Architecture
For London
82—84
Clerkenwell Rd
London
EC1M 5RF
020 3637 4236
architecture
forlondon.com

19047 - 23 Dartmouth Park Hill
Basement Impact Assessment
January 2020

Document Structure

This Basement Impact Assessment forms part of the planning application for the proposed basement and extension to the ground floor flat at 23 Dartmouth Park Hill.

It is proposed to underpin a section of the existing cellar and form a new basement beneath the proposed new extension.

The purpose of this document is to explain how the proposal takes into consideration the neighbouring properties and current ground conditions when forming the new design.

Executive Summary

To prepare this Basement Impact Assessment a sequential approach has been followed as set out in Camden Local Plan (2017).

Proposal

The existing property is a ground floor flat contained within a three-storey semi-detached property with an existing cellar basement located in the Borough of Camden. It is proposed to extend the existing single storey cellar basement below a portion of the existing property footprint extending beneath the new proposed rear extension.

Desk Study

A Desk Study has been undertaken by LMB, see Appendix C.

Ground Investigation

A visual assessment of the house and the adjoining properties have been undertaken by Architecture for London in October. 2019. The existing building and adjoining houses do not show any signs of significant structural damage. No ongoing movements were identified on site.

A site investigation was carried out in December. 2019. The tests revealed that the proposed basement will bear on London Clay formation which extends from 0.5 metre below ground level to 10.0 metres.

No ground water was encountered during the borehole drilling or during the site monitoring. Thus, no dewatering strategy is proposed.

Engineering Design Work

Architecture for London has designed the proposed development to Detailed Proposals Stage as set out in the Services of ACE Agreement 1. The results can be found in Appendix A.

The proposal is to form the basement using sequential reinforced concrete underpins, a well-known and frequently used technique to form basements. The basement slab and concrete retaining walls have been designed to resist soil pressure, heave movement or surcharge as shown in the structural calculations in Appendix B.

Ground Movements

LMB have undertaken a ground movement assessment, see Appendix C.

Their report indicates that the damages to adjacent structures due to the proposed basement construction will be Very Slight (Category 1). Architecture for London designed the reinforced concrete structure to comply with the acceptable limits of lateral deflection defined by LMB's report.

Flooding

The property lies in flood zone 1 and is not in a Critical Drainage area. Therefore, no flood risk assessment was undertaken.

Drainage and Surface Water

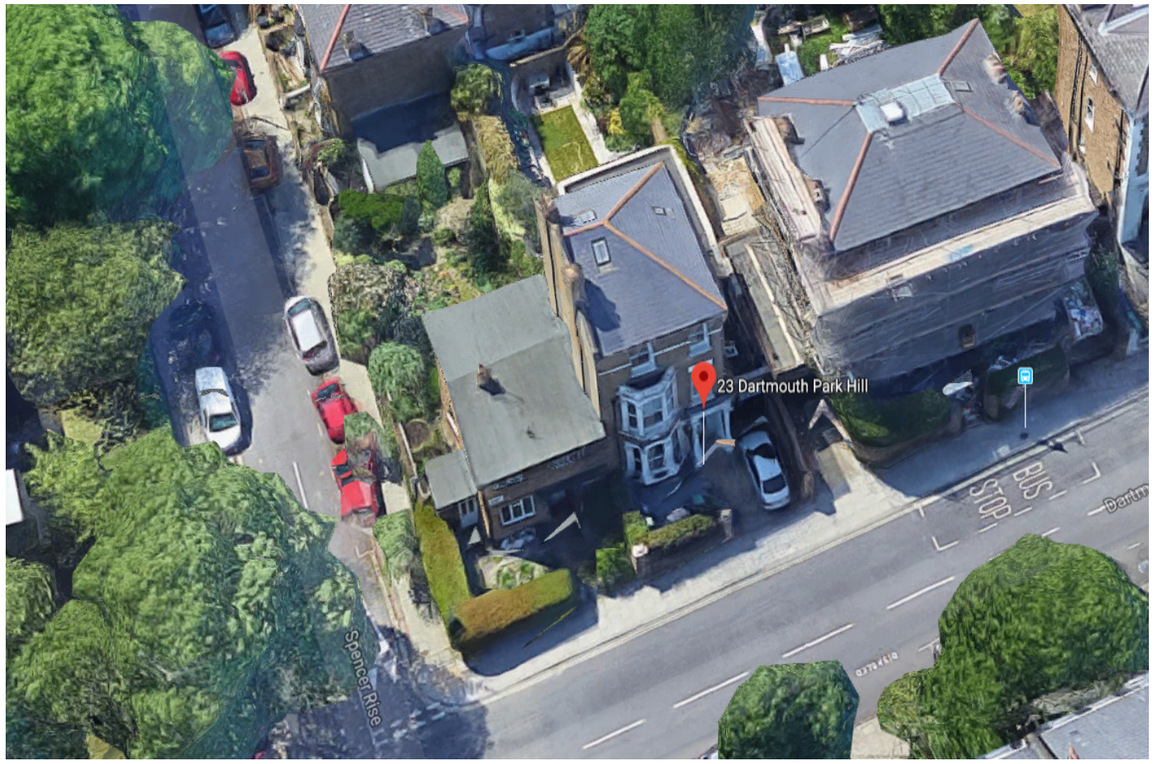
The below ground drainage and discharge from cavity drains will be drained to a sewage chamber below the basement slab from where it will be pumped via a rising drain to the existing gravity drainage system.

Existing Trees

The proposed basement is at a significant distance from the existing trees in the neighbouring gardens and will not impact them. Included is the Arboriculture Report from the neighbouring property No. 25 Dartmouth Park Hill, see Appendix D.

