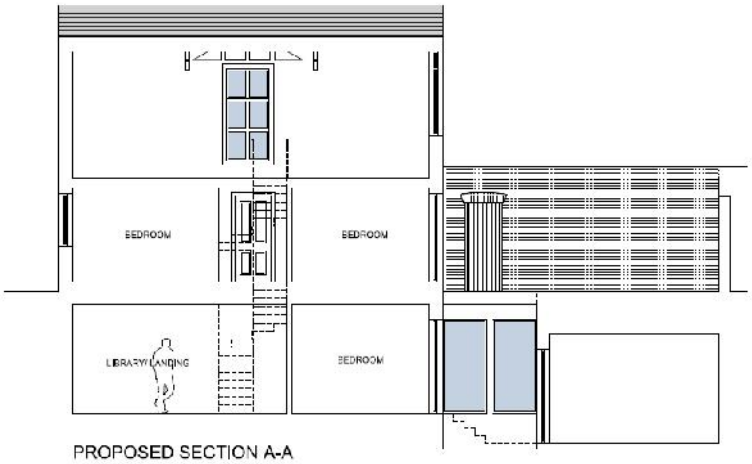
New Basement Construction and Lightwell Construction Method Statement (CMS) at Coach House, 1R Elms Road, London SW4 9ET



Project Name. Coach House

Origin Date: 11 May 2021

Prepared By:

Engineering Force (UK) Ltd

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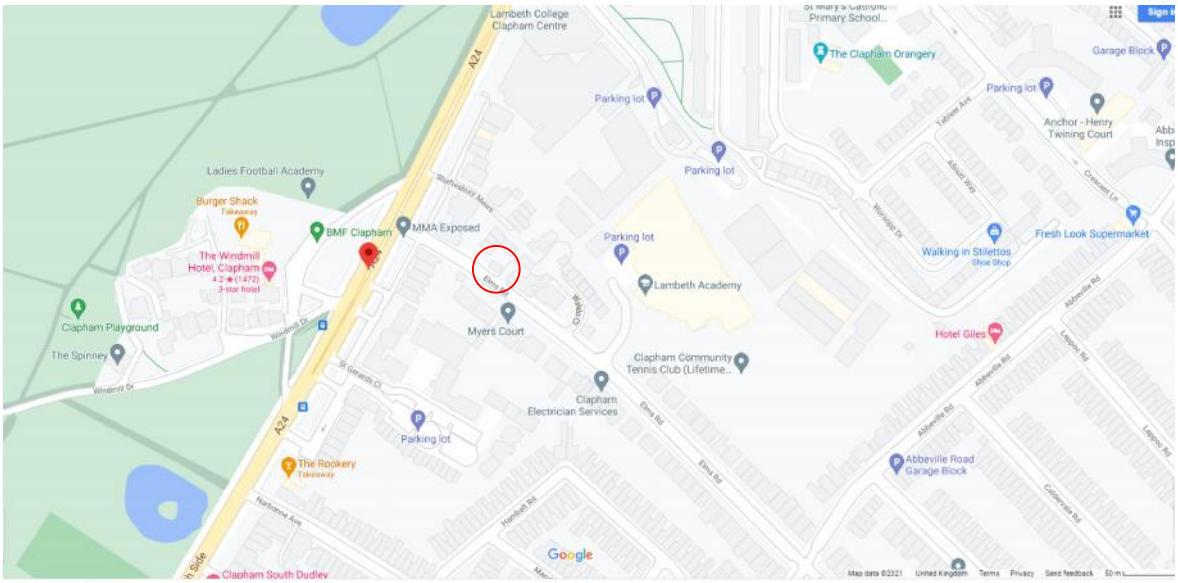
Location street Map



Location Map
Birdseye showing proximity of neighbouring properties.

Preface

This Construction Method Statement has been reviewed in accordance with The Lambeth's 'Supplementary Planning Document' for Basements dated October 2017.

Lambeth Council will only permit basement & underground developments that do not:

- Cause harm to the built and natural environment and local amenity
- Harm the Amenity of Neighbours
- Loss of Open Space or Trees
- Result in flooding
- Lead to ground instability.

This basement impact assessment is a systematic check through these points to allow the Town Planners to make an informed decision of the basement proposals.

This report is for planning purposes only and is not for construction. The information, drawings, method statement and other information in this report are for planning purposes. Any design warrantee or insurances from Engineering Force (UK) Ltd. may be provided in the final design. Further information and design considerations must be undertaken before building regulations submission. The information provided in this document is not for construction.

Appointments

Engineers:
The Applicant's Architect has appointed Engineering Force (UK) Ltd who have successfully carried out over 50 successful basement designs and constructions.

Engineers Retention:
The Engineers have received an appointment to retain their services for the duration of the planning stage.

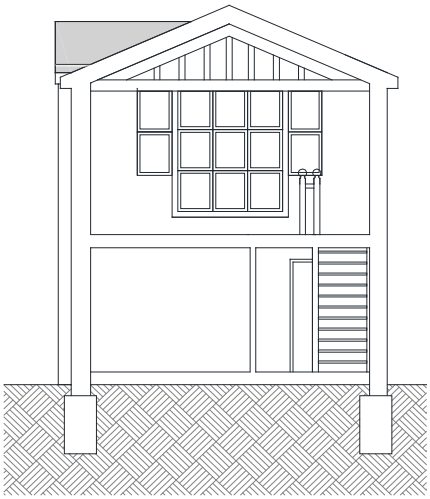
Builder:
The Applicant will appoint a contractor for this project who is experienced in basement construction as well as being a member of the 'Considerate Constructors Scheme' and the ASUC Association of Specialist Underpinning Contractors.

Design Information

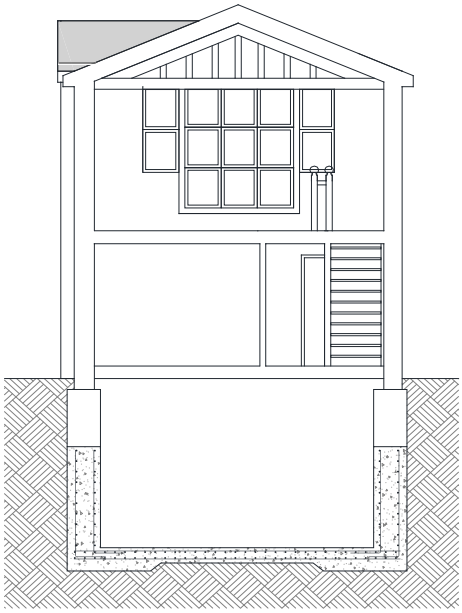
Description of Proposals / Structural Summary / Scope of Works

This Method Statement has been produced to accompany the Planning Application for Coach House, 1R Elms Road, London SW4 9ET. The existing building is late 19th Century and consists of a 2-storey detached building with private enclosed garden to the rear. The building sits on North West of Elms Road leading to A24 being the closest main Road. Elms Road is a level road. The property sits on the border line of the public footpath to Elms Road.

The existing building comprises of a traditional built cavity wall construction with facing bricks and internal timber suspended first floor and ground bearing concrete slab at ground floor. We have contacted Lambeth's Building Control Department to seek previous design drawing showing the nature of existing foundation, but nothing could be found in the archive. We will therefore assume, bearing in mind the age of the building, that the existing building is supported on conventional concrete trip foundations.



Sketch showing assumed existing foundation.



Sketch showing proposed underpinning and slab to the new basement under existing building.

The current use of the building is residential over ground and 1st floor under a shallow pitch roof.

There is no change of use proposed. The use of residential will continue, therefore the imposed floor loading of 1.5kN/m^2 as set out on table 1 of BS6399 will remain.

A load chase design analysis has been carried out for the purpose of this report to establish the level of the load imposed onto the existing foundations. (load chase down attached in appendix)

The uniform distributed load is 55.76kN/m. Working backwards on a 650mm – 700mm wide trench foundation the ground bearing pressure is therefore 85kN/m2, which is suitable to be achieved at approximately 1m below ground level at this part of the country.

In order to create the new basement, we have proposed a traditional underpinning design. By carrying out underpinning this will make sure the load pattern in the existing building does not change.

