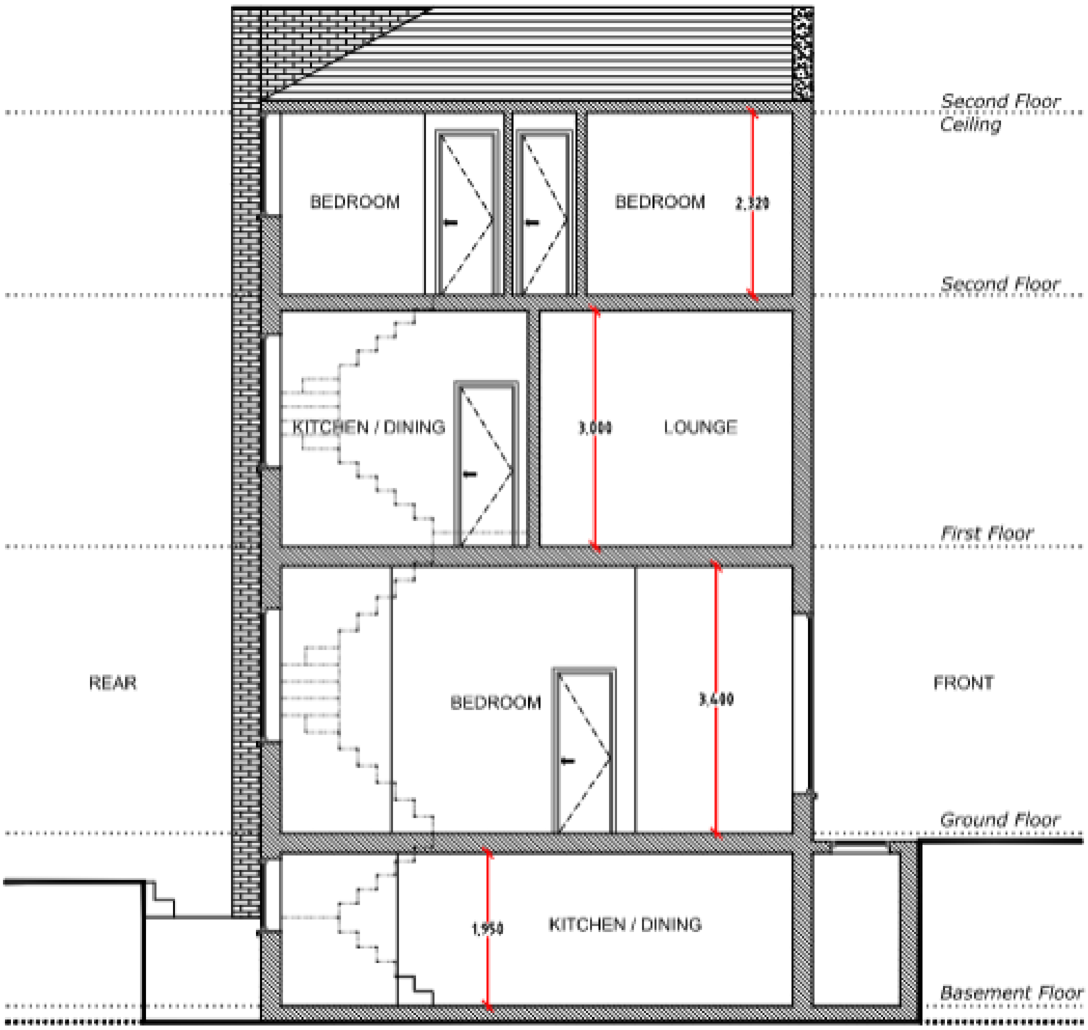
Proposed Section A-A



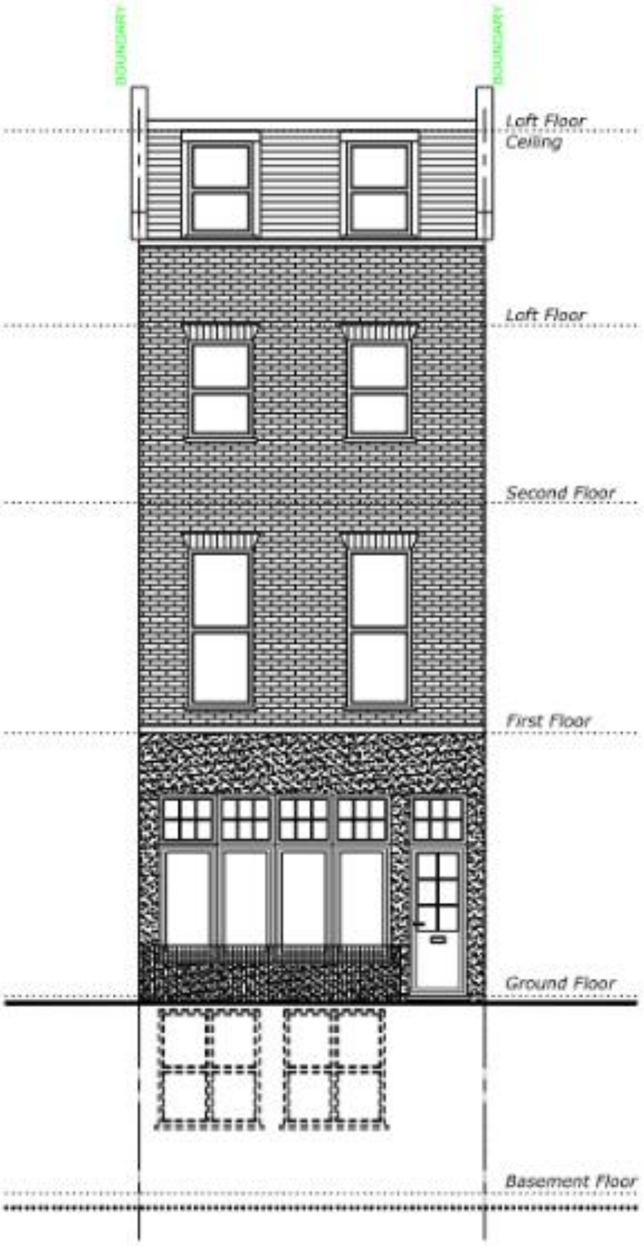
Proposed Section A-A

Scale 1:100

Existing Section A-A

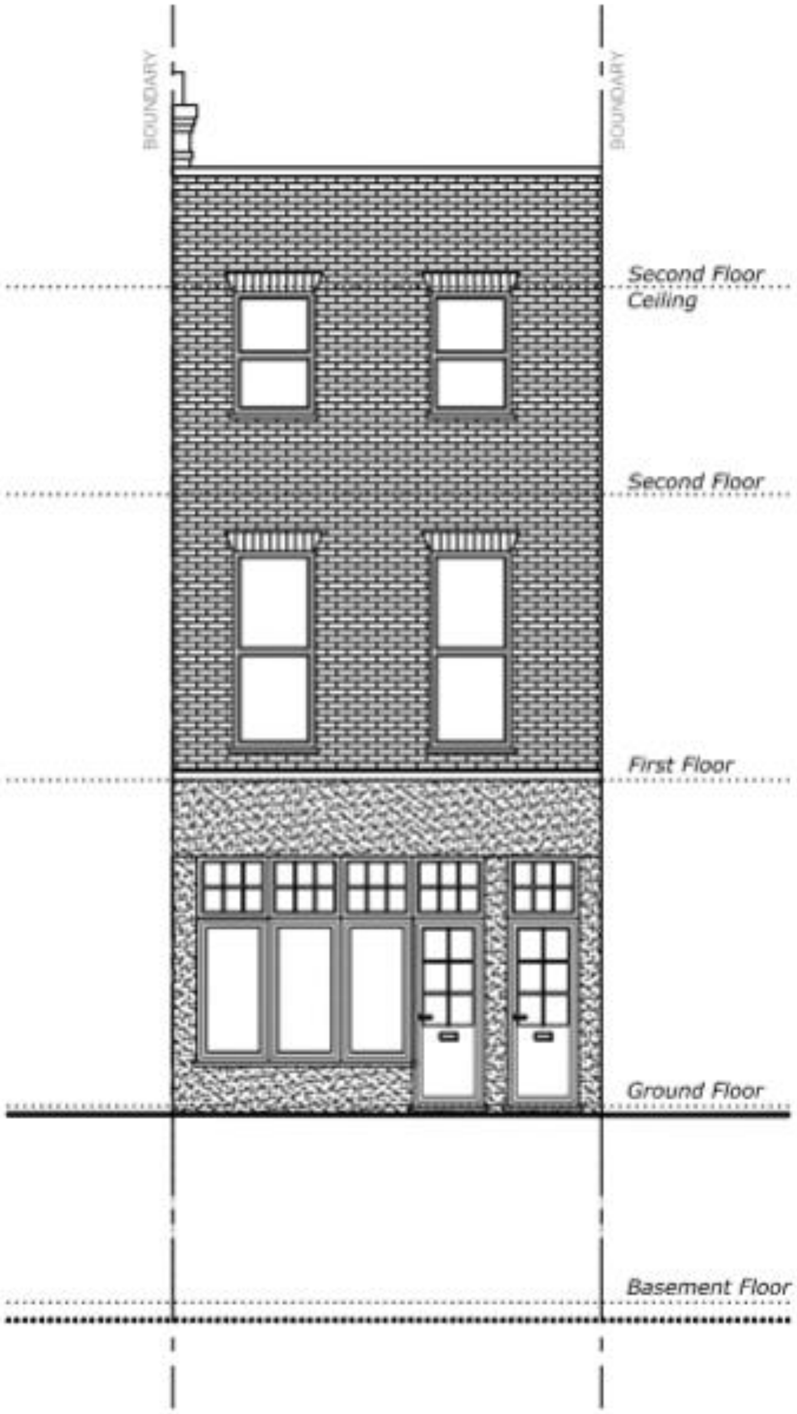


Proposed Front Elevation



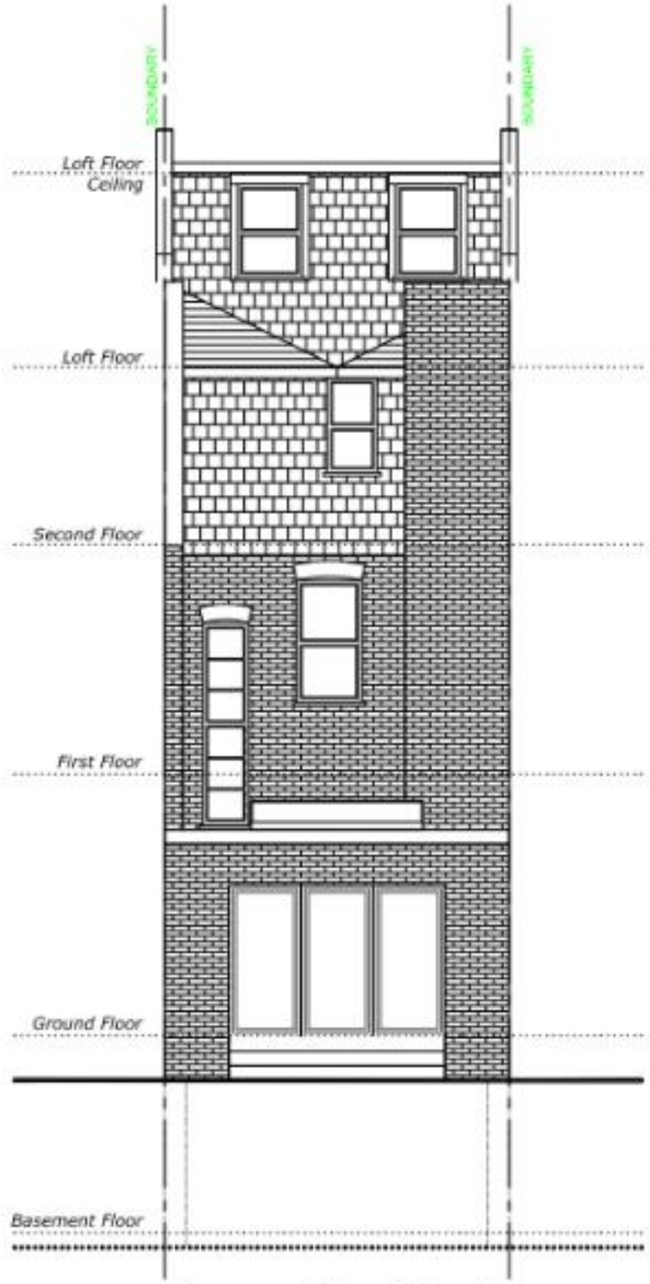
Proposed Front Elevation
Scale 1:100

Existing Front Elevation



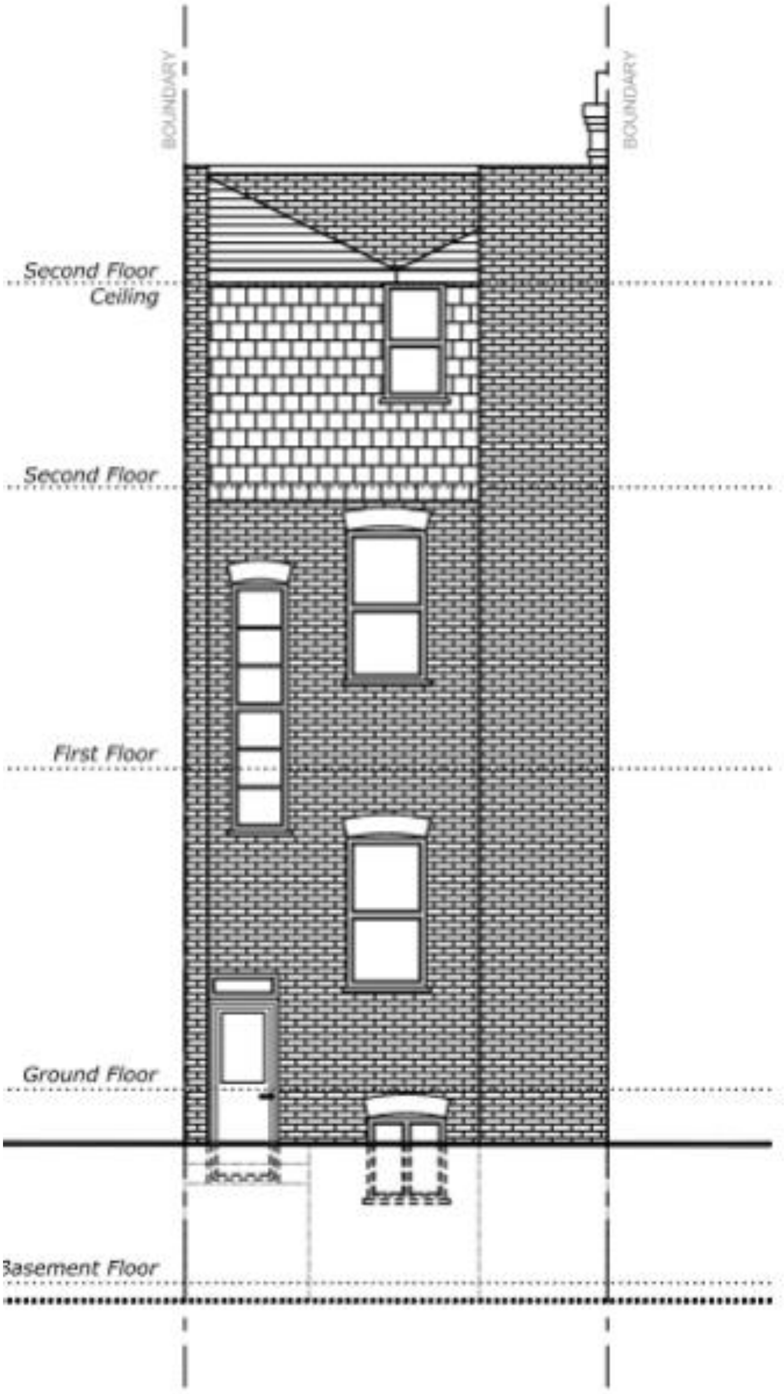
Existing Front Elevation
Scale 1:100

Proposed Rear Elevation



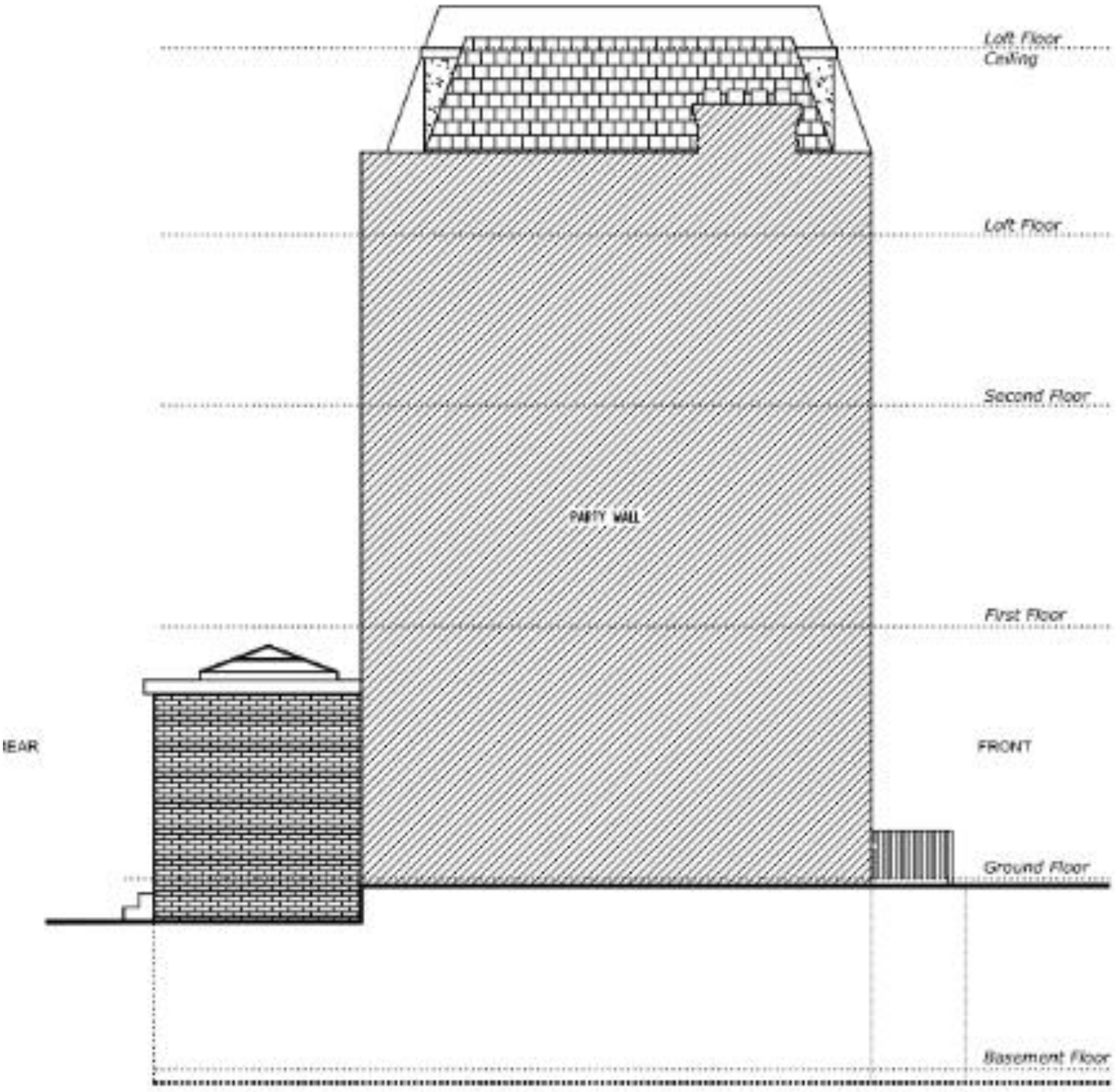
Proposed Rear Elevation
Scale 1:100

Existing Rear Elevation



Existing Rear Elevation
Scale 1:100

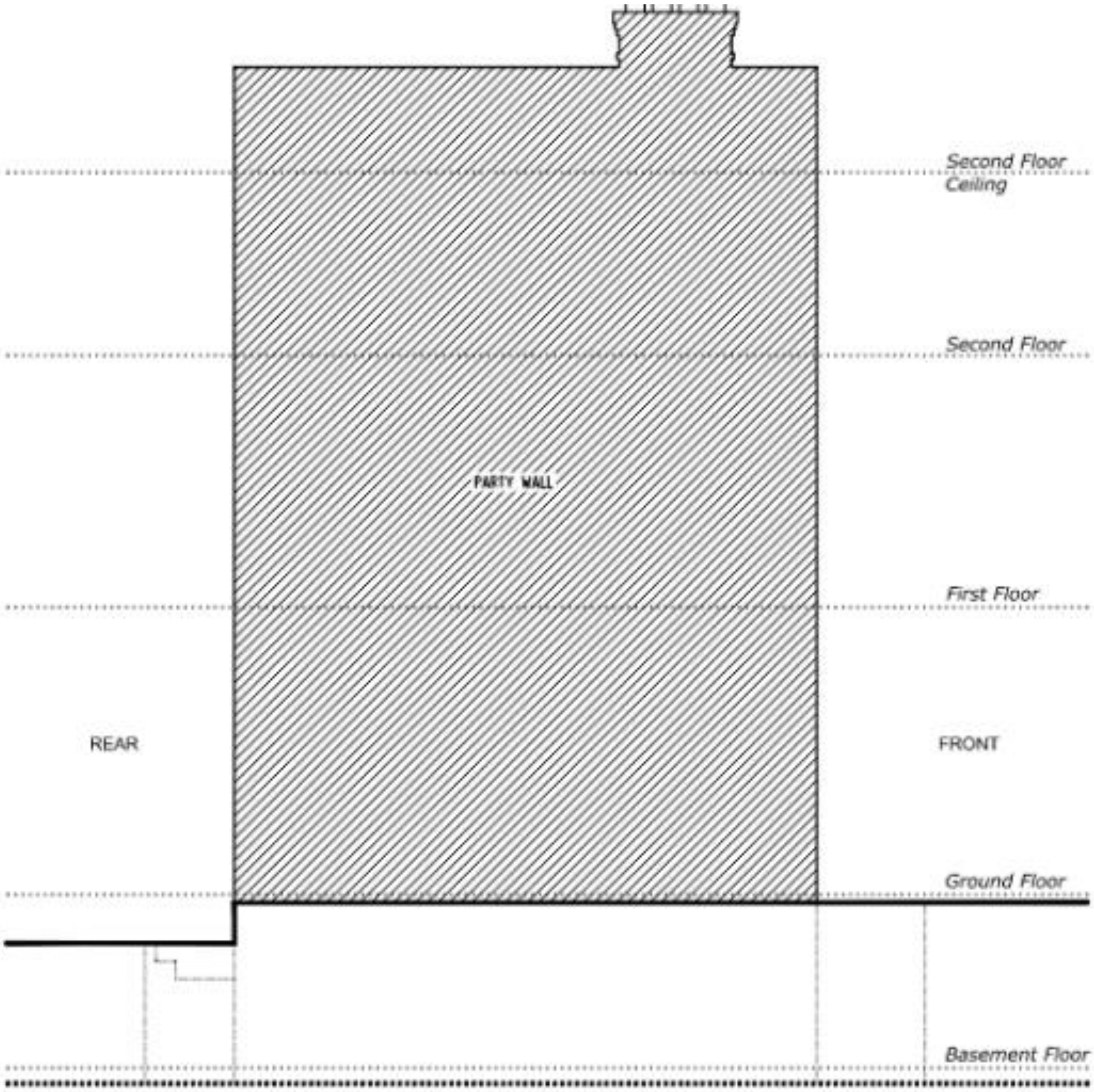
Proposed Side 1 Elevation



Proposed Side 1 Elevation

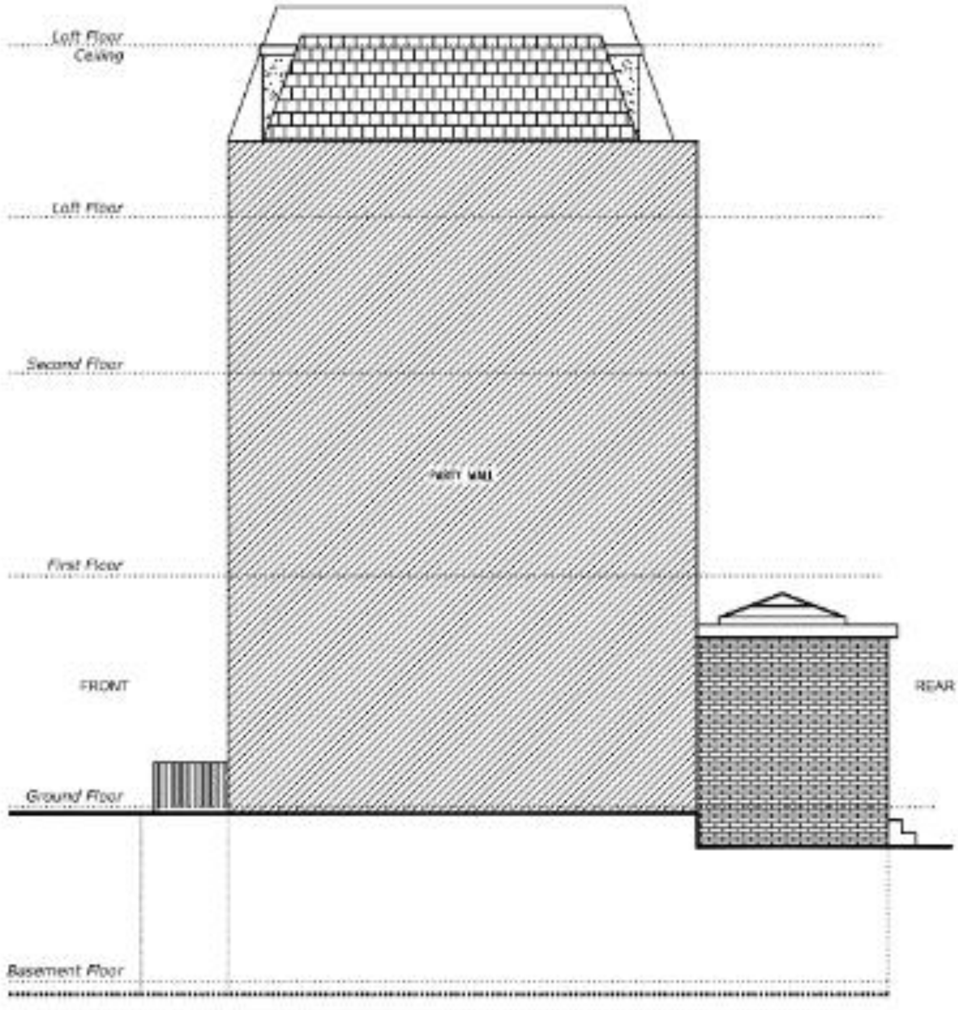
Scale 1:100

Existing Side 1 Elevation