Compliance with Camden Planning Guidance - Basements

This Basement Impact Assessment and its appendices have been prepared to comply with the requirements of Camden Planning Guidance for Basements (March 2018). The proposed subterranean development has been designed to safeguard the structural stability of the existing neighbours and adjoining properties.



Introduction

Architecture for London have been appointed by Ms. Philippa Huckle to carry out a structural basement impact assessment for the proposed single storey basement at 23 Dartmouth Park Hill. The basement is proposed to be extended from the existing cellar to the proposed new rear extension. The remaining parts of the flat will be refurbished; however, this report will only concentrate on the proposed basement works.

Our drawings and this report will be included within our client's planning application. Our documents are not intended for, and should not be relied upon by, any third party for any other purpose.

Reference Documents

- Camden Local Plan from 2017

- Camden Planning Guidance Basements from March 2018

- Camden's Core Strategy - Local Development Framework 2010-2025

- Camden Development Policy - Local Development Framework 2010-2025

- National Planning Policy Framework: Section 12 from February 2019

- Ground Movement Assessment & Damage Category Assessment - LMB (Jan 2020)

- The Lost Rivers of London by N.J Barton - 1992

- Code of Construction Practise - April 2016

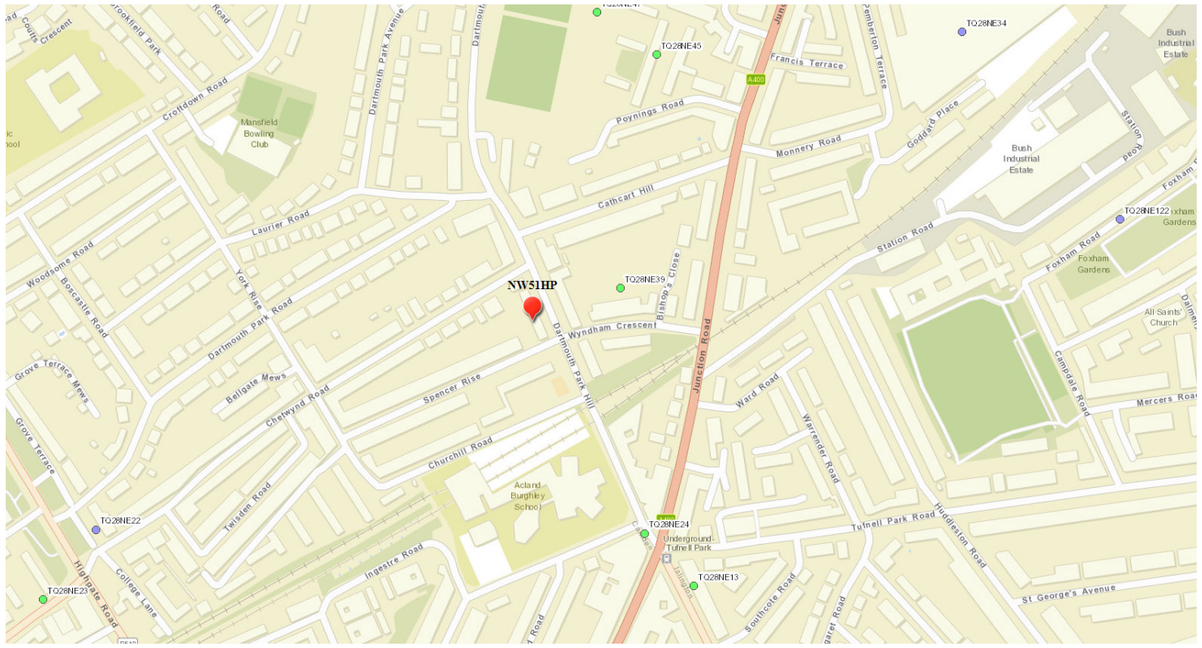
- SUDs NPPF - Guidance Notes

- Critical Drainage Map - May 2014

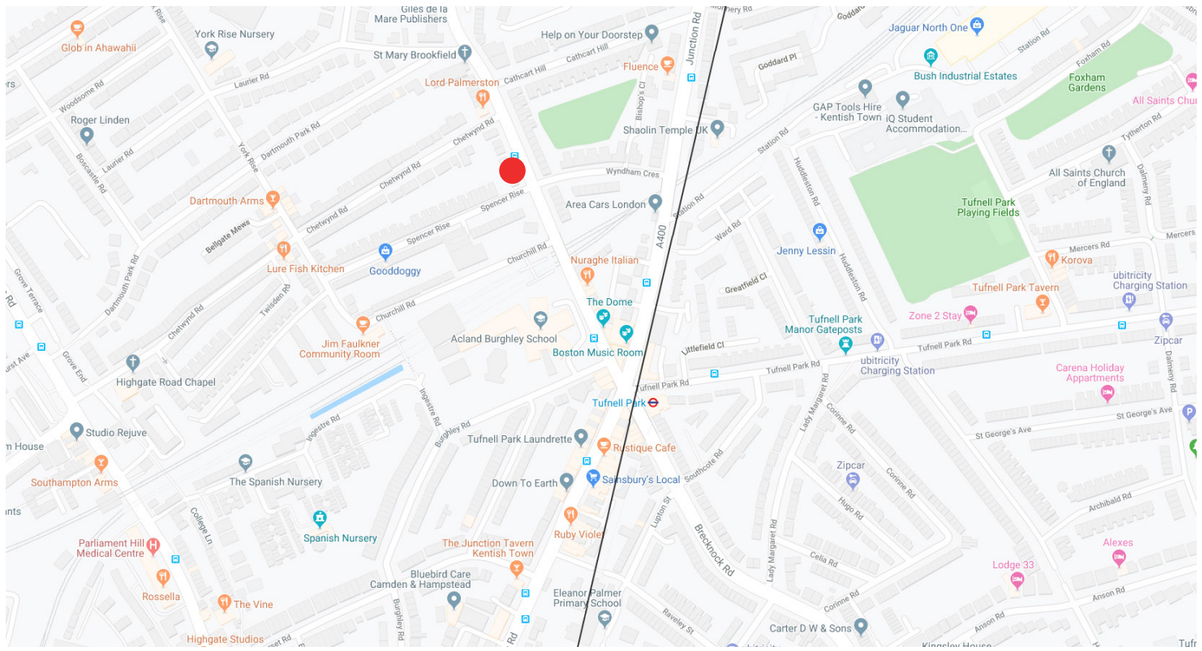
- Strategic Flood Risk Assessment - March 2014