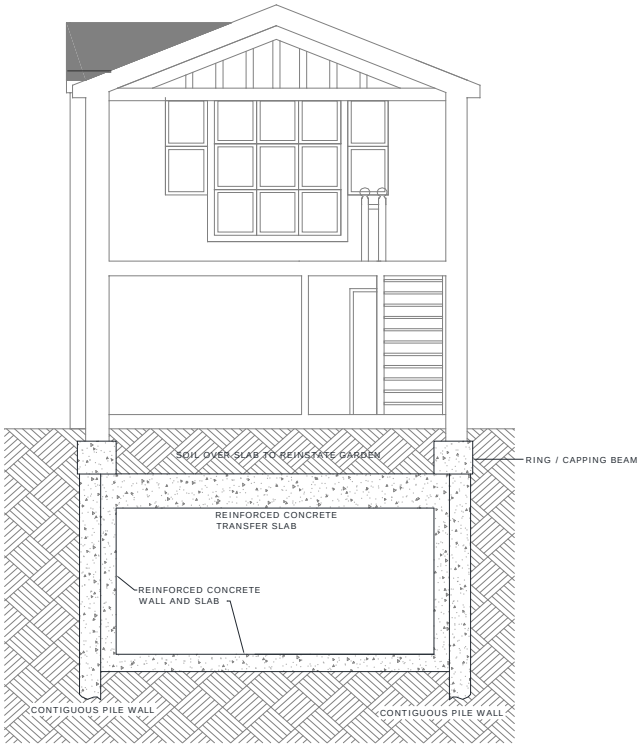
These concrete pins to be designed as retaining walls with reinforcement base and steam.

As the building is right on the boundary of public footpath and road, the reinforced concrete retaining walls will be designed to withstand lateral pressure from the soil, surcharge from fire engine, road traffic and general surcharge from public footpath as well as hydrostatic lateral pressure and uplift pressure from any ground water.

Table 1 — Minimum imposed floor loads

Type of activity/occupancy for part of the building or structure	Examples of specific use		Uniformly distributed load kN/m²	Concentrated load kN
A Domestic and residential activities (Also see category C)	All usages within self-contained [A1] single family [A1] dwelling units Communal areas (including kitchens) in blocks of flats with limited use (See note 1) (For communal areas in other blocks of flats, see C3 and below)		1.5	1.4
	Bedrooms and dormitories except those in [A1] single family dwelling units and in [A1] hotels and motels		1.5	1.8
	Bedrooms in hotels and motels Hospital wards Toilet areas		2.0	1.8
	Billiard rooms		2.0	2.7
	Communal kitchens except in flats covered by note 1		3.0	4.5
	Balconies	Single [A1] family [A1] dwelling units and communal areas in blocks of flats with limited use (See note 1)	1.5	1.4
		Guest houses, residential clubs and communal areas in blocks of flats except as covered by note 1	Same as rooms to which they give access but with a minimum of 3.0	1.5/m run concentrated at the outer edge
		Hotels and motels	Same as rooms to which they give access but with a minimum of 4.0	1.5/m run concentrated at the outer edge
B Offices and work areas not covered elsewhere	Operating theatres, X-ray rooms, utility rooms		2.0	4.5
	Work rooms (light industrial) without storage		2.5	1.8
	Offices for general use		2.5	2.7
	Banking halls		3.0	2.7
	Kitchens, laundries, laboratories		3.0	4.5
	Rooms with mainframe computers or similar equipment		3.5	4.5
	Machinery halls, circulation spaces therein		4.0	4.5
	Projection rooms		5.0	To be determined for specific use
	Factories, workshops and similar buildings (general industrial)		5.0	4.5
	Foundries		20.0	To be determined for specific use
	Catwalks		—	1.0 at 1 m centres
	Balconies		Same as rooms to which they give access but with a minimum of 4.0	1.5/m run concentrated at the outer edge
	Fly galleries		4.5 kN/m run distributed uniformly over width	—
	Ladders		—	1.5 rung load

Extract if Table 1 from BS6399-1



Sketch showing proposed basement to rear garden area.

The proposal also involves the basement to be extended onto the rear garden area with lightwell. The basement area in the garden is approximately 650mm lower. This is to facilitate a transfer slab over to be able to reinstate the garden.

The construction for the basement in the garden area requires installation of contiguous pile walls to act as temporary and permanent retaining walls to prevent collapse of the road and public footpath.

The contiguous pile wall will be designed as cantilever in temporary stage to allow for excavation without the need of installing any props at ground level. Once the excavation is completed and the reinforced slabs at basement and ground floor together with reinforced walls have been constructed the contiguous pile wall will have permanent support at top and bottom.

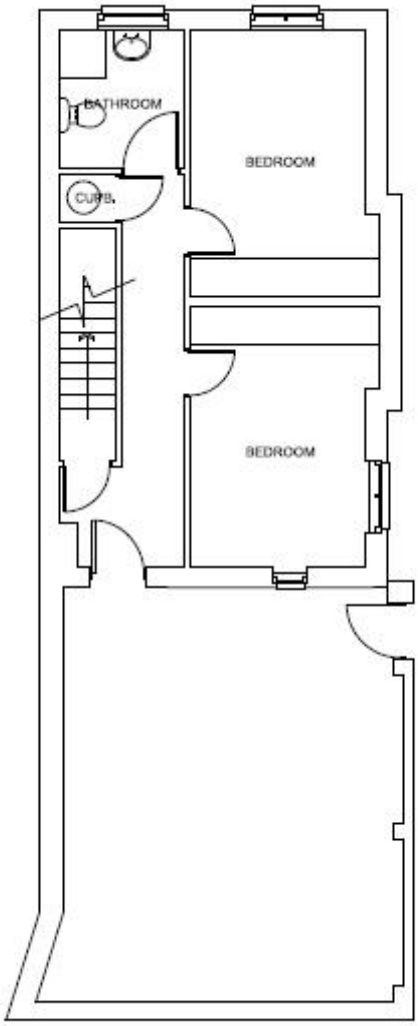
The proposal will not affect the existing ground floor as the works can be carried out from the rear existing garden. All excavated material will be taken out to the rear garden area to make sure no disturbances are made to the Elms Road pedestrians.

Method of construction for basement in the garden area is summarised as:

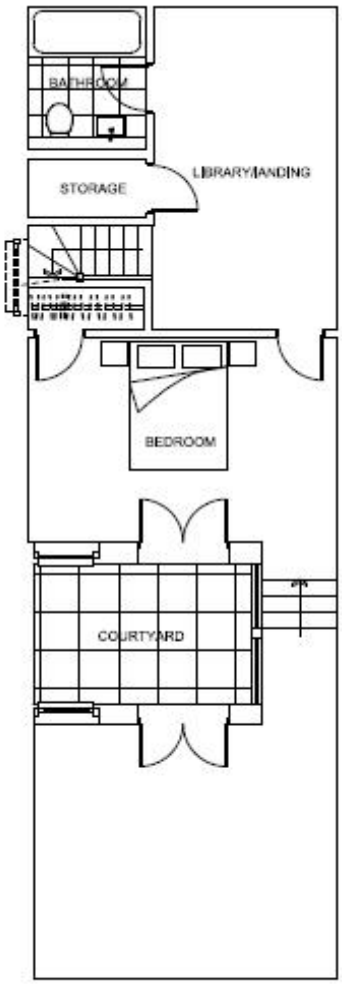
1. Remove existing garden wall.
2. Installation of 300mm diameter contiguous (CFA) concrete piles with reinforcement.
3. Excavate and expose top of the piles to facilitate construction of a refaced ring / capping beam.
4. Excavated to formation level.
5. Place down well compacted hardcore and construct basement slab and any below ground services / drainage / pumps.
6. Construction of the perimeter reinforced concrete walls against the contiguous piles.
7. Construction of lowered ground floor transfer slab.

Method of construction for underpinning under existing building is summarised as:

