BID Structural

Garages to the rear of Rockingham Parade, Uxbridge, UB8 2UW

Basement Impact Assessment

Total Ref: Job No. 24-012

November 2024

Property Address: Garages to the rear of Rockingham Parade, Uxbridge, UB8 2UW

Rev	Description	Issued by	Checked	Date
A	Basement Impact Assessment	JW	AC	Nov 2024

Prepared By:	Signed	Date
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Checked By:	Signed	Date
Andrew Conroy Msc BA BEng Director	AC	04/11/2024

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1. Introduction

BID Structural has been appointed by Total Planning as Consulting Structural Engineers to undertake a Basement Impact Assessment (BIA) in support of a proposed planning application for demolition of 6 substandard dilapidated garages and erection of a single storey dwelling with associated boundary treatments, hard and soft landscaping and provision of a car parking space and cycle storage at the garages to the rear of Rockingham Parade, Uxbridge, UB8 2UW.

The purpose of this Basement Impact Assessment is to demonstrate that the proposed works can be carried out safely, without posing any risks to the existing structure or neighbouring properties, or the future occupiers of the development. The Contractor holds the responsibility for determining the final method and sequence of the works. Prior to commencing the project, the Contractor is required to submit their proposed method statement to both the Architect and the Engineer for review and comment, with a minimum notice of two weeks.

2. *The Proposed Works*

The existing structures on the site comprise of 6 dilapidated vacant garages that are made with solid brick walls and have corrugated metal roofs.

Neighbouring Buildings to the East

The ground is entirely covered by concrete which is cracked in several locations with vegetation growing through and on top. As the concrete would have been required to take the weight of cars historically when in use, it is relatively thick with sub-base levels below it.

The proposed works involve removal of the existing concrete and sub-base layers which from inspection would be approximately 0.3m deeper than existing made ground level. The garages and their walls and roofs will be removed from the site completely.

The proposal will involve the creation of a lower ground level which would be situated 0.8m below the existing ground level of neighbouring properties. The external ground and outdoor amenity areas will also be lowered by 0.8m or less to provide a level garden space to the proposed dwelling.

The dwelling will be constructed with reinforced concrete 0.8m high retaining walls on the edges of the property, to ensure stability against below-ground forces. Some initial Structural Sketches are provided in Appendix A.

The new dwelling and the proposed retaining walls will not be situated within the vicinity of any existing neighbouring building as shown in the site photographs above and below.

Neighbouring buildings to the West

The new dwelling would comprise a living/dining room and two bedrooms with a hard landscaped courtyard area with water gardens for drainage of surface water run off from the sloping levels and from the green roof.

The courtyarded area will be enclosed and a new boundary fence erected near the entrance to provide a private garden space and external amenity.

Given the position of the new dwelling away from existing adjacent buildings and given the modest scope of the excavation works, subject to appropriate construction and excavation works being undertaken, the basement will not adversely impact neighbours and a high quality space for future occupiers can be delivered.

3. Desk Study

The objective of this study is to assess the potential effects of the proposed project on flooding, groundwater and structural stability, taking into consideration any possible impacts on nearby or adjacent properties.

Additionally, the study aims to identify appropriate construction methods and mitigation measures for the development, as well as establish a monitoring system to track local ground conditions, water flow, subsidence, and drainage.

Key aspects considered in the study include the site's historical background, underlying geological composition, significant topographical features, current and historical watercourses, groundwater levels, potential flooding from external sources, presence of trees, buildings in close proximity to the site, and underground infrastructure such as utilities, services.

3.1. Geology

Based on borehole data obtained from the British Geological Survey – TQ08/124), the local site composition can be inferred as follows: the top layer consists of made ground to an approximate depth of 0.6 meters. This is followed by layers of sands and gravels, bearing on a the London clay bedrock that continues down to many metres (seen in Figure 1). Considering this information, a cautious approach will be taken to determine the bearing pressure for the design of new foundations.

A series of trial pits were carried out in preparation of this statement. Although no signs of water were present, some moisture may be encountered during seasonal variations, and during periods of heavy rainfall. In the unlikely scenario that water is encountered during the proposed works, the contractor would implement localised dewatering to facilitate the excavation works.

UXBRIDGE TQ08/124 255
TQ08SE/262
APPROX NGR TQ05 84 204

Mr Page's fountain Hurdle Yard, nr: Church.

Sunk and communicated by Mr. C. Page.

Mem. G.S. vol. iii 1872, p. 528
L.M. vol. ii, 1859, p. 171.