Existing Conditions

The existing property is located on Dartmouth Park Hill, in the Borough of Camden. It is a ground floor flat, part of a three-storey semi-detached property. The perimeter walls are constructed from masonry brickwork, with timber floor joists on both the first and second floor and a ground bearing concrete slab on the ground floor. The roof is formed from a traditional timber pitched roof. The property exhibits no signs of excessive deformation or cracking other than would be expected of a property of this type and age.



Historical bore hole log map taken from the British Geological Surveys



Map showing local transport tunnels

Site Investigation & Desk Study

Investigation / Opening-up Works Undertaken

1 No. (Windowless) borehole was cut to determine the safe bearing loads and cohesion values, traditional piles and sleeved piled foundation. Furthermore, the extent of any ground contamination and ground water levels was established.

1 No. Trial pit was dug to determine the depth and profile of the existing cellar foundation.

Ground Conditions

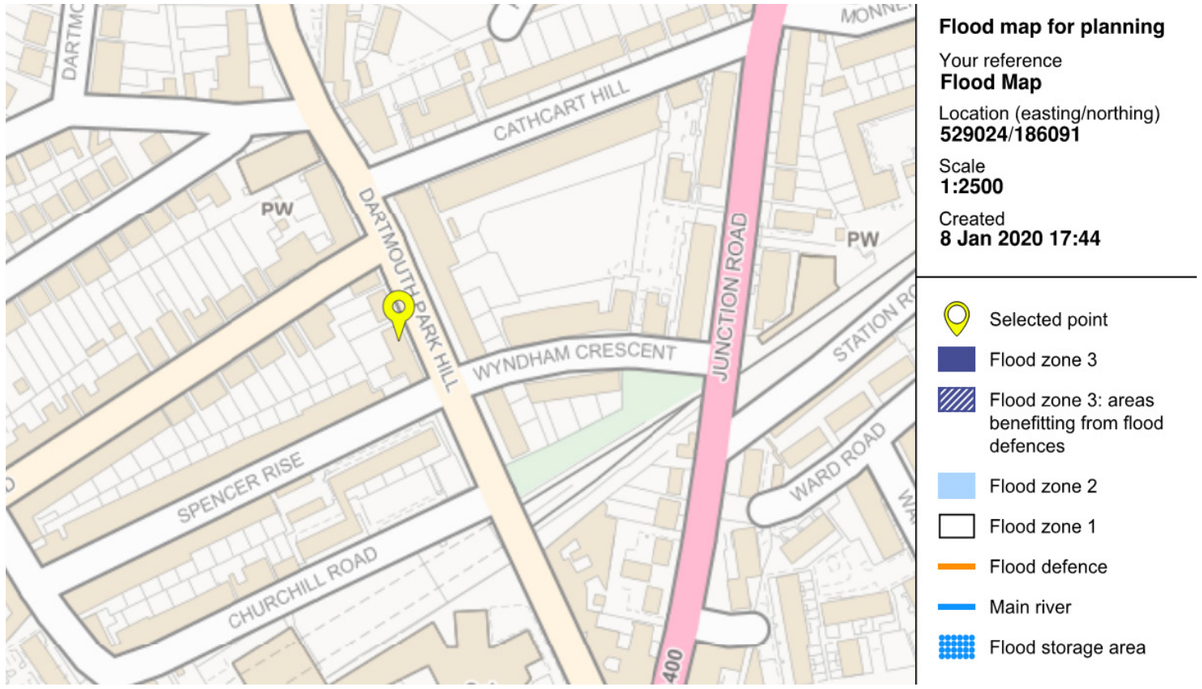
The local geographical survey maps accessible via British Geological Society website “http://mapapps.bgs.ac.uk/geologyofbritain” indicated that the underlying soil strata, is Hackney Sand and Gravel. Having reviewed the boreholes in the area and with particular respect to the borehole to the North of the address TQ287NE/39 (See figure) on adjacent page, brown & blue to dark brown clay was confirmed down to 10.07m (35ft) (See Appendix E).

Ground Investigation

A site specific ground investigation and interpretative report has been undertaken by LMB GeoSolutions Ltd and their findings and recommendations are described in their report dated January 2020. The ground conditions are summarised as follows:

Made Ground overlying London Clay Formation.