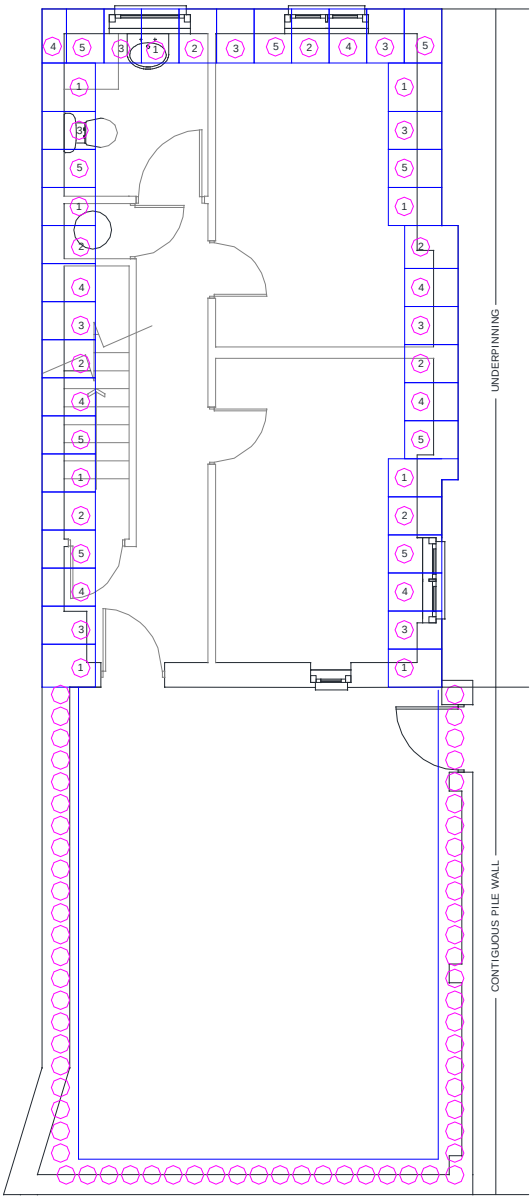
1. Excavate in 1.0m. wide sections to formation level in a sequence of operations such as hit and miss.
2. Provide necessary propping and a steel back shutter to maintain support of the adjoining earth and structure.
3. Fix reinforcement bars and continuity bars for base and stem for this 1.0m. section and mass concrete C35 DS1 Concrete the underpinning to within 75mm of the underside of existing foundation.
4. After 24hrs curing, dry pack between the new concrete and the existing foundation with 1 : 2 sharp sand and cement, well rammed in to place without any voids.
5. Keep maintaining propping as works proceed and repeat the process allowing for 48hrs curing between adjacent underpinnings.
6. Allow for inspection of every underpin by Building Inspector and periodic inspections by Structural Engineer.
7. Install new drainage runs are prescribed.
8. After the completion of the pins, prepare reinforcement for the basement slab and pour the new 200mm thick R.C. slab.



EXISTING GROUND FLOOR



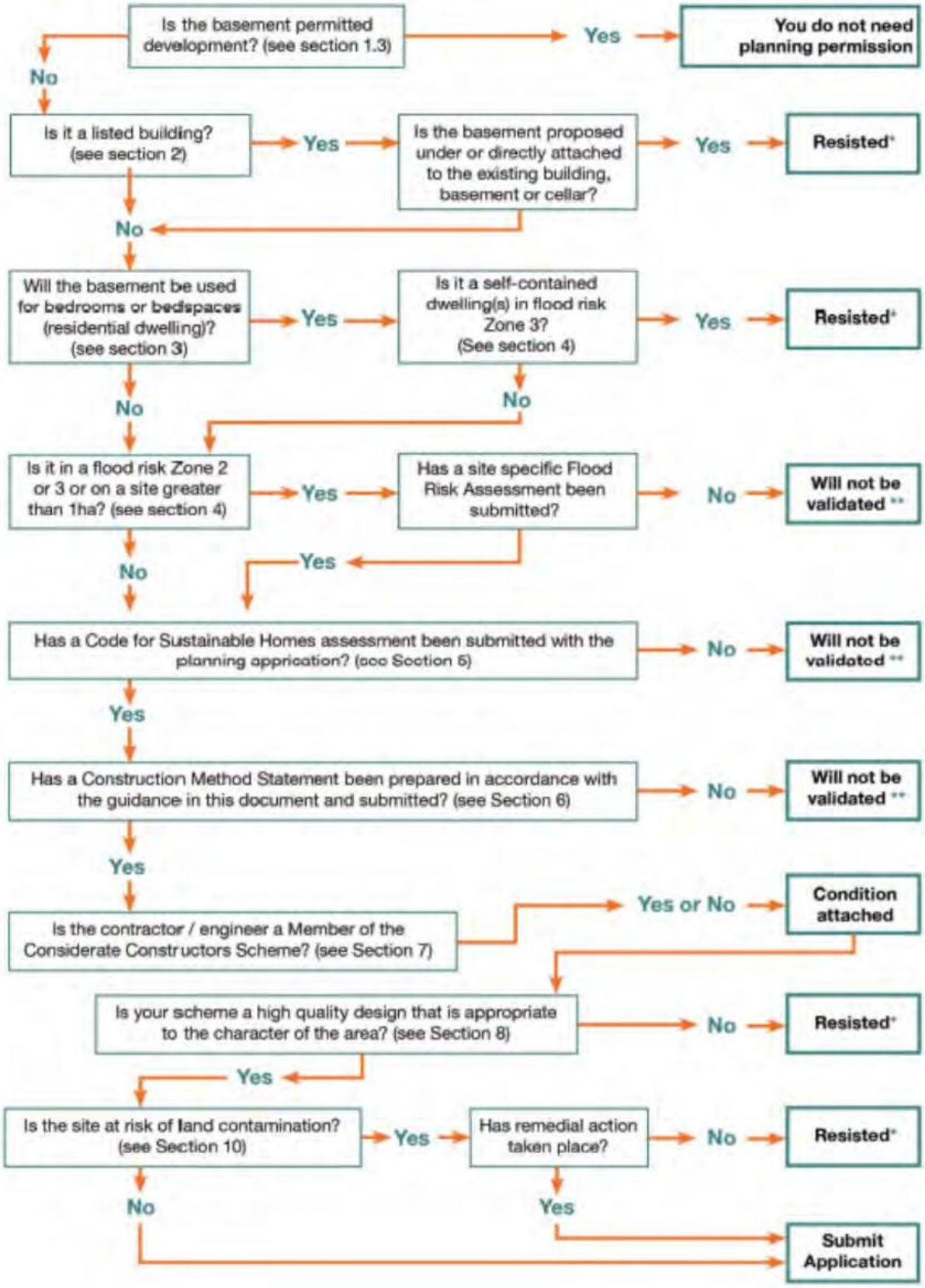
PROPOSED BASEMENT



Plan showing extend of underpinning and contiguous pile wall. More details to be provide at design and construction stage.

Structural Defects to Existing Building

No significant structural defects noted. No sign of movement or subsidence.



HIGHWAYS, RAIL, UTILITIES and UNDERGROUND

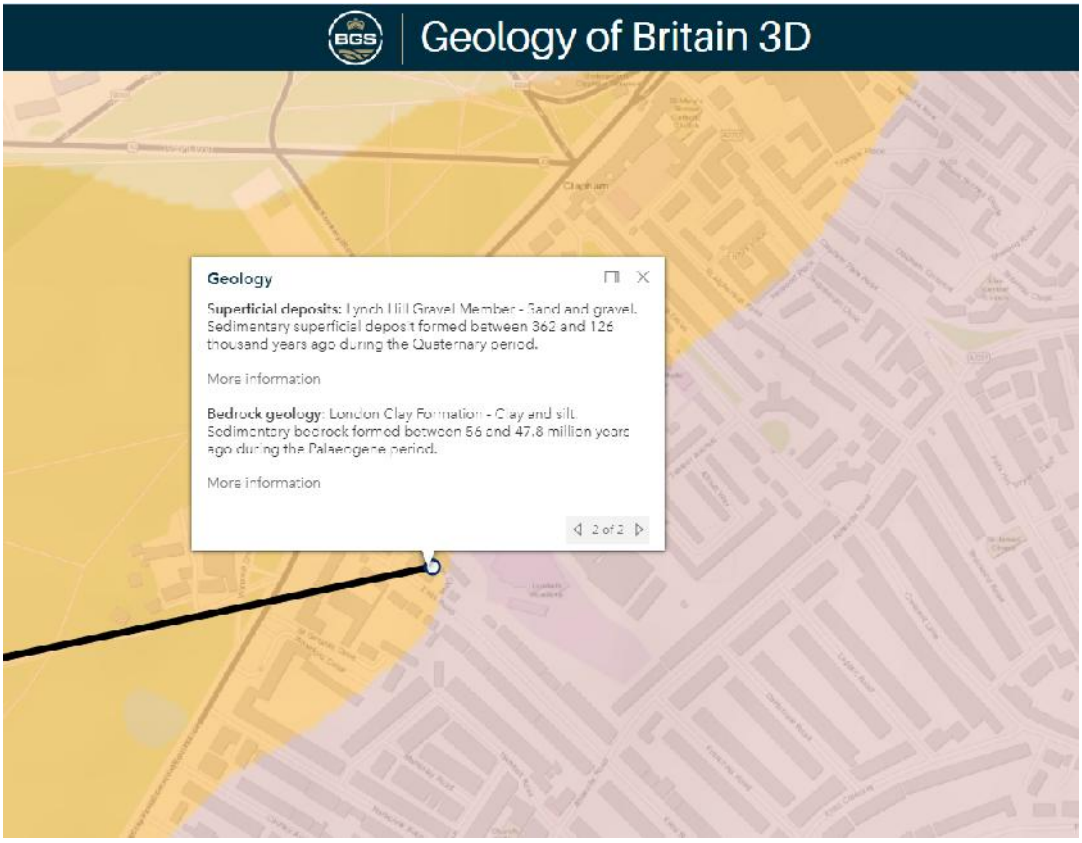
The site is within 5m of a highway or pedestrian footway. Highways loading allow:
20kN/m2 if within 45° of road
100kN point loads if under road or within 1.5m
5kN/m2 if within 45° of Pavement
Garden Surcharge 2.5kN/m2
Surcharge for adjacent property 1.5kN/m2 + 4kN/m2 for concrete ground bearing slab.