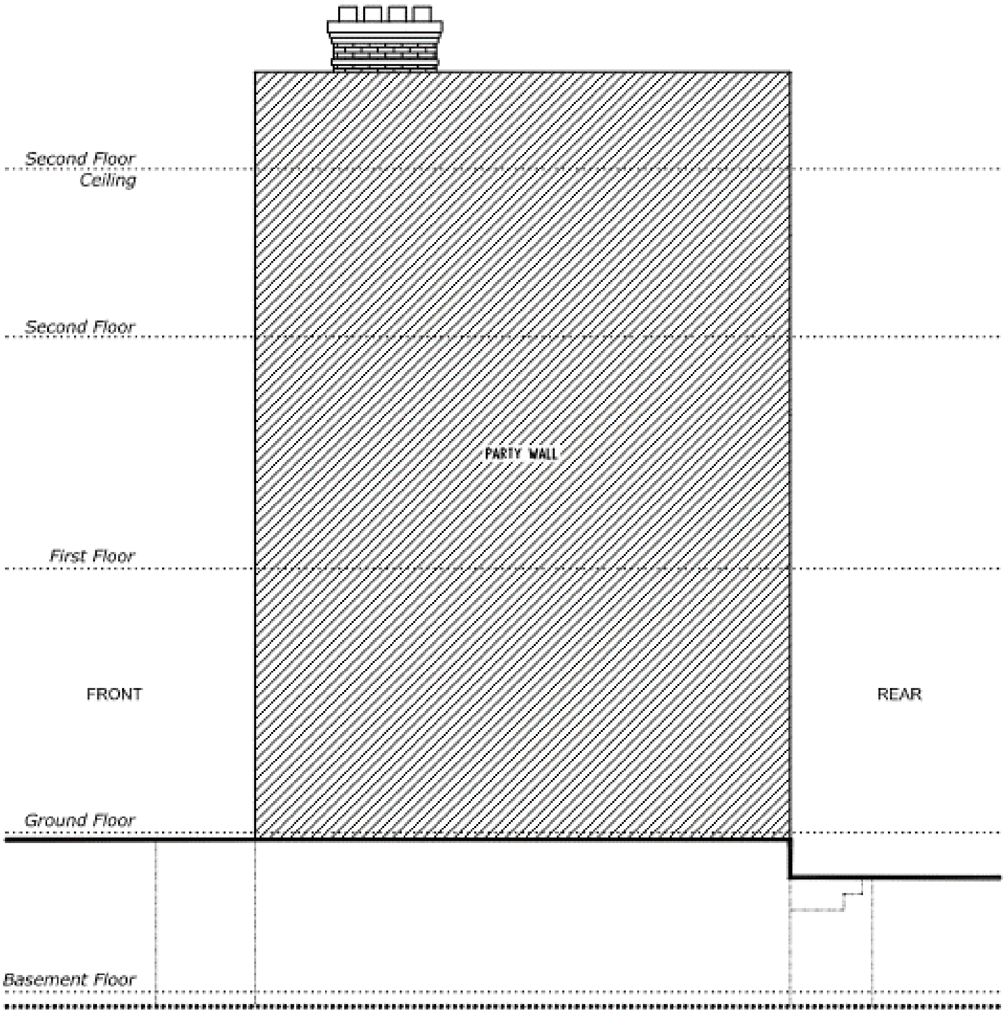
Existing Side 1 Elevation
Scale 1:100

Proposed Side 2 Elevation



Proposed Side 2 Elevation
Scale 1:100

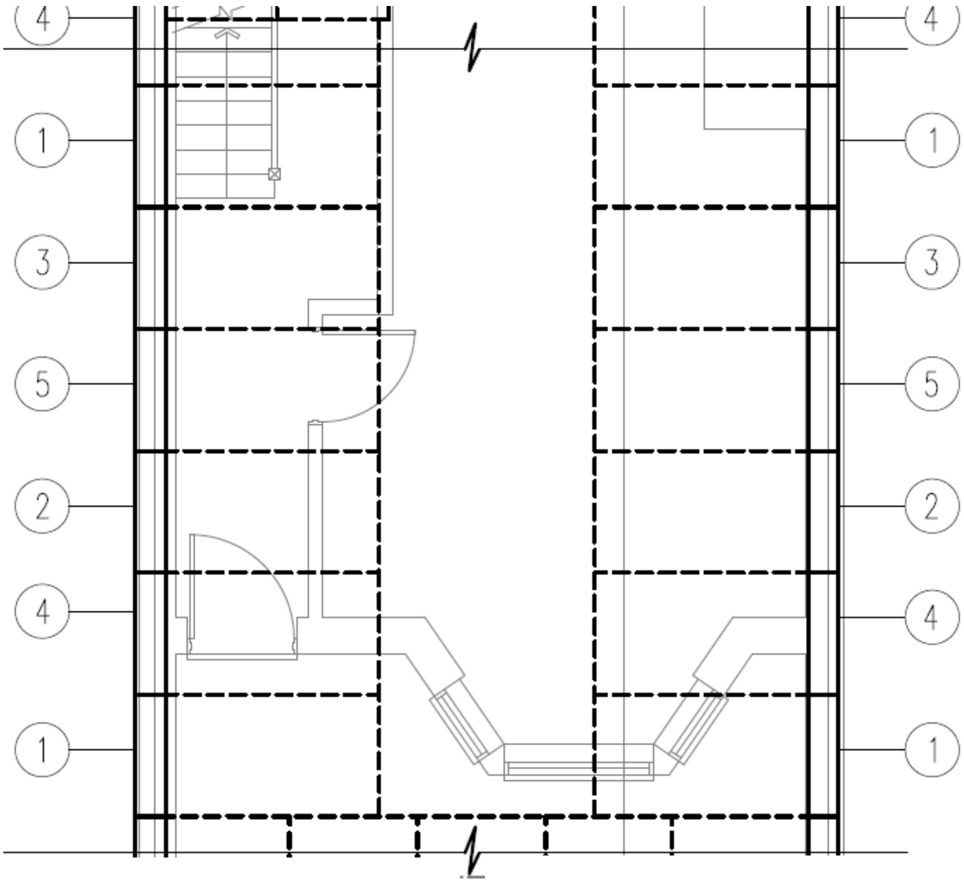
Existing Side 2 Elevation



Existing Side 2 Elevation
Scale 1:100

Appendix 4: Plan on envisaged basement works

INDICATIVE ONLY



TYPICAL SEQUENCE OF UNDERPINNING

A. EXCAVATE BAYS MARKED ①

B. CONCRETE BAYS MARKED ①

C. 3 DAY'S TO ALLOW CONCRETE UNDERPINNING TO SET & SHRINK

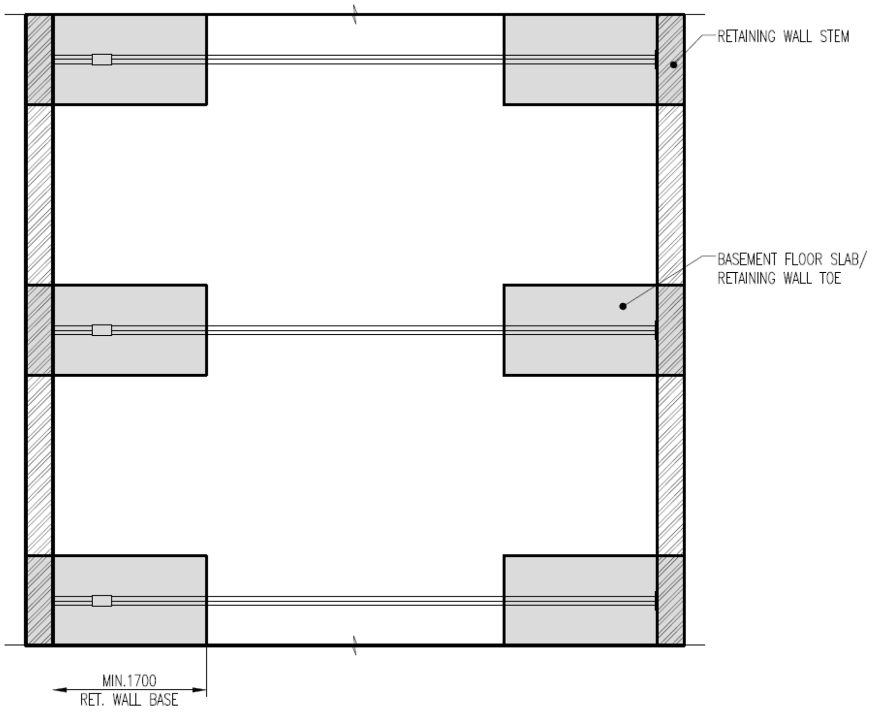
D. DRY PACK BETWEEN UNDERPINNING & ORIGINAL FOUNDATION

E. 24Hrs. TO ALLOW DRY PACK MORTAR TO GAIN STRENGTH

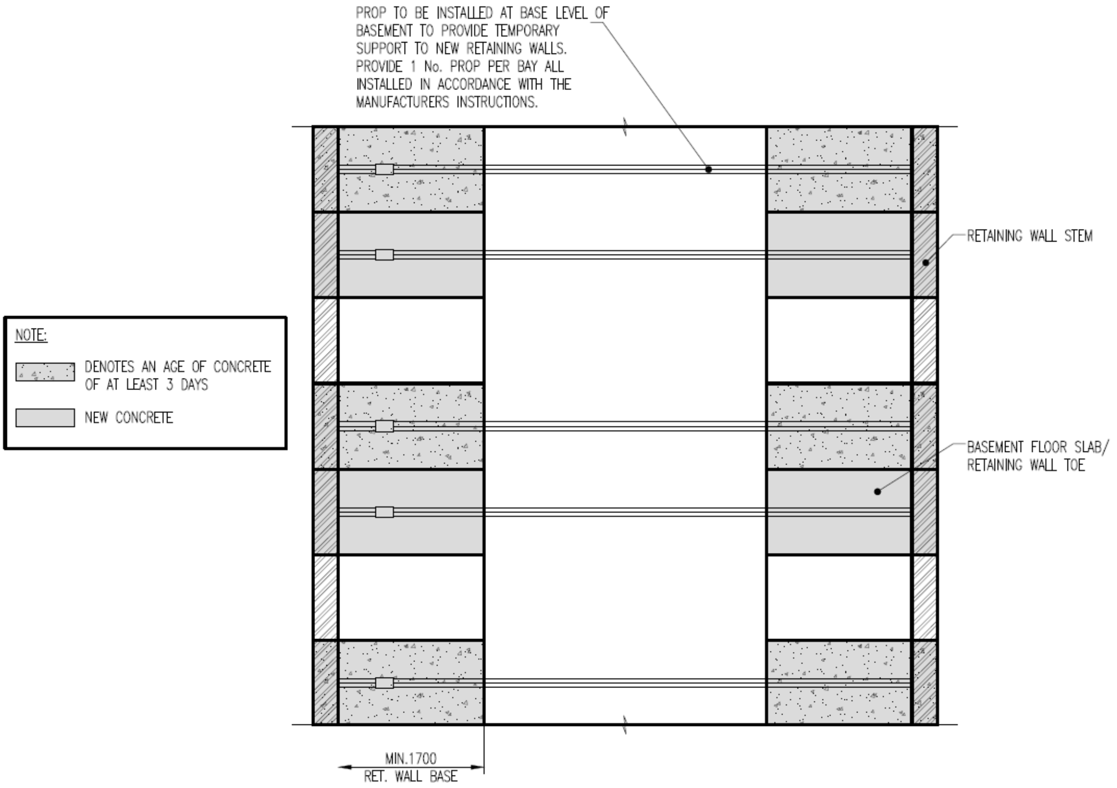
F. EXCAVATE BAYS MARKED ②

G. PROCEED AS FOR B. – E. ABOVE FOR BAYS MARKED ②