Strata	Depth Range to Top (m BGL)	Depth Range to (Base (m BGL)	Summary Description
Made Ground	Ground Level	0.20m -0.50m	The ground surface in the borehole location was found to comprise floor pavers and in the trial pit location concrete screed. The Made Ground soils were typically found to comprise sub-base (sand, brick etc.) overlying slightly sandy slightly gravelly clay with varying proportions of brick and concrete.
London Clay Formation	0.20m - 0.50m	10.00m	The London Clay was found to comprise an upper horizon (1.90m) of soft becoming firm clay overlying firm becoming stiff brown with occasional blue/grey veining clay. Closely fissured.



Flood map for planning

Your reference
Flood Map

Location (easting/northing)
529024/186091

Scale
1:2500

Created
8 Jan 2020 17:44

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

Map showing flood risk zone 23 Dartmouth Park Hill is located

The report confirms that the proposed basement development foundations placed within the London Clay Formation at the assumed formation level (3.0m BGL) may be designed to a net safe bearing pressure 110kN/m^2.

Our calculations demonstrate that the allowable ground bearing capacity will not be exceeded. See Appendix B.

No groundwater was recorded during the borehole drilling or during subsequent return monitoring.

Geology, Hydro-geology and Hydrology

Referring to the 'The Lost Rivers of London' the closest known watercourse is the Fleet which runs south from Hampstead Heath to the River Themes at Blackfriars Bridge. It runs to the west of the property approximately 335m away. The man-made Regents canal runs approximately 1900m south of the site. These are both a significant distance away and is unlikely to have any impact on the local hydrology.

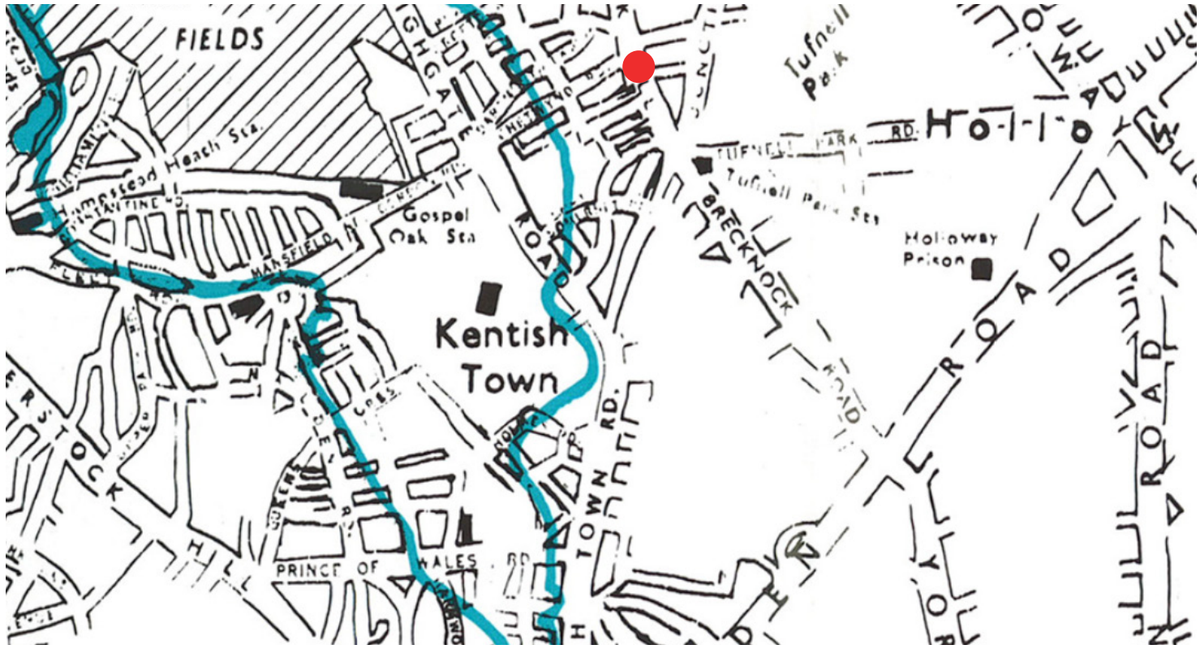
Flood Risk Assessment

Referring to the Environment Agency Flood Map, the proposed basement lies in Flood Risk zone 1 and therefore has a less than 1 in 1000 annual probability of river or sea flooding any year. As stated in the subterranean development SPD a flood risk is only required for zones 2 and 3 and therefore not provided for in this planning application.

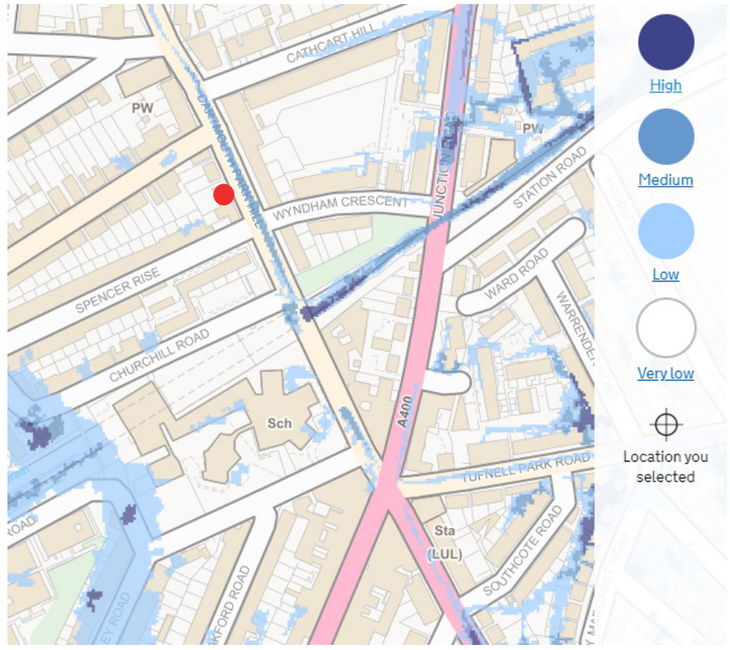
- The EA Surface Water Flood Map Suggest that the site lies in close proximity to an area of 'Low' risk of flooding from surface water

- The risk of flooding posed to the site by fluvial, tidal, groundwater and sewer surcharge flooding would appear to be negligible / low.