		Thickness	Depth
Filled up [made earth ?, or gravel ?] ...		-	2
[? London Clay, 20½ 28¼ ft.]	Black clay ...	14¼	16¼
	Clay-stone ...	¾	17
	Black clay ...	5½	22½
[? Reading Beds, 55½ ft.]	Yellow clay ...	33½	56
	Sand ...	12	68
	Grey clay ...	4	72
	Blue clay ...	4	76
	Black clay ...	1	77
	Black rock [flints ?] ...	1	78
[Chalk, 39½ ft.]	Rock chalk ...	5	83
	[?] ...	23½	106½
	[?] ...	11	117½

T.D 35.81m

Figure 1

The BGS Lexicon of Named Rock Units — Result Details

Alluvium

Computer Code:	ALV	**Preferred Map Code:**	notEntered
Status Code:	Full		
Age range:	Quaternary Period (Q) — Quaternary Period (Q)		
Lithological Description:	Alluvium is a general term for clay, silt, sand and gravel. It is the unconsolidated detrital material deposited by a river, stream or other body of running water as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope. Synonym: alluvial deposits. Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.		
Definition of Lower Boundary:	*none recorded or not applicable*		
Definition of Upper Boundary:	*none recorded or not applicable*		
Thickness:	*none recorded or not applicable*		
Geographical Limits:	*none recorded or not applicable*		
Parent Unit:	Fluvial deposits (FLUV)		
Previous Name(s):	Freshwater alluvium [Obsolete Name and Code: Use ALV] (-4655)		
Alternative Name(s):	*none recorded or not applicable*		

Figure 2

Lambeth Group

Computer Code:	LMBE	**Preferred Map Code:**	LMB
Status Code:	Full		
Age range:	Thanetian Age (GT) — Ypresian Age (GY)		
Lithological Description:	Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate. The Lambeth Group was deposited in fluvial, estuarine, lagoonal or proximal marine environments. Late Paleocene to Early Eocene (late Thanetian to early Ypresian).		
Definition of Lower Boundary:	The base of the Lambeth Group is taken at the base of the Upnor Formation. In the Hampshire Basin and the west of the London Basin, the Lambeth Group overlies the Chalk Group. In the centre and east of the London Basin it overlies the Thanet Formation, and in Suffolk the Ormesby Clay Member of the Lista Formation.		
Definition of Upper Boundary:	The top of the Lambeth Group is marked by the eroded or interburrowed surface at the base of the overlying Thames Group. The uppermost part of the Lambeth Group can be the Reading Formation or the Woolwich Formation, depending on the local succession, or the Upnor Formation, depending on the depth of pre-Thames Group erosion. The Lambeth Group is overlain by sands, silts, clays or gravel beds of the Harwich Formation, depending on the local sequences, or gravelly sandy clays at the base of the London Clay Formation.		
Thickness:	Up to 39 m in the west of the London Basin.		
Geographical Limits:	The Lambeth Group extends throughout the London Basin, extending north into Suffolk, but apparently absent in Norfolk (Knox et al., 1990). In parts of east London, Kent and Essex, the Lambeth Group was extensively eroded prior to deposition of the Thames Group (Hester, 1965). The Lambeth Group also occurs within the Hampshire Basin, where it mostly comprises only the Reading Formation, although there is a thin representation of the Upnor Formation, and the Woolwich Formation forms small outliers in the most easterly parts of the onshore outcrop.		
Parent Unit:	Not Applicable (-)		
Previous Name(s):	Woolwich and Reading Series [Obsolete Name and Code: Use WRB, LMBE] (-3142) Woolwich and Reading Beds [Obsolete Name and Code: Use WRB, LMBE, RB] (-2293)		
Alternative Name(s):	*none recorded or not applicable*		

Figure 3

3.2. Topography

According to the topographic map.com, the site's elevation is recorded as 34 meters above sea level. Figure 4 indicates that the area, including the site and its surroundings, is relatively flat. This information assures us that the design of the new basement will not be affected by any significant variations in the terrain.