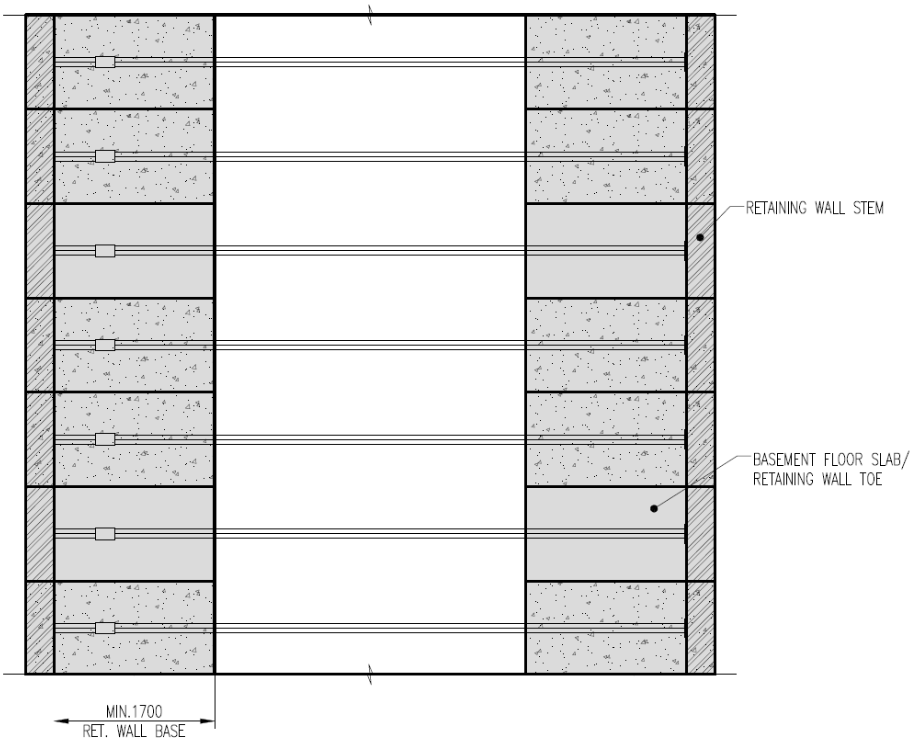
H. REPEAT PROCESS F. – G. FOR REMAINING BAYS IN SEQUENCE MARKED ON PLAN



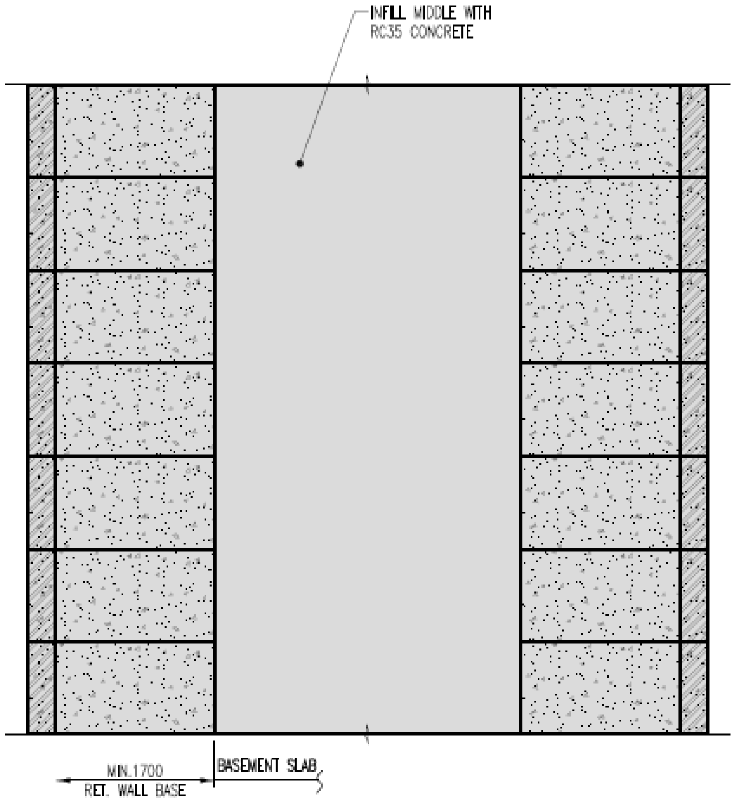
PLAN ON BASEMENT WORKS


PROP TO BE INSTALLED AT BASE LEVEL OF BASEMENT TO PROVIDE TEMPORARY SUPPORT TO NEW RETAINING WALLS. PROVIDE 1 No. PROP PER BAY ALL INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.

PLAN ON BASEMENT WORKS

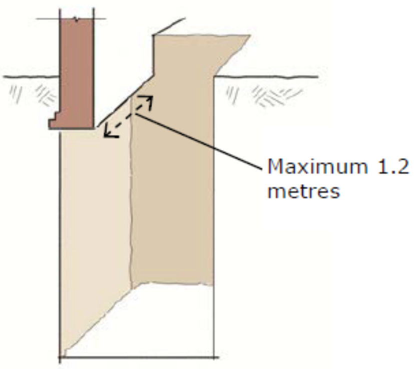


PLAN ON BASEMENT WORKS



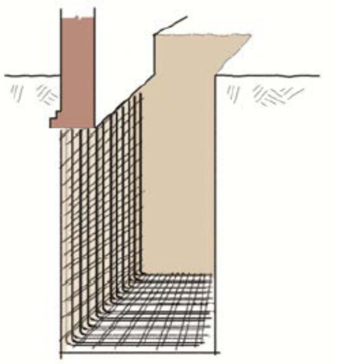
PLAN ON BASEMENT WORKS
SCALE 1:50

Appendix 5: Typical Underpinning sequence (ASUC Guideline)



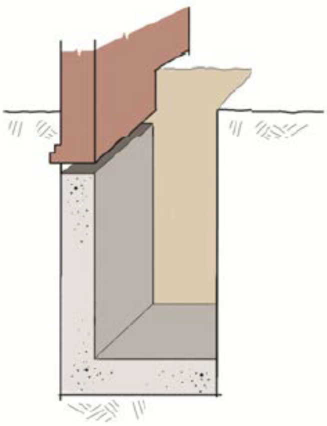
1. Excavation must be fully supported by props and shoring.
2. Edge protection to prevent falls into the excavation must be installed.