The site is NOT over (or within the exclusion zone) of any tunnels, e.g. railway lines. For further information please refer to S.I. Report and Utilities Search.

There are NO trees near to or adjacent to the site.

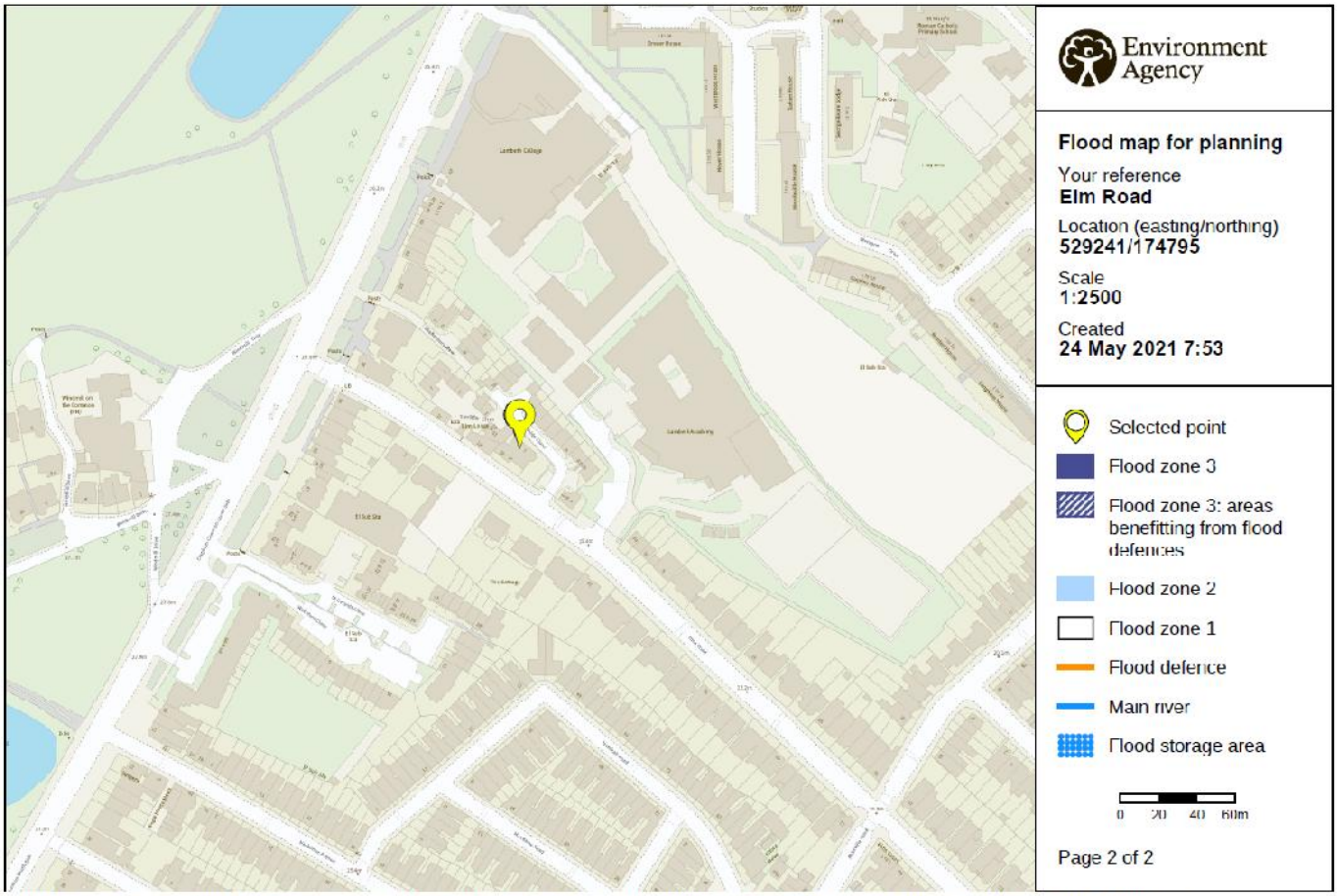
Special precautions for foundations near to trees is therefore NOT required.

SUB SOIL CONDITIONS



The British Geological Survey indicates that the Bedrock Geology are London CLAY Formation – Clay and Silt. Sedimentary Bedrock formed approximately 56 to 47.8 million years ago in the Palaeogene Period.

Flood Map shows the property is in Flood Zone 1.



FLOOD RISK

A Flood Risk Location Map is attached to this report which shows the site with the yellow marker indicating the subject property It is therefore NOT considered that ground water flooding or water in the excavations and during construction will be a hazard.

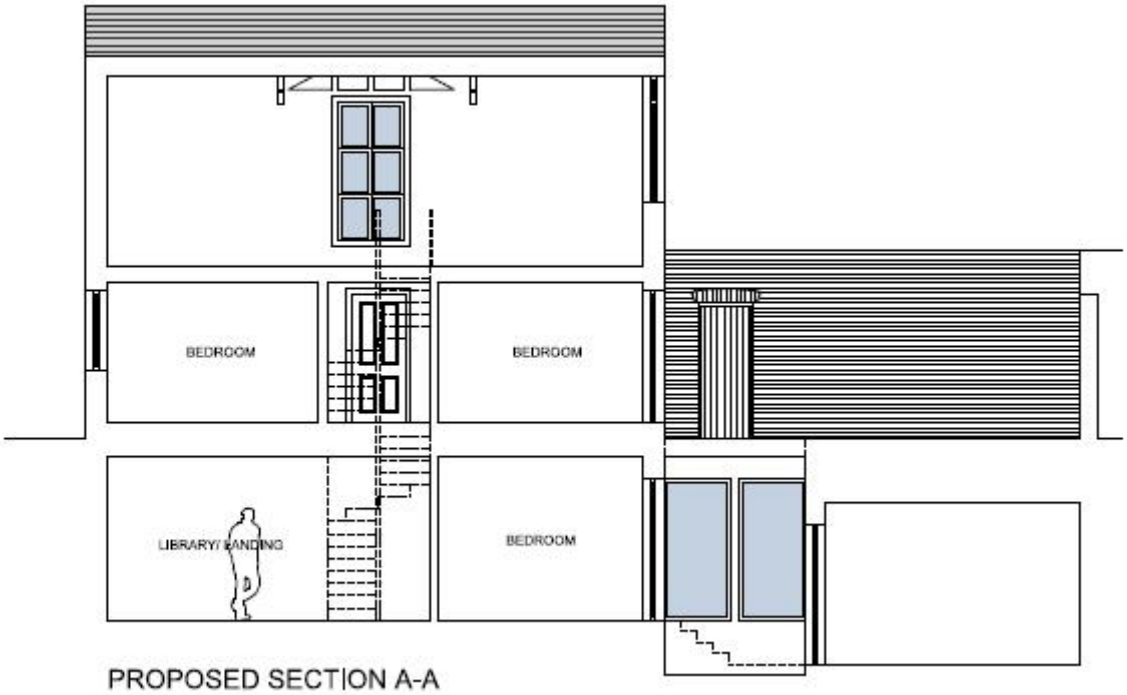
A separate 'Flood Risk Assessment' can be provided if required.
As part of the proposed site drainage, the surface water flows (e.g. volume of rainfall and peak run-off) will NOT be materially changed from the existing route.

The proposed basement development will NOT result in a change to the hard surfaced/paved external areas.