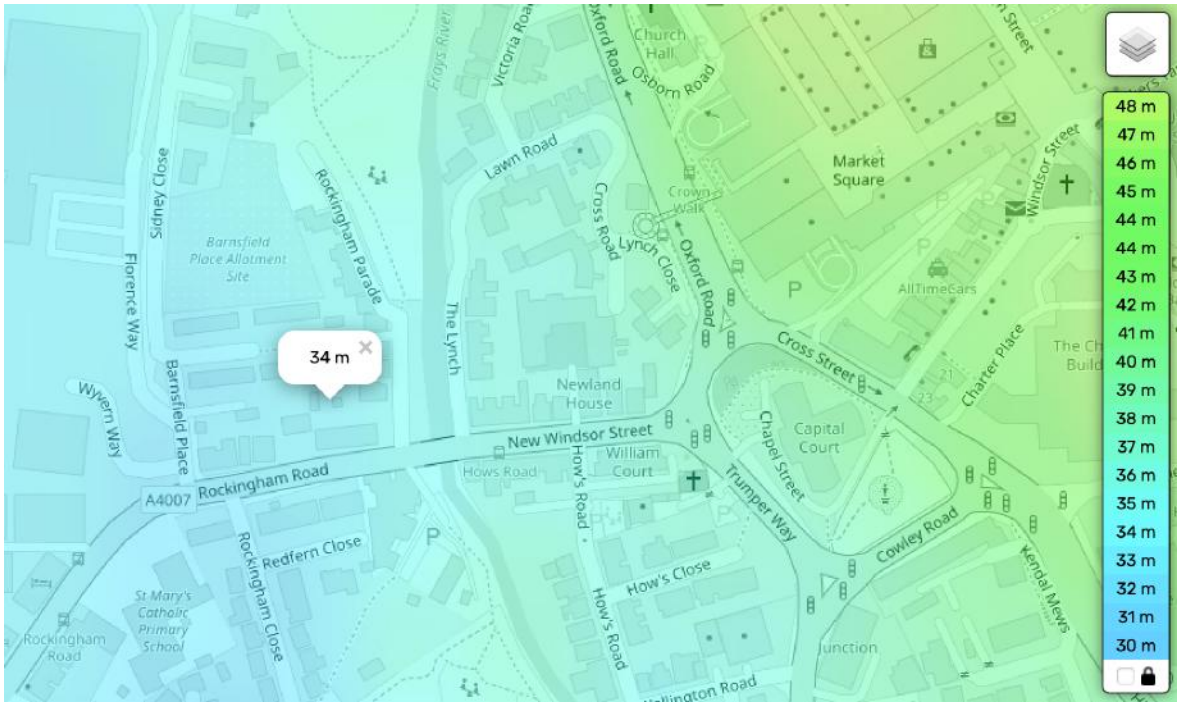


Figure 4 Elevation map of the site

3.3. Flooding Risk

The Gov.uk website provides maps indicating that the site is located in areas with no significant risk of flooding from rivers or the sea.

According to the description, the site is classified as low risk (See Figure 6 below), which means that there is an annual probability of flooding ranging from 0.1% to 1%. However, predicting flooding from surface water is challenging due to the unpredictable nature of rainfall patterns and the volume of precipitation. Figure 5 shows the extent of flooding from surface water in the surrounding area. The map indicates that the site does not experience or at risk from surface water flooding.