3. A temporary vertical prop or support may be placed under the wall to keep any loose bricks or masonry in place.
4. The main load from the existing wall will span onto the wall and foundations on either side of the excavation.

Stage 1. Excavation



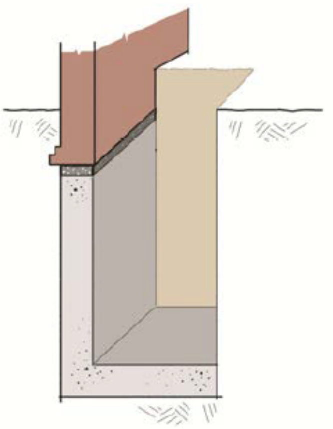
1. Reinforcement is fixed into position.
2. Reinforcement details are given in the engineering design. It is critical that the reinforcement is installed as detailed in the design
3. The design will usually require a shear connection between adjacent underpins. This is generally achieved using dowel bars between adjacent pins or by building sheer keys in the concrete underpin walls.

Stage 2. Reinforcement



1. Concrete is placed in the toe first.
2. Once the toe is sufficiently cured the concrete wall is poured.
3. Shuttering, usually timber, is used to hold the concrete for the wall in place while it is placed.
4. Gap of approximately 75mm left between the top of the concrete and the underside of the existing foundation.

Stage 3. Concrete placement



1. After a minimum of 24 hours dry-pack is rammed into the 75mm void that has been left above the new underpin.
2. Dry-pack is a mix of sharp sand and cement. It is easy to handle and has a low shrink volume, minimising settlement of the wall onto the new underpin foundation.
3. The completed underpin must be supported horizontally either by horizontal propping or by backfilling the excavation until the ground slab and possibly other permanent works are constructed.