PROPOSED WEST ELEVATION

PROPOSED EAST ELEVATION

PROPOSED SOUTH ELEVATION
(STREET)



PROPOSED SECTION A-A

PROPOSED SECTION B-B

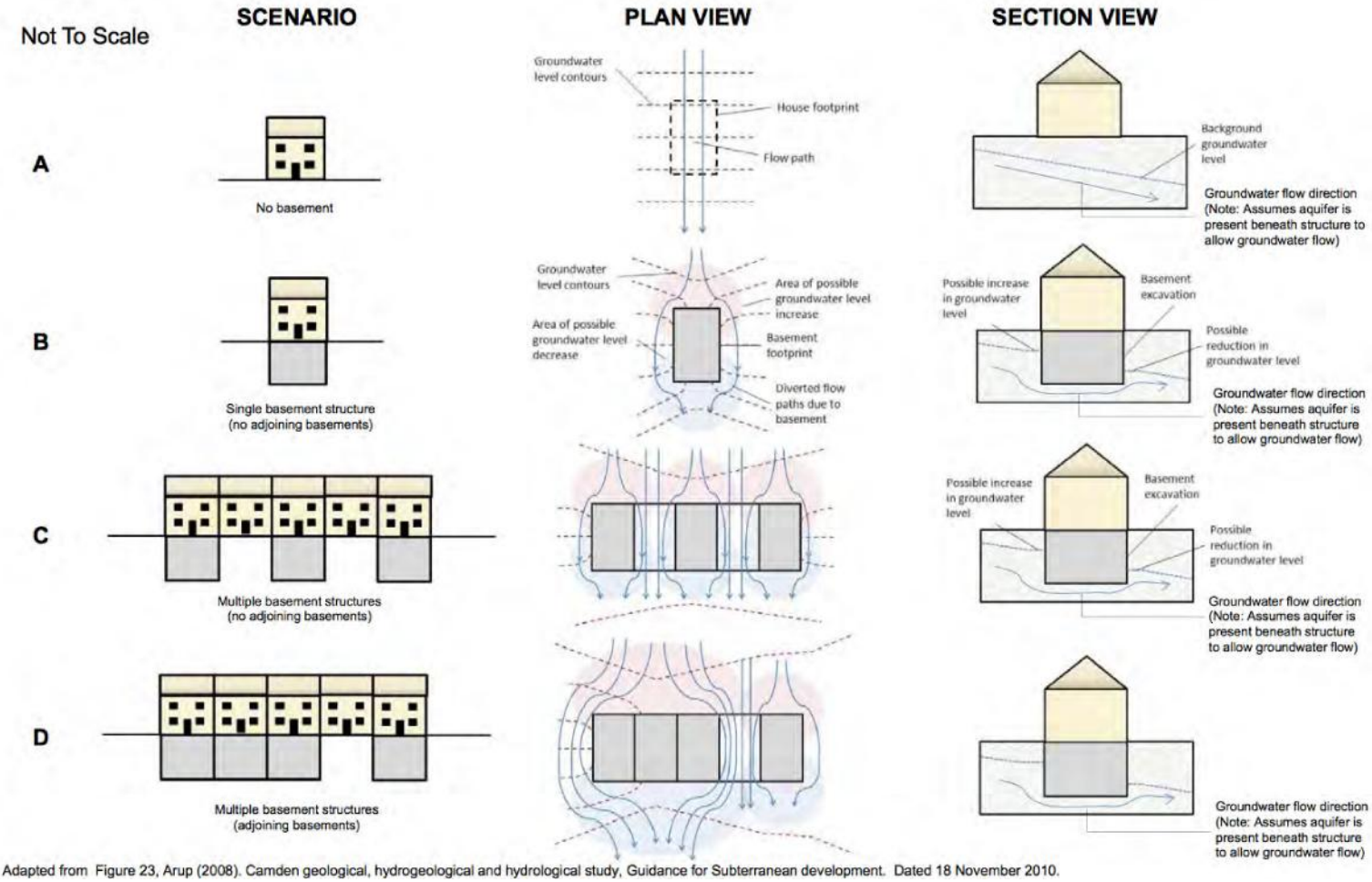
BLANK

The proposed basement will NOT result in changes to the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses.

The proposed basement will NOT result in changes to the quality of surface water being received by adjacent properties or downstream watercourses.

The proposed development will enter the current drainage system.

As Clays soils are encountered at depth, then a 150mm layer of compacted type 1 should be provided to prevent damming.



Adapted from Figure 23, Arup (2008). Camden geological, hydrogeological and hydrological study, Guidance for Subterranean development. Dated 18 November 2010.

Extract from Figure 23, Arup (2008). Camden geological, hydrogeological and hydrological study, Guidance for Subterranean development. Dated 18 November 2010.

Ground Water Design

The groundwater has been assumed to be at 2/3rd full height of the retaining walls in accordance with BS 8102 which have been designed for localised failure for burst mains and the like.

BASEMENT / FOUNDATION DESIGN

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Loadings

Intended use as mixture of residential and office building.

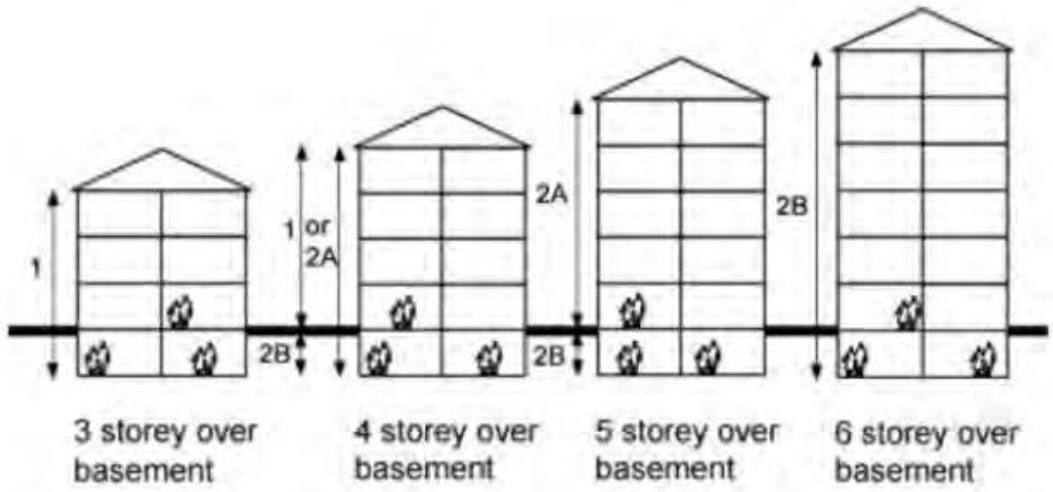
Loading Requirements for Residential use:
UDL = 1.5Kn/m² Concentrated Load = 1.4Kn Exposure / Wind = 0.6Kn/m²

Loading Requirements for ROOF without access use:
UDL = 0.75Kn/m² Concentrated Load = 2.7Kn Exposure / Wind = 0.6Kn/m²

No reduction for live load reduction has been assumed.

Progressive Collapse

Proposed number of storey is 2 (Basement, Ground and First) EN 1991-1-7:1996 Table A1



The application site falls under Use Class 1 of Table 11 of Approved Document 2004.

Lateral Stability

The existing structure above ground has not been proposed to be changed. The stability of the building is achieved via the external load bearing wall being held together via the floor and roof structure acting as diaphragm.

Construction Drawings

A full set of design and detailed construction drawings will be prepared with method statement prior to construction.

Drainage & Damp Proofing

Drainage and damp proofing is by specialist sub-contractor under warrantee.
This will be by a Newton or Delta membrane system with Titan or Bulldog sump pumps, back up pumps, alarm and telemetry warning systems.

Temporary Works

The contiguous pile walls will be designed as cantilever in temporary stage which means there is no requirement for any shoring and propping. These contiguous pile walls will be proposed horizontally by the reinforced ground and basement concrete slab.

The underpinning steam and base structure will be designed and detailed as cantilever walls.

Foundation Design

The Foundations and Basement design will be carried out by Engineering Force (UK) Ltd., Structural Engineers. The design will be will be in accordance with the following documents and approved by the London Borough of Lambeth Transportation and Highways Department.

- BS 8110 Part 1 1997 – Structural Use of Concrete
- BS 8002 2015 – COP for Earth Retaining Structures
- BS 8102 1990 - Protection of Structures against water from the ground
- General Requirements for the Design and Approval of Structures Supporting the Public Highway.

Prior to construction further investigations will be carried out to ensure the exposed ground conditions extend across the site and if any variations are found the design will be modified to take account of this.

POTENTIAL IMPACT ON ADJOINING OWNER'S PROPERTIES

The application site is detached and there are no immediate close by properties that could be directly affected.

The proposed method of construction will not affect the neighbouring structure as support is maintained at all times. The Underpinning cast under the existing ground floor slab shall be tied to the existing frame. There are no Party Wall conditions to consider.

The new basement foundations are expected to have a relatively limited effect on the hydrological flows and hydrogeology below this site and the adjacent properties.

In conclusion, the geology at the depth of the proposed foundations will be capable of supporting the existing imposed loads and should have NO effect on the neighbouring properties.

Dust and noise impacts to neighbours will be monitored throughout the building process ensuring that the property is hoarded at the front. All operations will be strictly in accordance with the Council's requirements of 8.00am to 6.00pm weekdays. No Saturday or Sundays or Bank holidays working will be allowed. All mechanical tools will be muffled and plant fitted with silencers and the use of hand tools are encouraged.