According to the strategic flood risk assessment map from URS, see Figure below, the site is located within a critical drainage area, however; not in a local flood risk zone.



Map showing 'Lost Rovers of London' in relation to property



Map showing flood risk in relation to property location

Design Proposal

The proposal is to increase the head-height in the existing cellar basement and to extend the basement beneath the proposed new extension at the rear of the property, see structural drawings in Appendix A. This will be undertaken by using sequential reinforced concrete underpins which is a well-known and frequently used technique to form basements. The use of temporary propping and sacrificial shuttering will ensure that the basement does not cause any local ground movements whilst the construction is taking place.

Below Existing Building and New Extension

To form the basement below the section of existing cellar area, the existing walls will require to be underpinned using reinforced concrete L-shaped pins. For the basement walls beneath the newly proposed rear extension and garden area, an open excavation method will be used where conditions permit. The ground will be banked to create the area for the construction of the new basement L-shape retaining walls. Where the walls are in close proximity to the party-wall and open excavation would not be possible, sacrificial sheet piles and temporary props passing through the permanent works will be used to retain the earth during the construction of the basement L-shape retaining walls.

Our structural calculations also demonstrate that the existing and new structure can be safely supported on the proposed retaining wall structure within the parameters provided by LMB GeoSolutions for ground bearing capacity. To ensure continuity between the reinforced concrete retaining walls and the masonry walls, dowels will be drilled into the underside of the masonry walls and cased in with the reinforced concrete retaining walls.

The basement slab will be ground bearing and will be tied into the toes of the underpin and retaining wall structure. This will ensure that the basement slab resists any potential soil pressure due to the heave of hydrostatic loads from localised perched water, leaking pipes, etc.

The expected heave forces cause short and long-term deformation. Short term heave deformation occurs instantaneously and can be rectified by removing the expanded ground during excavation. According to LMB GeoSolution report, see Appendix C, the long-term heave deformation is not likely to produce relevant cracking in the building. Nevertheless, the basement slab would require to be sufficiently stiff to withstand the local heave pressures and to transfer the forces to the perimeter retaining walls. These uplift forces would be resisted by the significant dead load of the existing building. Our structural calculations also demonstrate that the existing structure can be safely supported on the proposed retaining wall structure within parameters provided by Site Analytical Services for ground bearing capacity.

Above the Ground Floor

The newly reinstated ground floor would be formed using a series of steel beams that span from external side walls. Between the beams a stiff floor plate will be formed using timber floor joists and 18mm WBP (Weather and Boil Proof) structural ply. The new ground floor will act as a permanent prop to the heads of the new basement walls. To ensure continuity between the reinforced concrete retaining walls and the masonry walls, dowels will be drilled into the underside of the masonry walls and cast in with the reinforced concrete walls.

Waterproofing

BS 8102 set out guidance for the waterproofing of basement structures according to their use. Two waterproofing systems must be implemented in the construction of basements to be used as habitable spaces. With this in mind the use of tanked, integral and/or drained methods of waterproofing will have to be considered, with the most likely solution being waterproof concrete and a cavity wall drainage system within the structure. This will require a sump and pump drainage system. These items will be considered once a tanking specialist has been appointed.

Internal Alterations

It is envisaged that an overall refurbishment of the property will take place on the ground floor. Nonetheless, the current external load bearing walls will have to be supported and loads transferred back into the building's foundations.

Stage 1: Screening

A screening process has been undertaken based on the flow screening charts of the Camden Planning Guidance CPG4. The tables below identify any matters that are relevant in the proposed scheme. Each question is answered by "Yes" or "No". "No" answers are justified in the last column of the screening charts. "Yes" answers are discussed further in "Stage 2: Scoping".

Groundwater Flow

Is the site located on an Aquifer?	No	The site is underlain by the London Clay Formation which is designated as an Unproductive Strata.
Will the basement extend below the ground water level?	No	Groundwater was not encountered during borehole drilling or during return monitoring. Notwithstanding this, groundwater is commonly recorded within the London Clay Formation, particularly around foundations. However, rather than being representative of a permanent and laterally continuous aquifer unit, the ground water is present as discreet units within (for example) micro fissures and local mudstone horizons and the recorded ground water level will most likely be reflective of the pore water pressures within these discrete features.
Is the site within 100m of a water course, well or potential springline?	No	Based on the desk study information the nearest water features are an inland river located approximately 200m south west and a covered reservoir located approximately 120m north.
Is the site within the catchment of local surface water courses?	No	Based on the desk study information the nearest water features are an inland river located approximately 200m south west and a covered reservoir located approximately 120m north.
Will the proposed development change the proportions of soft / hard surfaced areas?	No	Based on the information reviewed areas of hard surfacing are predicted to remain the same as the proposed basement development lies beneath the existing footprint.
Will the development result in an increase in surface water infiltration to ground (e.g. via soakaway and / or SUDS)?	No	There is predicted to be no change as there are no plans to introduce infiltration drainage.
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 surface water feature or spring line.	No	Based on the desk study information the nearest water features are an inland river located approximately 200m south west which is at a lower elevation than the site. The covered reservoir located approximately 120m north is at a higher elevation than the site but is not an open water body.