Stage 4. Dry packing

Appendix 6: Flood Risk Maps

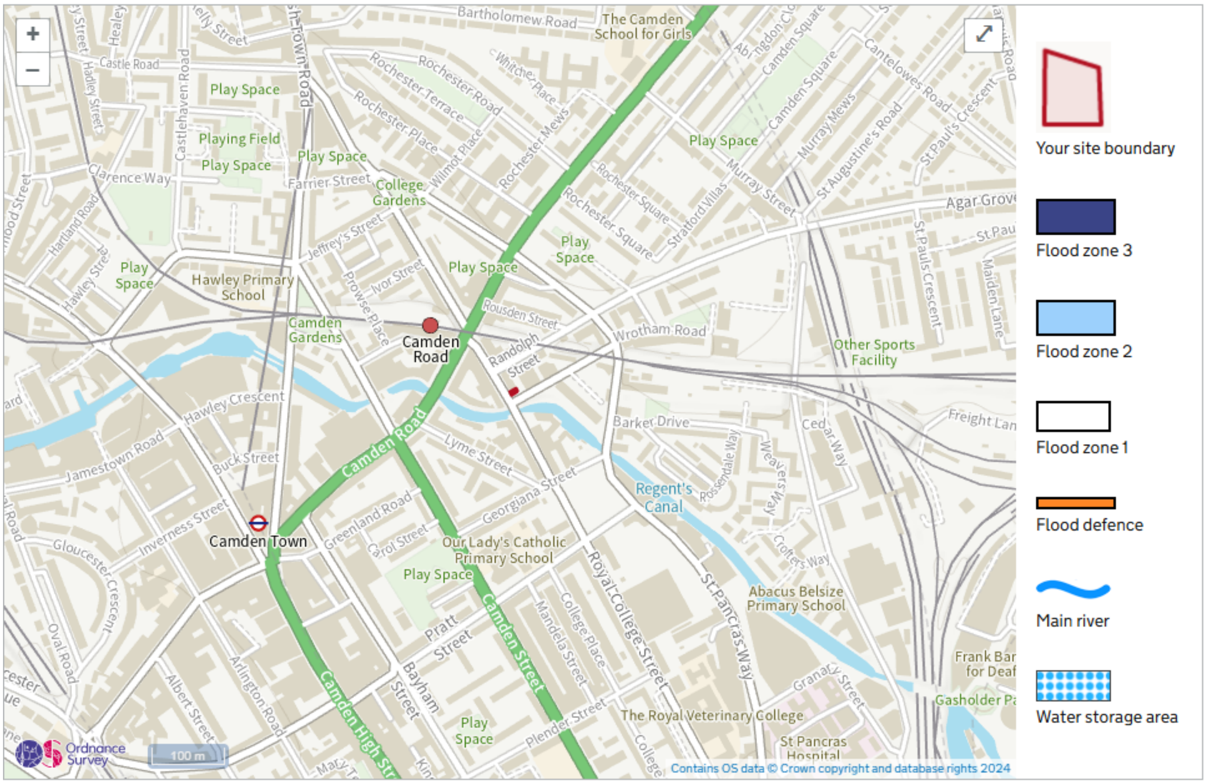


Figure 8 Flood map for planning

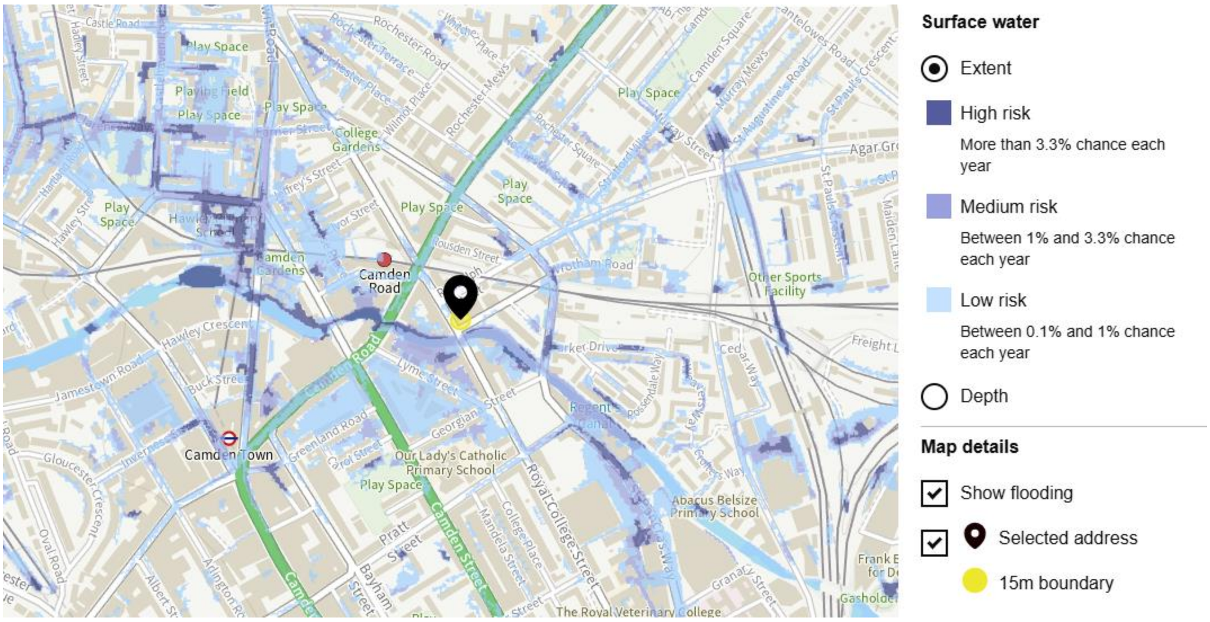
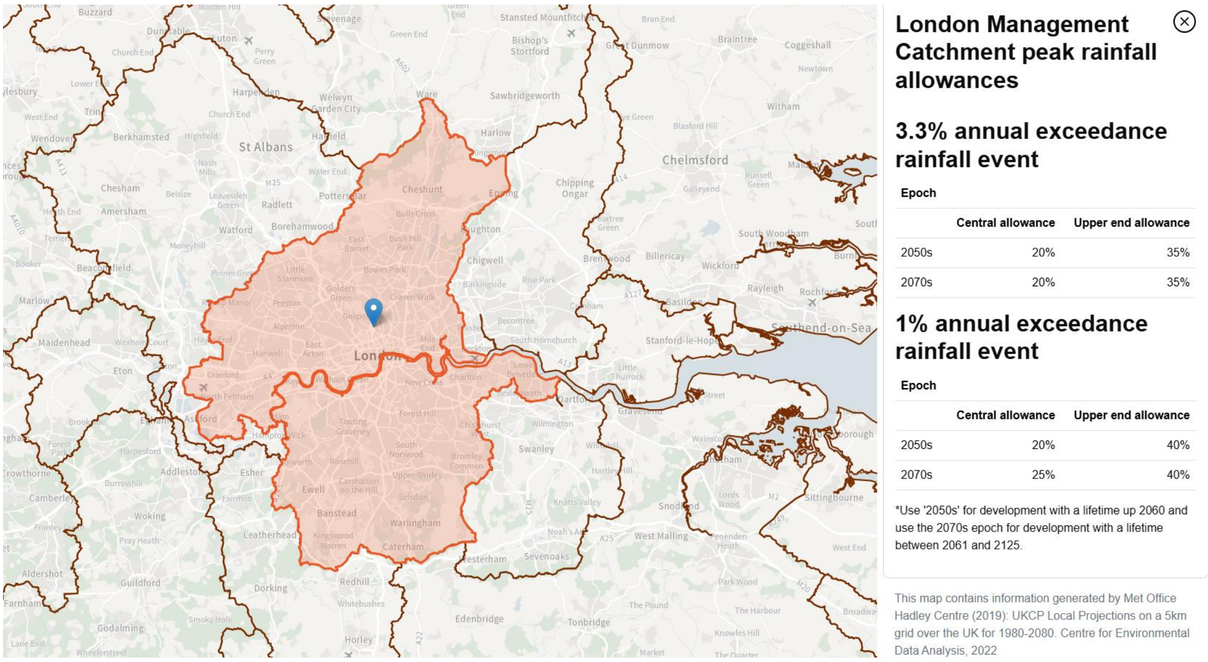


Figure 9 Extent of surface water flooding



London Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	35%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

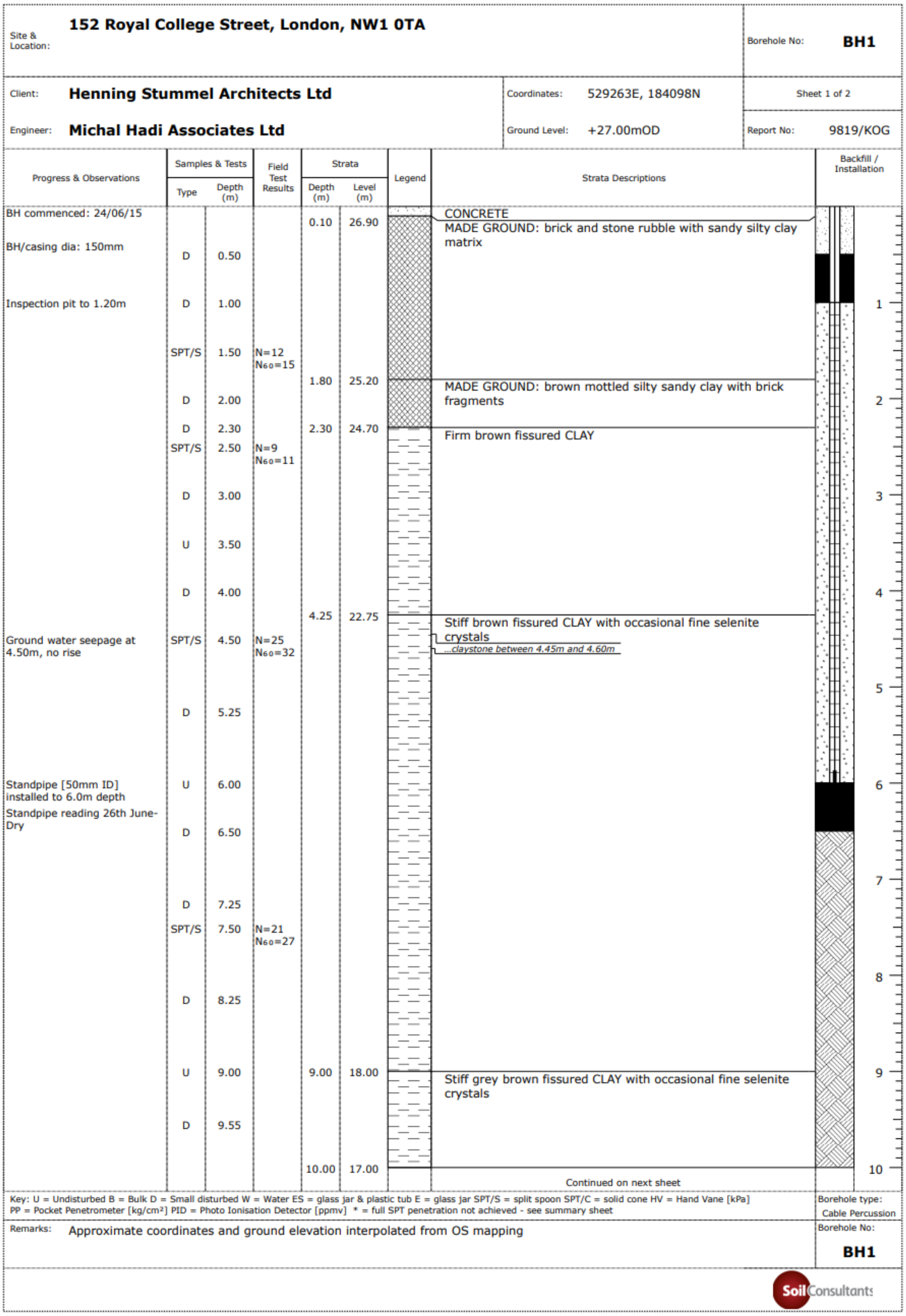
*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

Figure 10 climate change allowances for peak rainfall in England by catchment area

Appendix 7: Borehole details

Extract From MHA Document 15055/152 Royal College Street BIA (July 2015)



Site & Location: **152 Royal College Street, London, NW1 0TA**

Borehole No: **BH1**

Client: **Henning Stummel Architects Ltd**

Engineer: **Michal Hadi Associates Ltd**

Coordinates: 529263E, 184098N

Ground Level: +27.00mOD

Sheet 1 of 2

Report No: 9819/KOG

Progress & Observations	Samples & Tests		Field Test Results	Strata		Strata Descriptions
	Type	Depth (m)		Depth (m)	Level (m)	
BH commenced: 24/06/15						CONCRETE
				0.10	26.90	MADE GROUND: brick and stone rubble with sandy silty clay matrix
BH/casing dia: 150mm	D	0.50				
Inspection pit to 1.20m	D	1.00				
	SPT/S	1.50	N=12 N_{60}=15			
				1.80	25.20	MADE GROUND: brown mottled silty sandy clay with brick fragments
	D	2.00				
	D	2.30		2.30	24.70	Firm brown fissured CLAY
	SPT/S	2.50	N=9 N_{60}=11			
	D	3.00				
	U	3.50				
	D	4.00				
				4.25	22.75	Stiff brown fissured CLAY with occasional fine selenite crystals *...claystone between 4.45m and 4.60m*
Ground water seepage at 4.50m, no rise	SPT/S	4.50	N=25 N_{60}=32			
	D	5.25				
Standpipe [50mm ID] installed to 6.0m depth Standpipe reading 26th June- Dry	U	6.00				
	D	6.50				
	D	7.25				
	SPT/S	7.50	N=21 N_{60}=27			
	D	8.25				
	U	9.00		9.00	18.00	Stiff grey brown fissured CLAY with occasional fine selenite crystals
	D	9.55				
				10.00	17.00	

Legend

Backfill / Installation

Continued on next sheet

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone HV = Hand Vane [kPa]
PP = Pocket Penetrometer [kg/cm²] PID = Photo Ionisation Detector [ppmv] * = full SPT penetration not achieved - see summary sheet