Monitoring and Predicted Category of Damage

In order to safeguard the existing structures during underpinning and new basement construction movement monitoring is to be undertaken. Surveying studs are to be attached to the existing structures at ground and first floor levels at front, side and rear. The surveying points on the existing structures are to be set up using a Total Station reference point prior to the commencement of works and to be read weekly and reported against the following control values.

The Limits on ground and existing structures movement during underpinning and throughout the construction works shall be:

Movement of survey points must not exceed:
Settlement: Action values: 5mm (stop work)
Trigger values: 65% of action values (submit proposals for ensuring action values are not exceeded)

Lateral displacement: Action values: 6mm (stop work)
Trigger values: 65% of action values (submit proposals for ensuring action values are not exceeded)

Movement approaching critical values:
Trigger: Submit proposals for ensuring action values are not exceeded
Action: Stop work
The reporting format will be in the form of a table as attached.

Extract from The Institution of Structural Engineers "Subsidence of Low-Rise Buildings"

Classification of visible damage to walls with reference to ease of repair

Category of Damage	Approximate crack width (mm)	Description of typical damage Ease of repair in italic type
0	Up to 0.1*	Hairline cracks of less than about 0.1mm width are classed as negligible
1	Up to 1*	Fine cracks which can easily be treated during normal decoration. Perhaps isolated slight fracturing in building. Cracks rarely visible in external brickwork.
2	Up to 5*	Cracks easily filled. Re-decoration probably required. Recurrent cracks can be masked by suitable linings. Cracks not necessarily visible externally, some external repointing may be required to ensure weathertightness. Doors and windows may stick slightly.
3	5 to 15 (or a number of cracks up to 3)	The cracks require some opening up and can be patched by a mason. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Weathertightness often impaired.
4	15 to 25* but also depends on number of cracks	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distorted, floors sloping noticeably (1). Walls leaning (1) or bulging noticeably some loss of bearing in beams. Service pipes disrupted.
5	Usually greater than 25* but depends on number of cracks	This requires a major repair job involving partial or complete re-building. Beams lose bearing, walls lean badly and require shoring. Windows broken with distortion. Danger of instability.

Predicted Category of Damage

The predicted category of damage is likely to be within BRE Category Slight, with possible localised crack widths 2mm to 5mm Classification Aesthetic.

Potential Impact on Existing and Surrounding Utilities and Infrastructure

All services, electrical mains, gas and water are to be maintained during construction. A survey will be undertaken before construction starts on site at which time the routes of the various services will be determined and mapped out. A temporary electrical power board and water point will be established. Any necessary diversions will be agreed between the contractor and the design team and will be by prior agreement with the Utility Authority concerned.

Potential Impact on Drainage, Sewage, Surface and Ground Water.

All existing drainage and sewerage connections will be maintained throughout the construction process. By design and method of working, there will be no impact on these systems. Albeit the property is being extended by the use of the extension area at the rear, the household occupancy will be unchanged and therefore there should be no significant increase on the existing drainage and sewerage systems. Surface water run off will be similar to as before and the trial results indicate that the basement, being above the water table, there should not be any impact on the underground water flows and levels.

The proposed works does not affect the existing drainage system and therefore does not required to be diverted in temporary condition. In its final condition the existing and new drainage will be taken below the ground slab level and run at a gradient of 1 : 40 for a 110mm diameter underground pipe to the new chamber.

The property will also be lined with a 'Delta / Newton Membrane' proprietary waterproofing system and floor membrane.

A sustainable, environmentally friendly and responsible approach will be taken in the design of the surface water and cavity drainage systems for the development, which will also be in accordance with the SuDS and Water Framework Directive.

METHOD STATEMENT

Sequence of Works

1. Identify and mark existing services. Provide temporary electrical power and water. Access will be from the rear of the property, with excavations progressing towards the front. A hoarding will be erected at the front of the property for health and safety measures and dust control.

2. The existing wall to the rear will be removed to allow access in to the existing garden area.

3. Excavation and spoil removal will all be done by hand, loading arising in to bags and then removed from site.

4. The new basement under existing house will be under pinned in sequence shown on the structural engineers drawing.

5. The new basement in the rear garden will be formed using contiguous pile walls with reinforced concrete slab at ground and basement slab.

6. The new concrete foundations will be constructed, where specified on the structural drawings.

7. The underpinning will be carried out in a sequence of underpinning operations in maximum 1000mm widths, subject to inspection of the existing foundations and ground conditions. Using these underpinning widths safeguards the existing foundations from damage due to the local arching effects of the mass brickwork and also provides a safe working environment for the operative and is a tried and tested method of construction. When all the underpinning to form the new basement have been completed, bulk excavation to the floor slab will be carried out.

8. After the new basement slab has cured, a cavity drainage system, such as Newton or Delta will be laid to the slab and walls.

9. A layer of insulation will be placed on top of the drained cavity layer on the basement slab and in front of the drained cavity layer on the side walls.

10. Finally a layer of screed will be laid to form the finished basement floor.

BASEMENTS PLANNING POLICY AND SUPPLEMENTARY PLANNING GUIDE October 2017

The Lambeth Council's policy document will be adhered to in all respects. We recognise the nuisance of such building operations on neighbours and will do everything necessary to minimise this impact. In this respect and in accordance with Policy, we would state :

1. The development does not comprise more than one storey.

2. The development does not add further basement floors where there is an extant or implemented planning permission for a basement or one built through the exercise of permitted development rights.

3. The development does not cause loss, damage or long term threat to trees of townscape or amenity value.

4. The development will comply with the tests in national policy as they relate to the assessment of harm to the significance of heritage assets.

5. The development does not involve excavation underneath the listed building.

6. The development seeks to maintain and take opportunities to improve the character or appearance of the building, garden or wider area, with external elements such as light wells, roof lights, plant and means of escape being sensitively designed and discreetly sited; in the case of light wells and roof lights, also limit the impact of light pollution.

7. The development seeks include a sustainable drainage system (SuDS), to be retained thereafter, to include a sump chambers specifically utilised for the cavity drainage system.

8. The development seeks to ensure that traffic and construction activity do not cause unacceptable harm to pedestrian, cycle, vehicular and road safety; adversely affect bus or other transport operations (e.g. cycle hire), significantly increase traffic congestion, nor place unreasonable inconvenience on the day to day life of those living, working and visiting nearby.

10. The development will ensure that construction impacts such as noise, vibration and dust are kept to acceptable levels for the duration of the works.

14. The development has been designed to safeguard the structural stability of the existing building, nearby buildings and other infrastructure including London Underground tunnels and the highway.

15. The development will be protected from sewer flooding through the installation of a suitable anti-flood device.

CONTROL OF NOISE, VIBRATION AND DUST

Site Evaluation Guidelines

Low risk sites

- Development of up to 1,000 square metres of land and;
- Development of one property and up to a maximum of ten and;
- Potential for emissions and dust to have an infrequent impact on sensitive receptors

4.2 Mitigation Measures for Low Risk sites

These sites will be small developments on land with an area of up to 1,000 square metres with the potential for an infrequent impact on sensitive receptors. The following Best Practice Measures should be used:

Low Risk

Site Planning

- Erect effective barriers around dusty activities or the site boundary (**Section 6.1**).
- No bonfires (**Section 6.11**).
- Plan site layout–machinery and dust causing activities should be located away from sensitive receptors (**Sections 6.1 and 7.3**).

Construction traffic

- All vehicles should switch off engines – no idling vehicles (**Section 7.3**).
- Wash or clean all vehicles effectively before leaving the site if close to sensitive receptors (**Section 6.3**).
- All loads entering and leaving site to be covered (**Section 6.2.3**).
- No site runoff of water or mud.
- All non road mobile machinery (NRMM) to use ultra low sulphur tax-exempt diesel (ULSD) where available (**Section 7.2**).
- On-road vehicles to comply with the requirements of a possible future Low Emission Zone (LEZ) as a minimum (**Section 7.1**).

Demolition Works

- Use water as dust suppressant (**Sections 6.10 and 6.13**).
- Cutting equipment to use water as suppressant or suitable local exhaust ventilation systems (**Section 6.8**).
- Securely cover skips and minimise drop heights (**Section 6.9**).

Site Activities

- Minimise dust generating activities (**Sections 6.8, 6.9, 6.10 and 6.15**).
- Use water as dust suppressant where applicable (**Section 6.6**).
- Keep stockpiles for the shortest possible time (**Section 6.7**).

From the Mayor's Best Practice Guidance, this site is 'Low Risk'

Noise and vibration

1.Noise will be kept within the legal limits as defined in the Environmental Protection Act 1990.