Land Stability

Does the existing site include slopes, natural or man-made, greater than 7°?	No	Observations during a site visit and reference to Figure 16 of the Arup guidance indicates that there are no slopes > 7°.
Will the proposed re-profiling or landscaping at the site change slopes at the property boundary to more than 7° ?	No	Information presented on the proposed development schematics confirms that there will be no slopes > 7° following development.
Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No	Observations during a site visit and reference to Figure 16 of the Arup guidance indicates that the site does not neighbour land where there are slopes > 7°.
Is the site within a wilder hillside setting in which the general slope is greater than 7°?	No	The site is located on a hillside setting. However, reference to figure 16 of the Arup guidance indicates that the general slope is not > 7°.
Is the London Clay the shallowest strata at the site?	No	Made Ground deposits have been recorded to 0.50m bgl and overlie the London Clay Formation.
Is there a history of seasonal shrink swell subsidence in the local area and / or evidence of such effects at the site?	Unknown	The London Clay has a high plasticity with a high volume change potential. However generally movement that causes subsidence is due to trees and / or drains or poor subsoil and there is no visible evidence of such movement at the site.
Is the site within 100m of a water course or potential springline?	No	Based on the desk study information the nearest water features are an inland river located approximately 200m south west and a covered reservoir located approximately 120m north.
Is the site in an area of previously worked ground?	No	Ground investigation identified up to 1.50m of Made Ground and review of historical plans indicate no previous site uses indicative of worked ground have been identified.
Is the site within an aquifer?	No	The site is underlain by the London Clay Formation which is designated as Unproductive Strata.
Is the site within 5m of a highway or pedestrian right of way?	Yes	The site is within 5m of the pavement / public highway. However, the basement itself will be constructed beneath the rear of the property and as such is not within 5.0m of pavement / public highway.
Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes	The closest neighbouring properties are not believed to include lower ground floor / basements and although there are no shared party walls, the basement excavation will result in differential depth of foundations.
Is the site over any tunnels e.g. railway lines?	No	Enquiries with assets holders have also been undertaken and confirm that the site is not located over any known tunnels.

Surface Flow and Flooding

Is the site within the catchment of local surface water courses?	No	Based on the desk study information the nearest water features are an inland river located approximately 200m south west and a covered reservoir located approximately 120m north.
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	The development will not alter the external areas and drainage and surface water flow should not alter significantly.
Is the site within 100m of a water course, well or potential springline?	No	Based on the desk study information the nearest water feature are an inland river located approximately 200m south west and a covered reservoir located approximately 120m north.
Will the proposed development change the proportions of soft / hard surfaced areas?	No	The areas of hard and permeable landscaping will remain the same as the development lies under the existing footprint and surrounding landscaping is hard surfacing.
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?	No	There are no proposals to alter the site drainage and surface water flows following development and there is not anticipated to be any significant alteration to the profile of inflows being received downstream of the site (if applicable).
Is the site in an area known to be at risk from surface water flooding?	Unknown	The desk study information indicates that the site is not at risk of flooding from surface water or rivers and sea. An area of low surface water flooding is identified on Dartmouth Park Hill on the opposite side of road from the property within an estimated flood depth is <300mm.

Is the site within 5m of a highway or pedestrian right of way?	Yes	The site is within 5m of the pavement / public highway. However, the basement itself will be constructed beneath the rear of the property and as such is not within 5.0m of pavement / public highway.
Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes	The closest neighbouring properties are not believed to include lower ground floor / basements and although there are no shared party walls, the basement excavation will result in differential depth of foundations.
Is the site over any tunnels e.g. railway lines?	No	Enquiries with assets holders have also been undertaken and confirm that the site is not located over any known tunnels.

Summary

Based on the Screening Assessment presented, the following potential issues have been carried forward to the scoping stage of the assessment:

- An area of low risk surface water flooding is identified on Dartmouth Park Hill on the opposite side of the road from the property.
- Parts of the site are within 5.0m of a pavement with a public highway beyond. However, the basement itself will be constructed beneath the rear of the property and as such is not within 5.0m of a pavement / public highway.
- There is no known history of seasonal shrink swell subsidence in the local area and / or evidence of such effects at the site, but it does lie on the London Clay Formation which is a high plasticity clay with high volume change potential.
- There is potential for the proposed basement to increase the differential depth of foundations relative to neighbouring properties.

Scoping Assessment

The potential issues identified within the screening assessment are considered within the following scoping sub-sections:

- Surface Water Floor & Flooding

As outlined, the site and proposed basement development are in an area of low risk from surface water flooding.

Review of information on the gov.uk website indicates that the flood depth is predicted to be <300mm and observations on site suggest that the existing property and proposed basement entries will be above this elevation. However, possible mitigation measures will be considered to prevent potential impacts on the proposed basement / future site users.

- Land Stability

The site and proposed basement development are within 5.0m of a pavement on a hillside setting and the site lies on the London Clay Formation which is a high plasticity clay with high volume change potential.

As such a Ground Movement Assessment (GMA) has been undertaken to appraise the potential impacts on neighbouring properties (See Appendix C).

Temporary Works

The method statement provided, (see Appendix A), is for the purpose of the design team's design development and for the purpose of the client's planning application. The appointed contractor will be responsible for all the temporary supports and for the stability of the structure during the works. The method of construction adopted under the existing ground floor minimises the need for temporary works. However, propping during the underpinning sequencing will be required to minimise the risk of ground movement occurring.