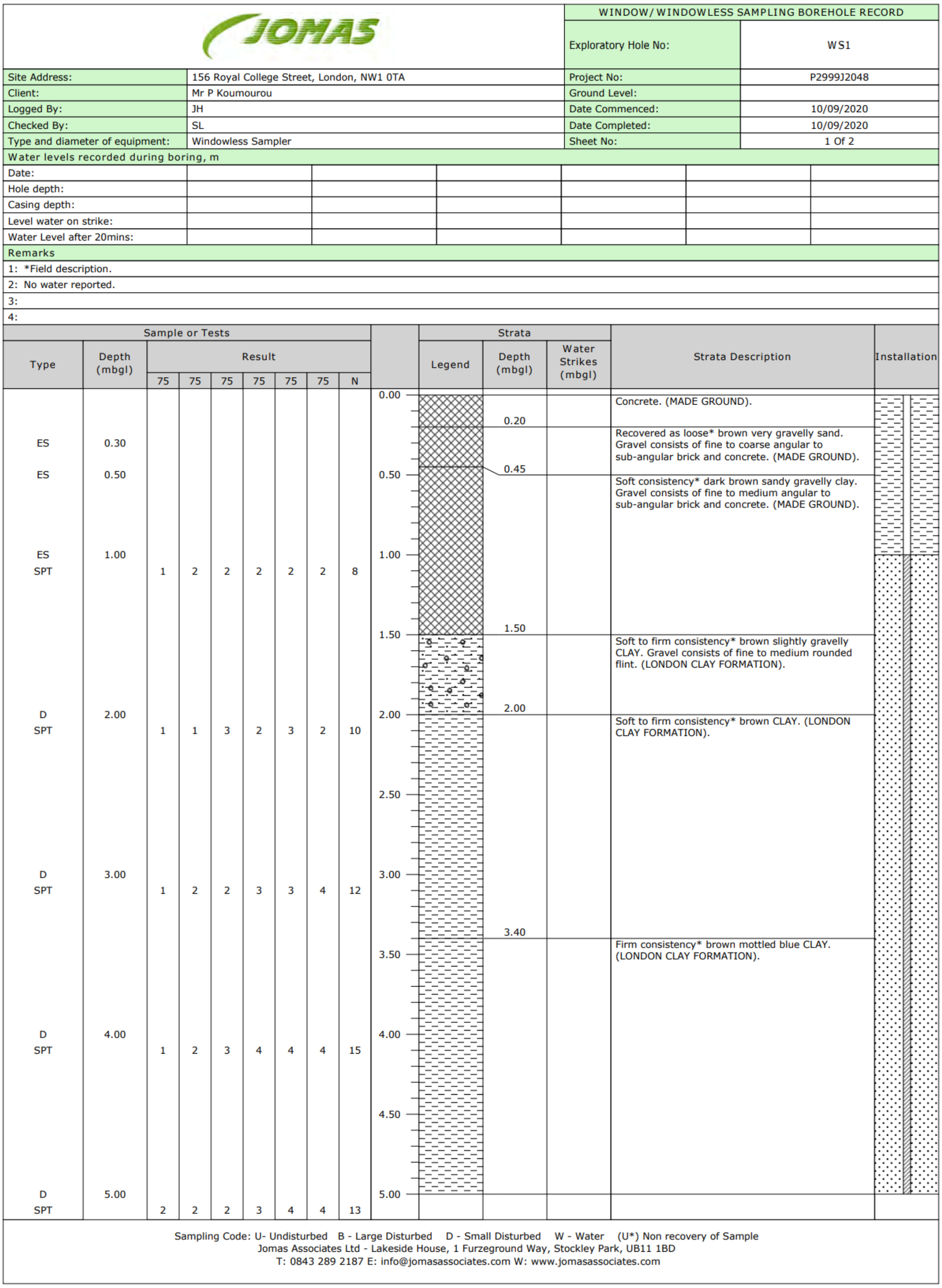
Borehole type: Cable Percussion

Remarks: Approximate coordinates and ground elevation interpolated from OS mapping

Borehole No: **BH1**

SoilConsultants

Extract From MAUND GEO-CONSULTING Document Basement Impact Assessment 156 Royal College Street, NW1 0TA (May 2022)



JOMAS

WINDOW/WINDOWLESS SAMPLING BOREHOLE RECORD

		Exploratory Hole No:	WS1
Site Address:	156 Royal College Street, London, NW1 0TA	Project No:	P2999J2048
Client:	Mr P Koumourou	Ground Level:	
Logged By:	JH	Date Commenced:	10/09/2020
Checked By:	SL	Date Completed:	10/09/2020
Type and diameter of equipment:	Windowless Sampler	Sheet No:	1 Of 2

Water levels recorded during boring, m

Date:						
Hole depth:						
Casing depth:						
Level water on strike:						
Water Level after 20mins:						

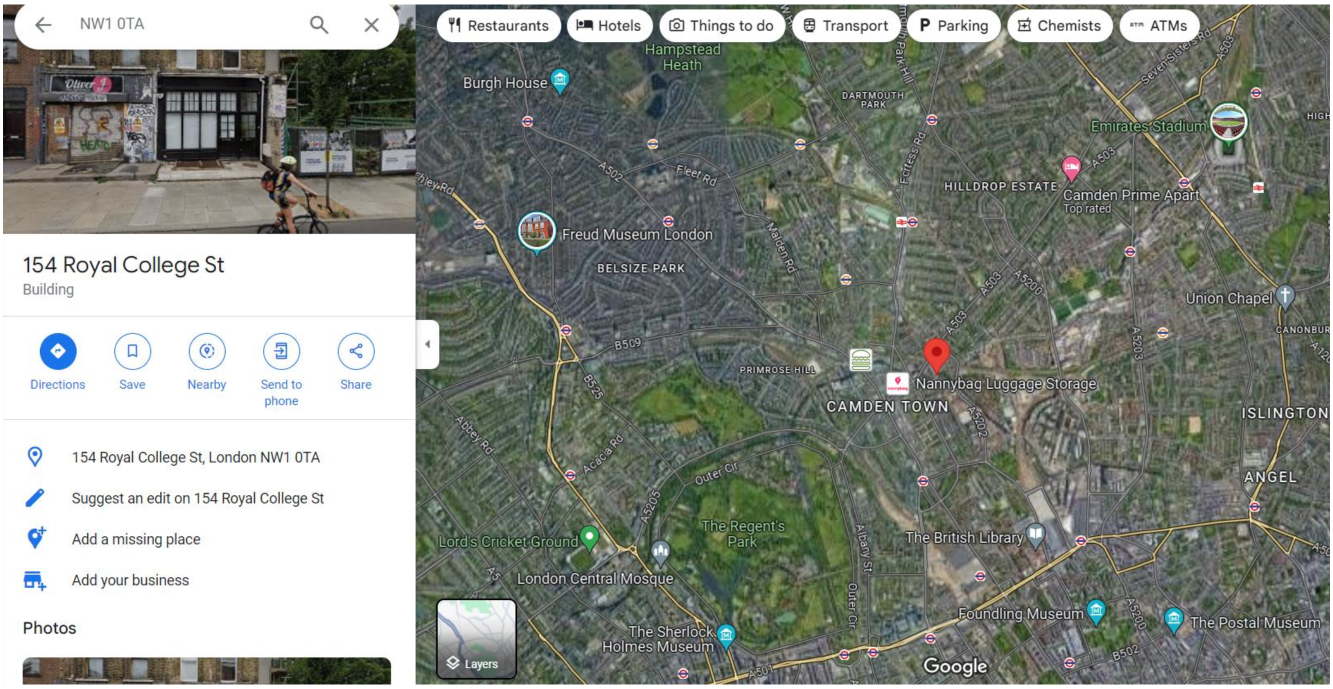
Remarks

1: *Field description.
2: No water reported.
3:
4:

Sample or Tests										Strata				
Type	Depth (mbgl)	Result								Legend	Depth (mbgl)	Water Strikes (mbgl)	Strata Description	Installation
		75	75	75	75	75	75	N						
									0.00		0.20		Concrete. (MADE GROUND).	
ES	0.30										0.45		Recovered as loose* brown very gravelly sand. Gravel consists of fine to coarse angular to sub-angular brick and concrete. (MADE GROUND).	
ES	0.50								0.50				Soft consistency* dark brown sandy gravelly clay. Gravel consists of fine to medium angular to sub-angular brick and concrete. (MADE GROUND).	
ES SPT	1.00	1	2	2	2	2	2	8	1.00					
									1.50		1.50		Soft to firm consistency* brown slightly gravelly CLAY. Gravel consists of fine to medium rounded flint. (LONDON CLAY FORMATION).	
D SPT	2.00	1	1	3	2	3	2	10	2.00		2.00		Soft to firm consistency* brown CLAY. (LONDON CLAY FORMATION).	
									2.50					
D SPT	3.00	1	2	2	3	3	4	12	3.00					
									3.50		3.40		Firm consistency* brown mottled blue CLAY. (LONDON CLAY FORMATION).	
D SPT	4.00	1	2	3	4	4	4	15	4.00					
									4.50					
D SPT	5.00	2	2	2	3	4	4	13	5.00					

Sampling Code: U- Undisturbed B - Large Disturbed D - Small Disturbed W - Water (U*) Non recovery of Sample
Jomas Associates Ltd - Lakeside House, 1 Furzeground Way, Stockley Park, UB11 1BD
T: 0843 289 2187 E: info@jomasassociates.com W: www.jomasassociates.com