2.Noisy operations will only take place during the following site working hours:

- Monday to Friday - 8am to 6pm

3. All work will be carried out in accordance with BS 5228-1:2009 and BS 5228-2:2009. All works will employ Best Practicable Means as defined by Section 72 of the Control of Pollution Act 1972 to minimise the effects of noise and vibration. All means of managing and reducing noise and vibration which can be practicably applied at reasonable cost will be implemented.

4. The following measures will be taken:

a. Consultation / communication with neighbours / affected others prior to the start of the works.

b. Use only of modern, quiet and well maintained equipment, all of which will comply with the EC Directives and UK regulations set out in BS 5228-1:2009.

c. Use of electrically powered hand tools rather than air powered tools that require a compressor unless particularly hard concrete or other ground obstructions are encountered. If used air powered tools and a compressor will be used for to the minimum extent practicable.

d. Operating the site as a closed site, that is:

i. Leaving the building facade and roof in place during the work.

ii. Having all windows and door closed during noisy operations within the building (the basement is being built only within the footprint of the existing building).

iii. Installing insulation in the windows and other openings at ground floor to reduce noise escaping the site.

iv. Closing openings in the building / hoarding with timber and lining insulation.

e. Avoidance of unnecessary noise (such as engines idling between operations or excessive engine revving, no radios no shouting)

f. Use of screws and drills rather than nails for fixing the hoarding.

g. Careful handling of materials, so no dropping of materials from height into skip etc. Spoil will be deposited into the skip from approximately two metres height but this does not cause unreasonable noise.

h. Ensuring that the conveyor is well maintained with rollers in good working order and well oiled.

i. Isolating the neighbouring properties from vibration / breaking out work where practicable. In particular the edges of the existing concrete slab at ground floor will be broken out first (this isolating the remaining slab at ground floor) before the main part of the existing ground slab is removed.

j. Collection / delivery times will be as given in the CTMP.

k. Collection / delivery vehicles will not loiter / wait in the area before the allowed times.

5. Vibration will be kept well below the levels that may damage buildings, given in BS 7385-2:1993.

Dust

1. The site has been assessed using the Mayor of London's Best Practice Guidance on The control of dust and emissions from construction and demolition, July 2014, section 4 as a Low risk site as it is:

- Under 2,500 square metres of land.
- Development is only one property
- Has potential for emissions and dust to have an infrequent impact on sensitive receptors. This is based on the site being within the enclosure of the existing building.
- Take in to account the impact of air quality and dust on occupational exposure standards to minimise worker exposure and breaches or air quality objectives that may occur outside the site boundary, such as by visual assessment.
- Keep an accurate log of any complaints from the public and take measures to address these complaints.

2. In accordance with the guidance the following actions will be taken:

a. Barriers will be erected / maintained around dusty activities and the site boundary.

b. Hoardings, fences, barriers and scaffolding will be regularly cleaned with wet cloths. Used water will be collected to maximise the use of recycled and non-potable water.

c. Regular checks will be performed within 100m. Of the site to check for soiling due to dust and cleaning shall be carried out where necessary.

d. Visitors and Staff shall be encouraged to change clothes and shoes before going off site otherwise cleaning facilities, boot cleaners and the like will be in place to prevent dust being transported off site.

e. The site will be planned so that dusty activities are kept within the protected site boundaries where practicable.

f. Delivery / collection vehicles will switch off engines where possible.

g. The onsite mini-digger will be thoroughly cleaned before being moved from site.

h. All materials will be supplied covered including all cement and ballast that will be supplied in closed bags and covered in shrink wrapped plastic sheeting. No materials will be supplied in loose form.

i. No site run off of water or mud until the water has been left to settle and is free from particles (as explained in the CTMP).

j. During demolition:

i. Special care to ensure that the site is closed.

ii. Water to be used as a dust suppressant if appropriate / needed.

iii. Cutting equipment to use water as a suppressant or to have a local extraction ventilation system.

k. Skips are to be discouraged, but any skip will be fully covered during normal operations.

l. The skip will be damped down before the grab removes the spoil if appropriate / needed.

If measures to control dust are unsuccessful work will stop and alternative methods will be devised.

WALL LOAD CHASE DOWN (BS6399:PART1:1996)

TEDDS calculation version 1.1.00

Roof Loading - pitched tiled roof

Roof slope θ = **25.0** °

Dead load

Tiles $Roof_{D1}$ = **0.45** kN/m^2

Battens $Roof_{D2}$ = **0.05** kN/m^2

Felt $Roof_{D3}$ = **0.05** kN/m^2

Rafters $Roof_{D4}$ = **0.10** kN/m^2

Dead load on slope $Roof_{DL\_sroof}$ = sum($Roof_{D1}$,$Roof_{D2}$,$Roof_{D3}$,$Roof_{D4}$) = **0.65** kN/m^2

Ceiling joists $Roof_{D5}$ = **0.05** kN/m^2

Insulation $Roof_{D6}$ = **0.05** kN/m^2

Plasterboard and skim $Roof_{D7}$ = **0.14** kN/m^2

Services $Roof_{D8}$ = **0.05** kN/m^2

Dead load on plan $Roof_{DL\_proof}$ = sum($Roof_{D5}$,$Roof_{D6}$,$Roof_{D7}$,$Roof_{D8}$) = **0.29** kN/m^2

Total dead load on plan $Roof_{DL}$ = $Roof_{DL\_sroof}$ / cos(θ) + $Roof_{DL\_proof}$= **1.01** kN/m^2

Imposed load

Roof imposed load $Roof_{IL}$ = **0.75** kN/m^2 on plan

Total roof loads

Unfactored foundation design loads w_{roof_u} = $Roof_{DL}$ + $Roof_{IL}$ = **1.76** kN/m^2

Factored design loads w_{roof_f} = 1.4 × $Roof_{DL}$ + 1.6 × $Roof_{IL}$ = **2.61** kN/m^2

Timber floor Loading - 1st floor

Dead load

Boards $Floor_{1\_D1}$ = **0.50** kN/m^2

Joists $Floor_{1\_D2}$ = **0.15** kN/m^2

Ceiling $Floor_{1\_D3}$ = **0.14** kN/m^2

Total dead load $Floor_{1\_DL}$ = sum($Floor_{1\_D1}$,$Floor_{1\_D2}$,$Floor_{1\_D3}$) = **0.79** kN/m^2

Imposed load

Imposed load $Floor_{1\_I1}$ = **1.50** kN/m^2

Partitions $Floor_{1\_I2}$ = **1.00** kN/m^2

Total imposed load $Floor_{1\_IL}$ = sum($Floor_{1\_I1}$,$Floor_{1\_I2}$) = **2.50** kN/m^2

Total 1st floor loads

Unfactored foundation design loads w_{floor1_u} = $Floor_{1\_DL}$ + $Floor_{1\_IL}$ = **3.29** kN/m^2

Factored design loads w_{floor1_f} = 1.4 × $Floor_{1\_DL}$ + 1.6 × $Floor_{1\_IL}$ = **5.11** kN/m^2

Insitu floor Loading - ground floor

Dead load

Finishes $Floor_{grnd\_D1}$ = **1.50** kN/m^2

False floor $Floor_{grnd\_D2}$ = **0.20** kN/m^2

Insitu slab $Floor_{grnd\_D3}$ = **4.80** kN/m^2

Decking $Floor_{grnd\_D4}$ = **0.05** kN/m^2

Services $Floor_{grnd\_D5}$ = **0.15** kN/m^2

Total dead load

$Floor_{grnd\_DL}$ = sum($Floor_{grnd\_D1}$,$Floor_{grnd\_D2}$,$Floor_{grnd\_D3}$,$Floor_{grnd\_D4}$,$Floor_{grnd\_D5}$) = **6.70** kN/m^2

Imposed load

Imposed load — $Floor_{grnd\_l1}$ = **1.50** kN/m^2

Partitions — $Floor_{grnd\_l2}$ = **1.00** kN/m^2

Total imposed load — $Floor_{grnd\_lL}$ = sum($Floor_{grnd\_l1}$,$Floor_{grnd\_l2}$) = **2.50** kN/m^2

Total ground floor loads

Unfactored foundation design loads — w_{grnd_u} = $Floor_{grnd\_DL}$ + $Floor_{grnd\_lL}$ = **9.20** kN/m^2

Factored design loads — w_{grnd_f} = 1.4 × $Floor_{grnd\_DL}$ + 1.6 × $Floor_{grnd\_lL}$ = **13.38** kN/m^2