To ensure that the retained engineer's intent is correctly interpreted by the contractor, they will be required to submit all temporary works proposals to review a minimum of 7 working days prior to commencing excavation. The contractor should also submit a dewatering strategy to ensure a strategy is agreed should water be encountered.

Temporary propping to the newly formed retaining walls will be required until the ground floor has been formed. For further details please see Appendix A for construction sequence and method statement.

Dewatering Strategy

Widely used methods for dewatering are described below. The appointed principal contractor must submit a detailed dewatering strategy to Architecture for London Ltd 14 days prior to commencing works on site.

Local Dewatering simple sump method

All excavations shall be kept clear of water by a submersible pump. Should large quantities of water be encountered, this will be pumped into the existing drainage system using a larger sump pump via a sediment settling tank. A long period of pumping will be avoided and regular inspections of the work area to ensure dewatering should be carried out only when necessary.

Jetted Sumps

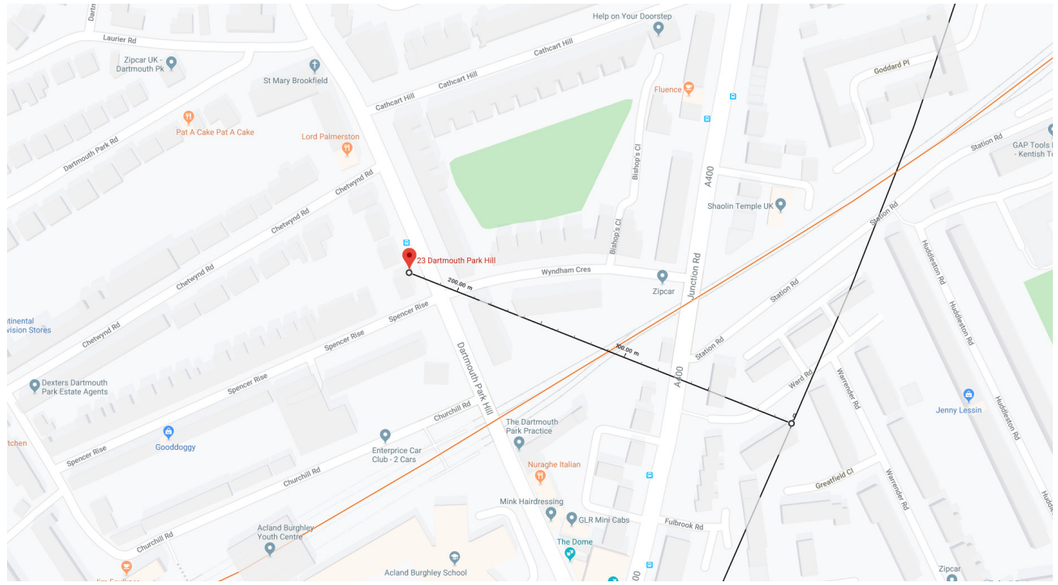
This method achieves the same objective as the simple sump methods of dewatering but will minimise the soil movement associated with this and other open sump methods. A borehole is formed in the subsoil by jetting a metal tube into the ground by means of pressurised water, to depth within the maximum suction lift of the extract pump. The metal tube is withdrawn to leave a void for placing a disposable well point and plastic suction pipe. The area surrounding the pipe is filled with coarse sand to function as a filtering media.

Other dewatering

Strategies such as grouting and ground freezing are likely to be impractical for a project of this size. However, this is at the discretion of the main contractor.

Construction Methodology

Please see Appendix A for construction sequence and method statements.



Nearest underground tunnel in relation to 23 Dartmouth Park Hill

Stability of Neighbouring Structures

Due to the robust engineering principles and construction method applied, the extent of movement is limited in accordance with British and European codes. We can confirm that the proposed structural design and method of construction of the basement has been developed with a view to ensuring structural safety, and that if construction is in accordance with this document the works will be able to be completed without any adverse impact on the structural stability of neighbouring properties, other adjacent structures, adjoining land and gardens or the adjoining Public Highway.

The reinforced concrete structure will be designed to accommodate surcharges from the neighbouring property, public highway and ground pressures. The structure will have adequate stiffness to ensure that the lateral deflections do not exceed the appropriate limits recommended by British Standards Codes of Practice in order to ensure that potential ground movements be kept to acceptable limits.

The structures will be designed to withstand any uplift due to hydrostatic pressures as well as being designed to transfer vertical loads into the ground safely.

The Northern underground line is 235m away from the proposed basement as shown in the image displaying the nearest tube line. This is considered a significant distance away; thus, no consultation with the London Underground Asset Protection team will be undertaken.

A Ground movement assessment report has been undertaken by LMB GeoSolutions and can be found in Appendix C.

The LMB Geosolutions report confirms that the ground movement model predicts movement to fall in category 1, which is described in the table below.

Category of Damage	Description of typical damage	Approximate crack width (mm)	Limiting tensile strain
0 Negligible	Hairline cracks of less than about 0.1mm are classed as negligible	<0.1	0.0 to 0.05
1 Very slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection	<1	0.05 to 0.075
2 Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weather tightness. Doors and windows may stick slightly.	<5	0.075 to 0.15
3 Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable lining. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weather tightness often impaired.	5 to 15 or a number of cracks > 3	0.15 to 0.3
4 Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15 to 25 but also depends on number of cracks	>0.3
5 Very severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion, Danger of instability.	Usually > 25 but depends on number of cracks	

Party Wall Matters

The scope of works falls within the Party Wall Act 1996. Procedures under the Act will be dealt with by the client's Party Wall Surveyor. The Party Wall Surveyor will prepare and serve necessary Notices under the provision of the Acts and agree Party Wall Awards in the event of disputes. The Contractor will be required to provide the Party Wall Surveyor with the appropriate drawings, method statements and all other relevant information covering the works notifiable under the Act. The resolution of the matters under the Act and provision of Party Wall Awards will protect the interests of all owners.