Appendix 8: Google Maps/Camden Maps



NW1 0TA

154 Royal College St

Building

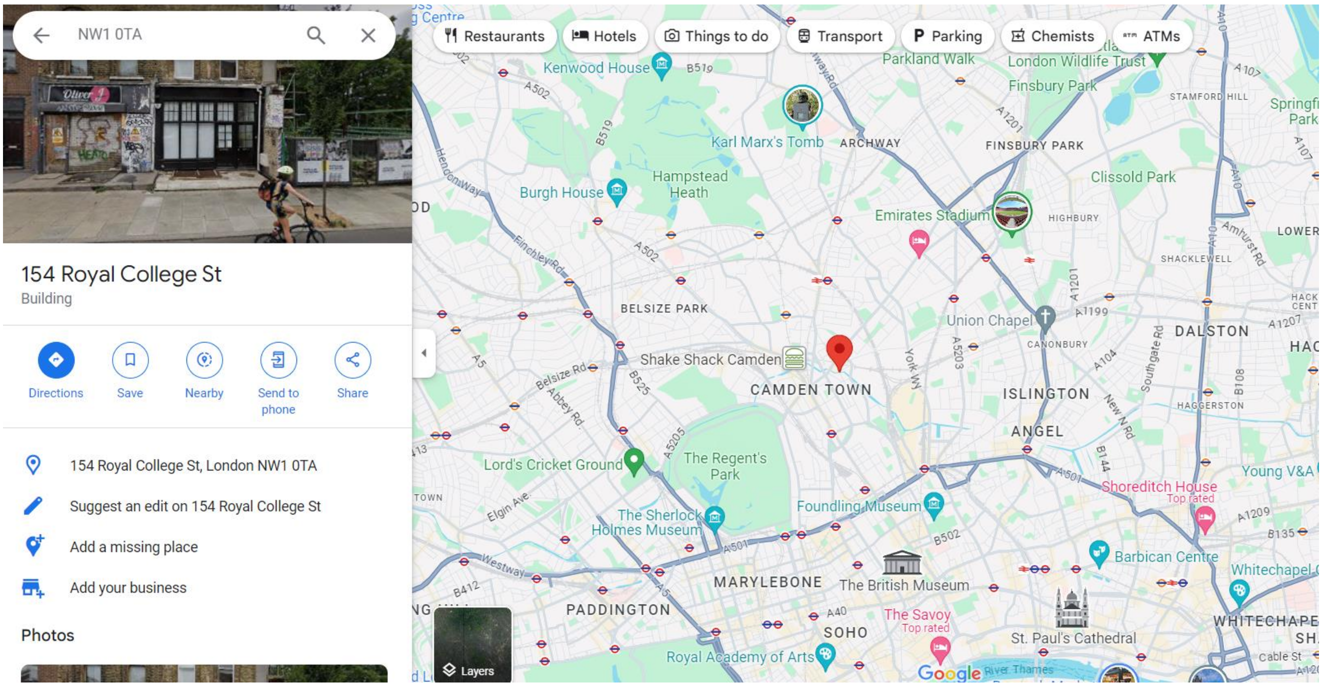
154 Royal College St, London NW1 0TA

Suggest an edit on 154 Royal College St

Add a missing place

Add your business

Photos



NW1 0TA

154 Royal College St

Building

154 Royal College St, London NW1 0TA

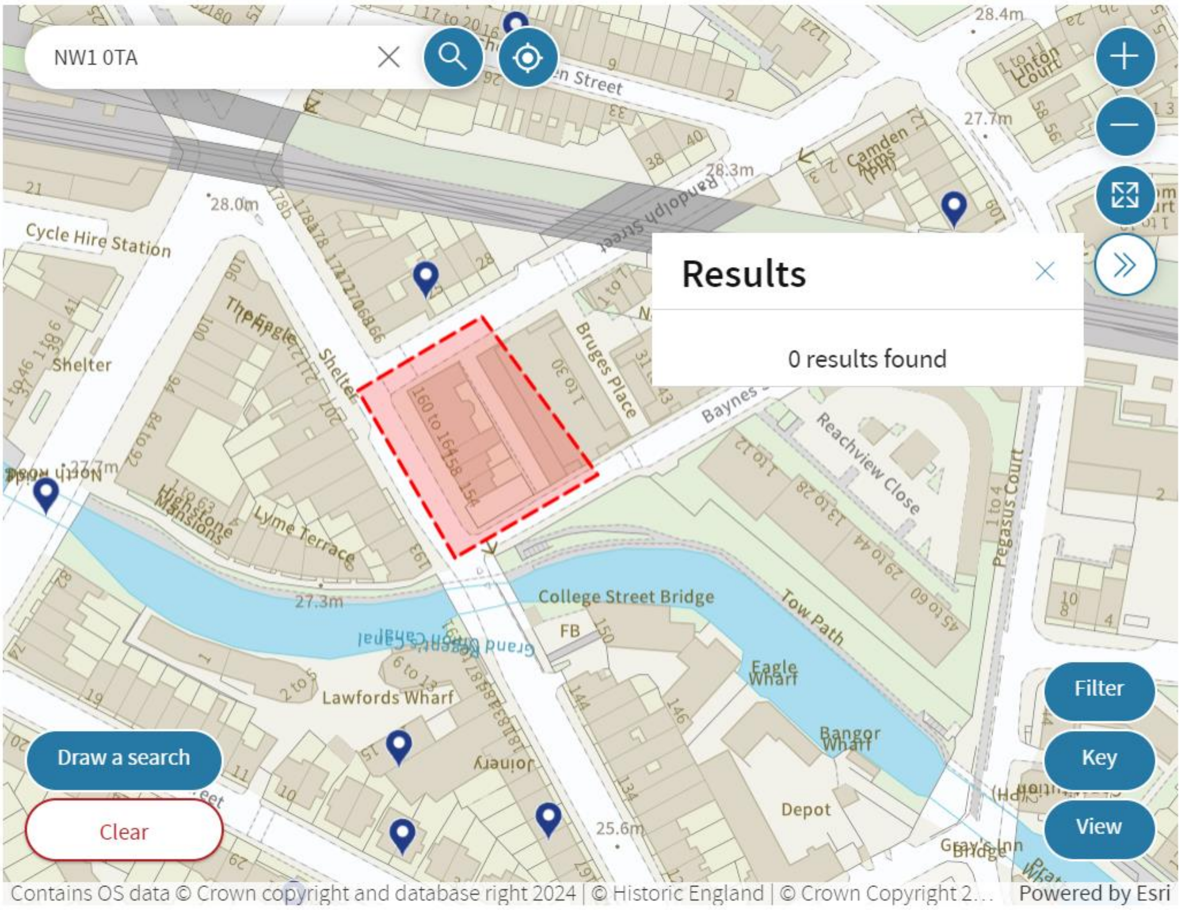
Suggest an edit on 154 Royal College St

Add a missing place

Add your business

Photos

Appendix 9: Map of Listed Buildings (Source: Historic England website)



NW1 0TA

Results

0 results found

Appendix 10: Map of Local Flood Risk Zones and Critical Drainage Areas

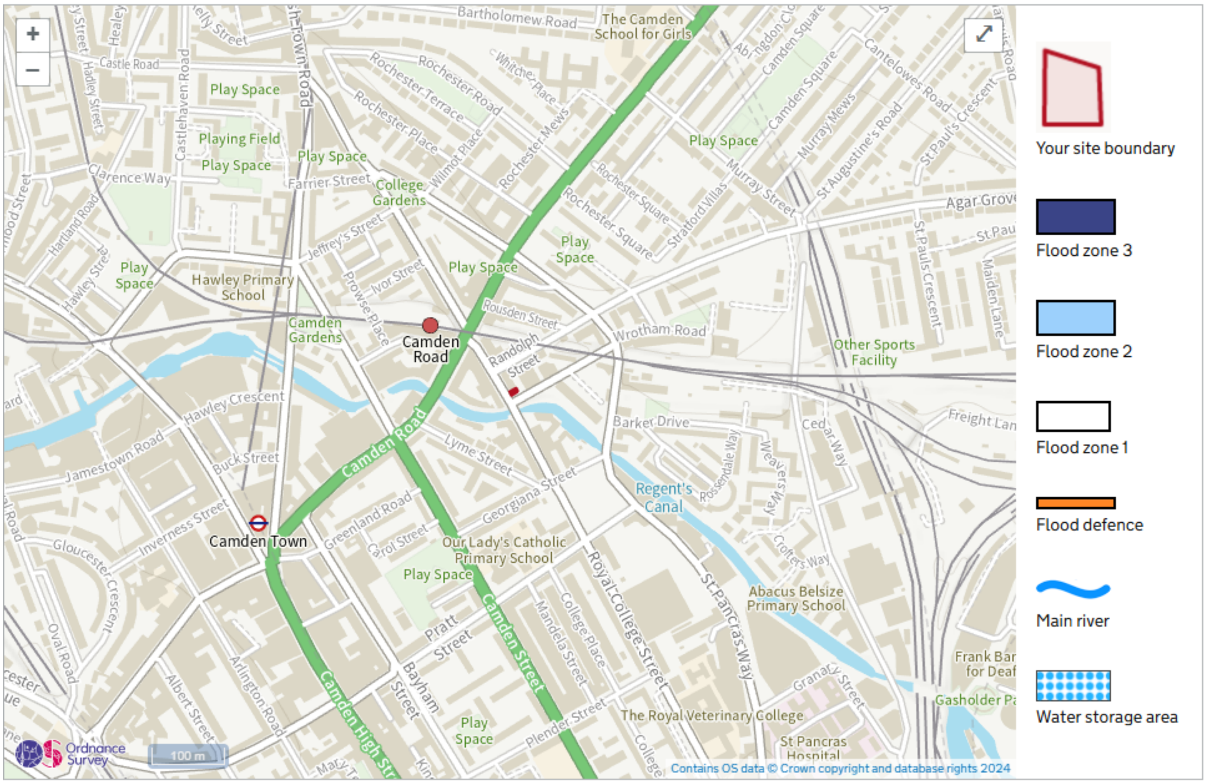


Figure 11 Flood map for planning

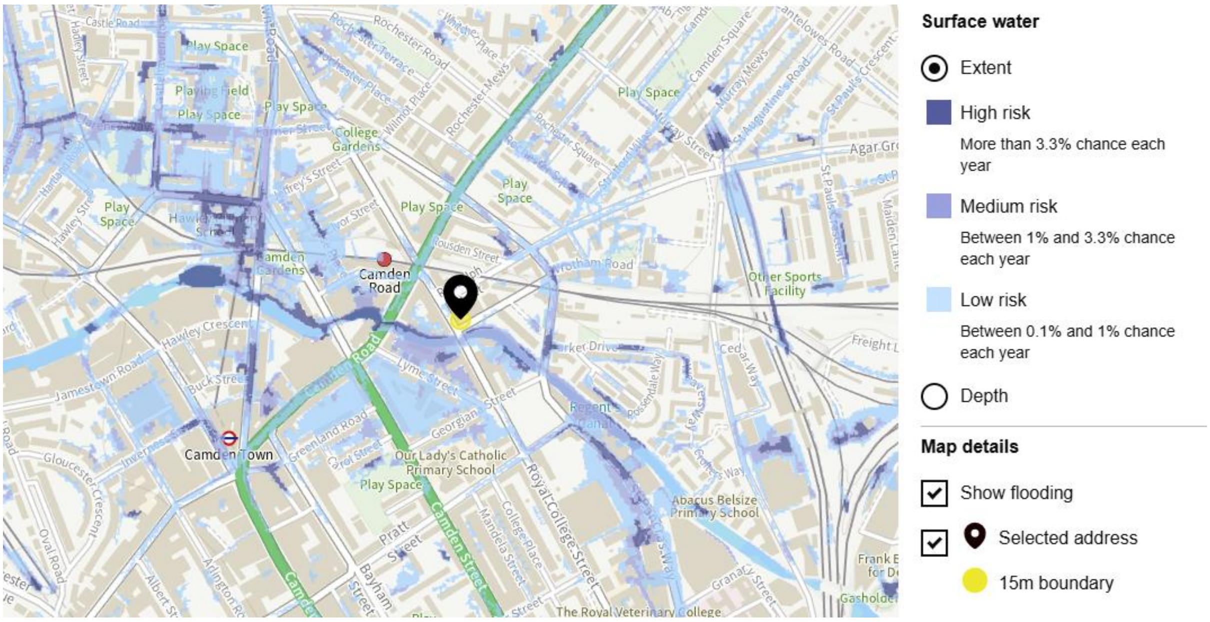


Figure 12 Extent of surface water flooding

Appendix 12: Map showing Trees Preservation Order (TPO)

N/A – Direct inquiry via Tree and Landscape Officer (Camden Council) required:

Contact details

Telephone

020 7974 4444
Fax: 020 7974 1930

E-mail

planning@camden.gov.uk

Website

www.camden.gov.uk/planning

Appendix 13: Map showing the recorded bomb location of WW2

154 Royal College Street,

London, NW1 0TA

Bomb density indicates a Moderate/High risk zone, however no Bombs have been found within the immediate vicinity. Sevral site with Un-Exploded Ordinance are recorded so caution when conducting excavation is neccesary.