Cavity Wall Loading

Dead load

Masonry (outer leaf) — CW_{D1} = **2.25** kN/m^2

Masonry (inner leaf) — CW_{D2} = **1.00** kN/m^2

Plaster — CW_{D3} = **0.15** kN/m^2

Total dead load — CW_{DL} = sum(CW_{D1},CW_{D2},CW_{D3}) = **3.40** kN/m^2

Total cavity wall load

Unfactored foundation design loads — w_{cw_u} = CW_{DL} = **3.40** kN/m^2

Factored design loads — w_{cw_f} = 1.4 × CW_{DL} = **4.76** kN/m^2

Cavity wall design loads - 2 storey building

Roof

Span of roof - one side of wall — $Span_{cw\_roof\_1}$ = **2.69** m

Other side — $Span_{cw\_roof\_2}$ = **2.69** m

Total span on both sides of wall — $Span_{cw\_roof}$ = $Span_{cw\_roof\_1}$ + $Span_{cw\_roof\_2}$ = **5.37** m

Factored load on cavity wall from roof — $W_{cw\_roof\_f}$ = w_{roof_f} × $Span_{cw\_roof}$ / 2 = **7.0** kN/m

Unfactored load on cavity wall from roof — $W_{cw\_roof\_u}$ = w_{roof_u} × $Span_{cw\_roof}$ / 2 = **4.7** kN/m

1st floor

Height of the 1st floor — H_1 = **2.50** m

Span of 1st floor - one side of wall — $Span_{cw\_1\_1}$ = **2.69** m

Other side of wall — $Span_{cw\_1\_2}$ = **2.69** m

Total span on both sides of wall — $Span_{cw\_1}$ = $Span_{cw\_1\_1}$ + $Span_{cw\_1\_2}$ = **5.37** m

Factored load on cavity wall

Self weight from roof to 1st floor — W_{cw1_f} = w_{cw_f} × H_1 = **11.9** kN/m

Load from 1st floor — $W_{cw\_floor1\_f}$ = w_{floor1_f} × $Span_{cw\_1}$ / 2 = **13.7** kN/m

Unfactored load on cavity wall

Self weight from roof to 1st floor — W_{cw1_u} = w_{cw_u} × H_1 = **8.5** kN/m

Load from 1st floor — $W_{cw\_floor1\_u}$ = w_{floor1_u} × $Span_{cw\_1}$ / 2 = **8.8** kN/m

Ground floor

Height of the ground floor — H_{grnd} = **2.40** m

Span of ground floor (one side of wall) — $Span_{cw\_grnd\_1}$ = **2.69** m

Other side — $Span_{cw\_grnd\_2}$ = **2.69** m

Total span on both sides of wall — $Span_{cw\_grnd}$ = $Span_{cw\_grnd\_1}$ + $Span_{cw\_grnd\_2}$ = **5.37** m

Factored load on cavity wall

Self weight from 1st to ground floor — W_{cwgrnd_f} = w_{cw_f} × H_{grnd} = **11.4** kN/m

Load from ground floor — $W_{cw\_grnd\_f}$ = w_{grnd_f} × $Span_{cw\_grnd}$ / 2 = **35.9** kN/m

Unfactored load on cavity wall

Self weight from 1st to ground floor — W_{cwgrnd_u} = w_{cw_u} × H_{grnd} = **8.2** kN/m

Load from ground floor — $W_{cw\_grnd\_u}$ = w_{grnd_u} × $Span_{cw\_grnd}$ / 2 = **24.7** kN/m

Below ground floor

Height of the cavity wall below ground floor H_{below} = **0.25** m

Factored load on cavity wall

Self weight below ground floor $W_{cwbelow\_f} = w_{cw\_f} \times H_{below}$ = **1.2** kN/m

Unfactored load on cavity wall

Self weight below ground floor $W_{cwbelow\_u} = w_{cw\_u} \times H_{below}$ = **0.9** kN/m

Factored design loads for walls - conservatively use factored loads at base of wall

Factored design load for 1st floor wall $W_{cw\_1} = W_{cw1\_f} + W_{cw\_roof\_f}$ = **18.91** kN/m

Factored design load for ground floor wall $W_{cw\_grnd} = W_{cw1\_f} + W_{cwgrnd\_f} + W_{cw\_roof\_f} + W_{cw\_floor1\_f}$ = **44.04** kN/m

Total factored load on foundation of the cavity wall

$W_{cw\_f} = W_{cw1\_f} + W_{cwgrnd\_f} + W_{cwbelow\_f} + W_{cw\_roof\_f} + W_{cw\_floor1\_f} + W_{cw\_grnd\_f}$ = **81.16** kN/m

Total unfactored load on foundation of the cavity wall

$W_{cw\_u} = W_{cw1\_u} + W_{cwgrnd\_u} + W_{cwbelow\_u} + W_{cw\_roof\_u} + W_{cw\_floor1\_u} + W_{cw\_grnd\_u}$ = **55.76** kN/m

Flood map for planning

Your reference	Location (easting/northing)	Created
Elm Road	**529241/174795**	**24 May 2021 7:53**

Your selected location is in flood zone 1, an area with a low probability of flooding.

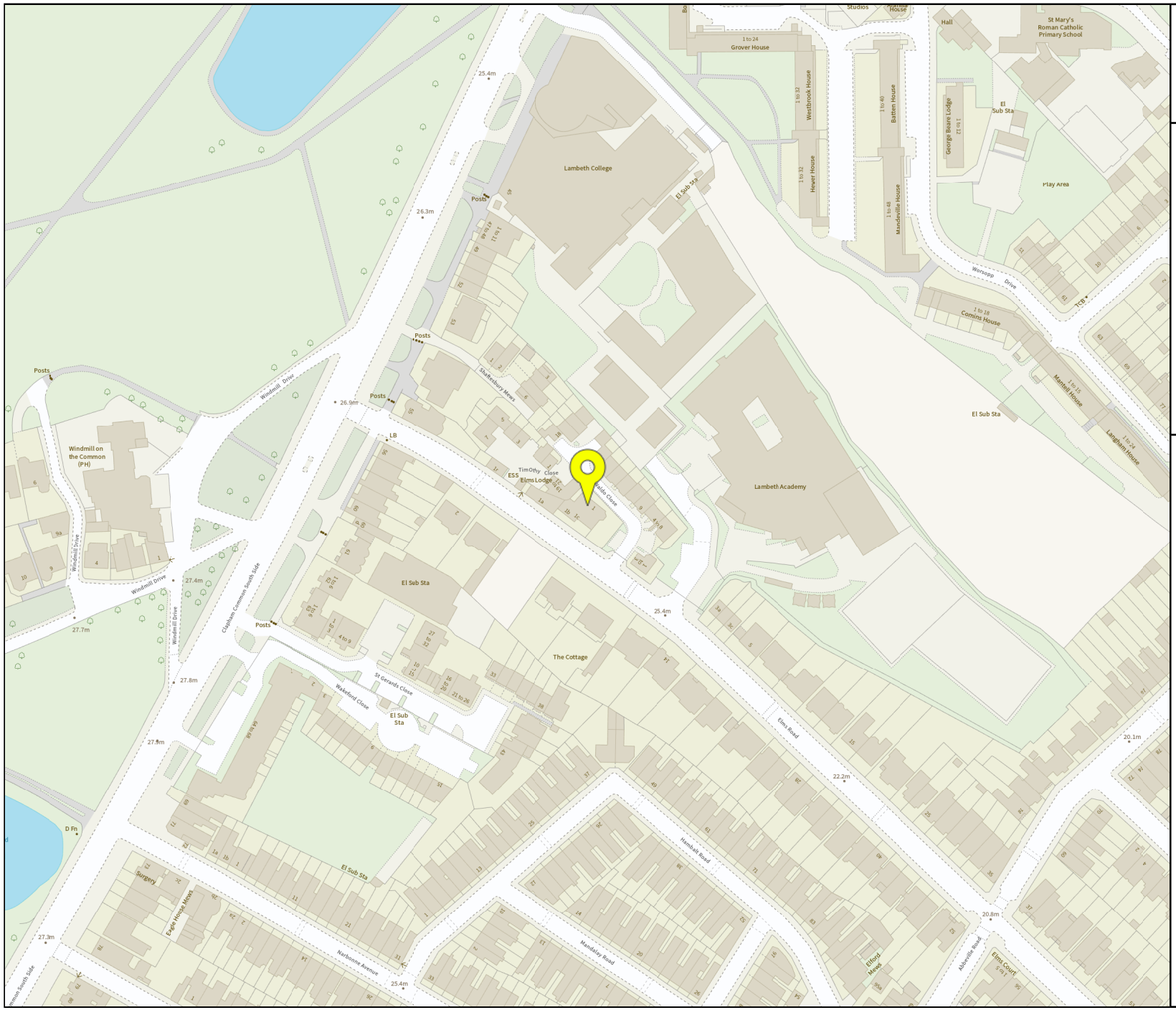
This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
Elm Road

Location (easting/northing)
529241/174795

Scale
1:2500

Created
24 May 2021 7:53

- 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

0 20 40 60m