Monitoring

It is proposed that the structural stability of the surrounding / adjacent properties is safeguarded by a system of movement monitoring.

The Contractor shall monitor the position and movements of the elevations of the adjacent properties around the perimeter of the proposed excavation. The monitoring shall be undertaken by a specialist survey company. The monitoring system will have at least the following characteristics:

- The existing facades of the neighbouring properties as well as the flank wall of the neighbouring building will be monitored near ground level and at roof level, at intervals not exceeding 3m centres.

- Monitoring points (targets) shall be firmly attached, to allow 3D positioning on, at not less than the following intervals:

    - Before any works commence (base reading)

    - Weekly during the period of basement excavation / construction

    - Monthly during the course of remainder of the works

    - Six months after the completion of all construction works

- All measurements shall be plotted graphically, to clearly indicate the fluctuation of movement with time. The survey company shall submit the monitoring results to the Engineer (Architecture for London Ltd) and to the Adjoining Owners Party Wall Surveyors / Engineer within 24 hours of measurement, graphically and numerically.

- The following trigger levels for movement are proposed for agreement. In the event of a trigger value being reached the Contractor will immediately stop any work that might cause further movement, assess the situation and propose alternative methods for proceeding, with definitive further movement limits for those later steps.

- Trigger movement limits are proposed as follows:

    A) Existing Buildings Horizontal / Vertical movement

- Amber	+/- 7mm	All Parties Notified.
- Red	+/- 10mm	Works reviewed.

    B) The garden walls and excavation

- Amber	+/- 7mm	All Parties Notified
- Red	+/- 10mm	Works reviewed.

Drainage and SUDs

The above ground drainage will be subject to invert levels, drained by gravity to the existing combined sewage. The below ground drainage will be drained to a submersible package sewage station situated below the basement slab which will then be pumped via a rising drain to the nearest available inspection chamber on the existing gravity drainage system. This can then flow by gravity into the existing combined sewage system. To mitigate the risk of back flow suitable measures such as non-return values will be incorporated into the drainage design.

There will be appropriate drainage installed to the landscaping on the site. There will most likely be no available space for a typical attenuation system. It is therefore envisaged at this stage that a hydro break chamber and oversized pipes will be utilised as part of the surface water drainage strategy. However, this is subject to review and detailed design stage.

Sustainability

As the basement construction, will involve significant amounts of concrete, cement replacement alternatives should be considered. Cement replacements can be used to replace up to 40% of the cement in concrete mix. These replacements are typically waste products from the energy production industry such as PFA (pulverized fuel ash) and GBFS (granulated blast furnace slag). By adopting the waste products from the energy production industry are recycled and not sent to landfill sites. Furthermore, this also reduces the amount of cement that needs to be mined. Concrete should be bought from a local supplier to further reduce the carbon footprint of transport.

There is a significant amount of reinforced concrete on the project for which steel reinforcement bars will be required. By specifying reinforcement from a UK supplier, it ensures that the rebar is made from 100% recycled steel. Any structural steelwork should be sourced from a British manufacturer to ensure that rolled sections are made from at least 60% recycled steel. Sourcing the steel from a local supplier will further reduce the transport carbon footprint.

The use of timber as a structural element is to be maximised as timber production actively negates greenhouse gas production. Furthermore, all timber is to be FSC certified insuring that the timber is produced from a sustainable source.

Summary

Review and Mitigation Measures

The table below summaries the potential impact of the proposed basement on the natural environment and local amenity.

Potential Impact	Mitigation Measures
Land Stability: Impact on neighbouring structures	Monitoring of neighbouring buildings will be undertaken
	The new basement will be constructed following the construction method statement
	The contractor will adopt the practices outlined within the Demolition Protocol and the Considerate Constructors Scheme
Ground Water Flow: Impact on aquifer	The new basement will have no impact on any aquifer units
Surface Flow and Flooding: Increase of surface water run off to drainage system	The new basement access staircase will include green areas to provide some attenuation of the surface water run-off to the local drainage system.

Compliance with Camden Planning Guidance

This Basement Impact Assessment and its appendices have been prepared to comply with the outlines and policies set out Camden planning guidances referenced in the introduction (Section 2).

Non- Technical Summary

It is essential that a thorough review of all temporary works, contractors' method statements and calculations for these works is undertaken by a suitably qualified structural engineer prior to works starting. The permanent works will also be submitted to Building Control and the necessary Party Wall Surveyors for approval prior to the works commencing on site.

The findings of this Basement Impact Assessment can be summarised as per below:

- The new basement will predominantly be within London Clay
- Groundwater is not expected to be encountered
- The development is expected to have negligible impact on surface water flow and flooding
- From the results of the Ground Movement Assessment, the predicted damage category is between Category 0 and Category 1. This is below the limit imposed by Camden Council and will only be a risk of aesthetic damages
- Monitoring of adjacent properties will be undertaken throughout the works

The proposed works at 23 Dartmouth Park Hill have been designed with robust structural principles and methods of construction that are widely used and known. This will ensure the integrity of neighbouring structures and roadways are not comprised during its construction. This assumed Method Statement and Structural report has been completed by Architecture for London.

Report Prepared by:

Bilal Shaweesh

Structural Engineer
Architecture for London