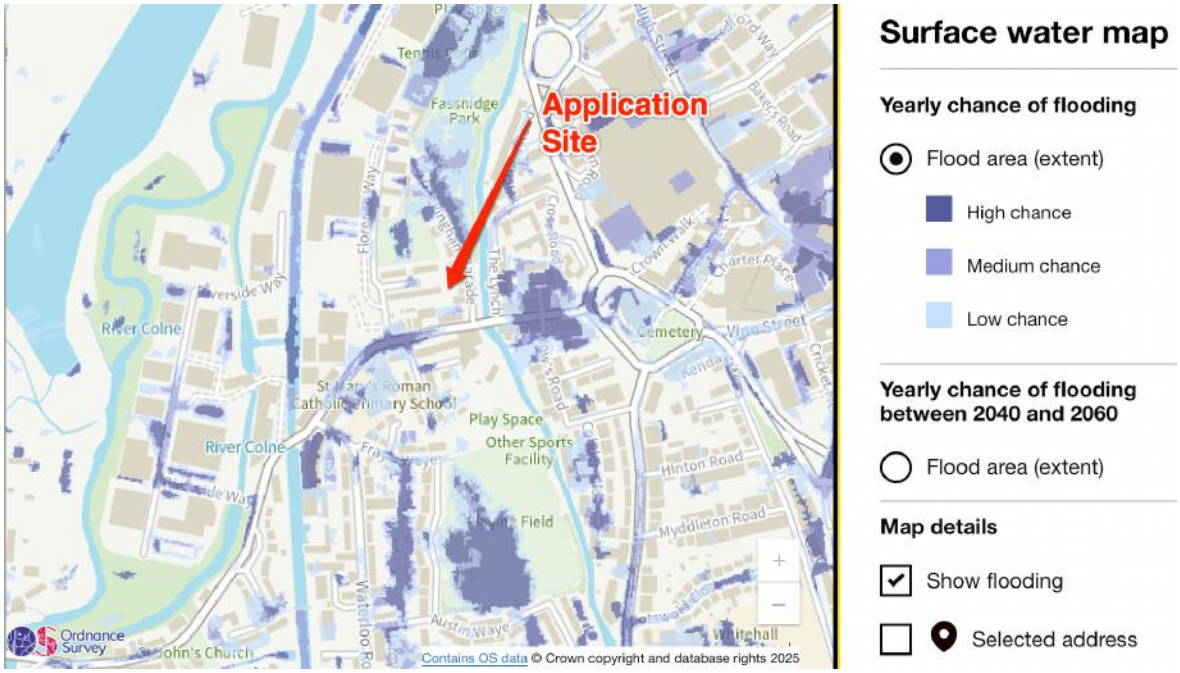


Figure 5 Surface Water Flooding Map

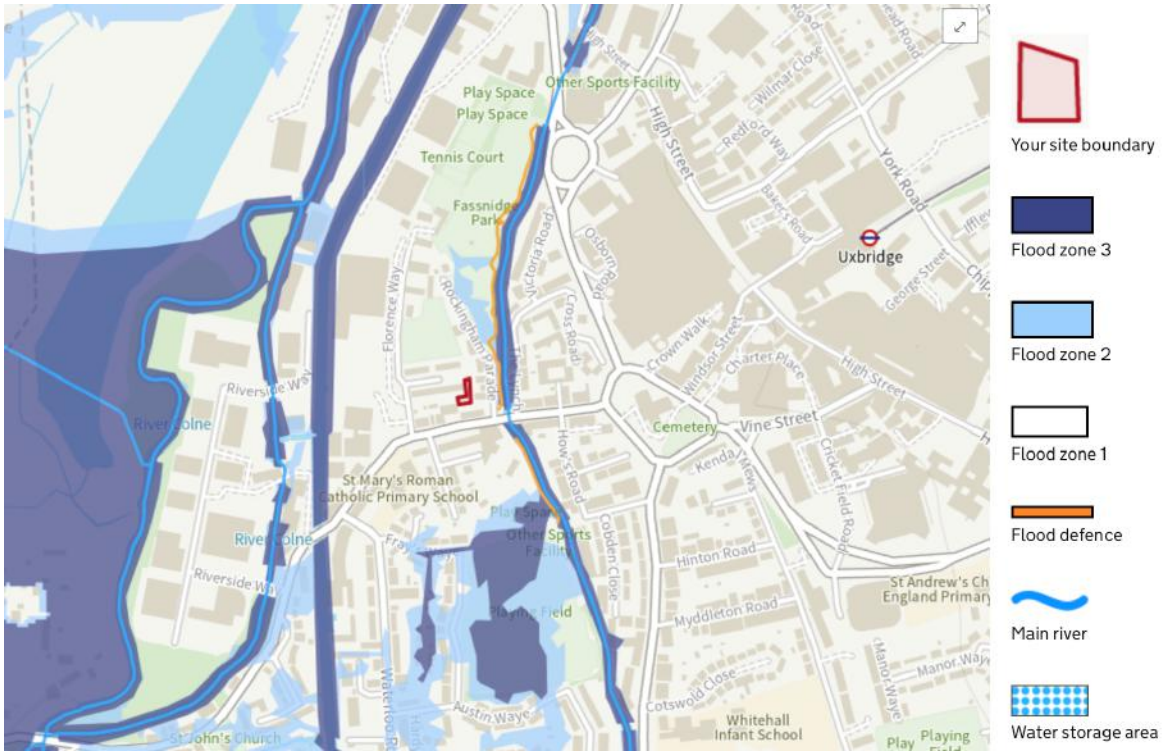


Figure 6 Flood Risk Map EA

3.4. Substructure/Utilities

Public utilities such as Thames Water Sewers, Water, electrics, and telecommunications have been identified within the road and pavement adjacent to the proposed site. However, to confirm if these utilities encroach upon the property boundary line where the new lowered ground level is planned to be constructed a full survey of the utilities will be conducted. Necessary investigations will be carried out to determine the exact locations of the utilities and verify the ground conditions. All relevant service providers will be contacted after the planning stage, such as Thames Water's Build Over Agreement as the works may be within 3 meters of sewer.

4. General site works

• Once the site is ready for use, it is important to establish welfare facilities and install hoarding along the site frontage.

• Prior to starting any construction activities, a thorough on-site examination and identification of all services, such as gas, electricity, water, and drainage, must be conducted. Any active services should be appropriately marked or secured by a qualified professional.

• Identify the exact location of existing foundations, underground drains, and any other obstructions or service routes.

If there are any discrepancies with the issued drawings, it is essential to inform the Structural Engineer.

• The maximum height of hoardings should be 2 meters, and they should be painted.

• Any excavated materials generated during the construction process should be removed using a conveyor system or manually bagged within the working area and then deposited into a designated skip located at the roadside.

• The pavements and roadside kerbs should be cleaned daily at the end of each shift or as necessary.

• Temporary water supply and electrical services must be provided within the working area.

5. *Basement / excavation works*

RETAINING WALLS

• New RC retaining walls are required and should be constructed in an underpin sequence.

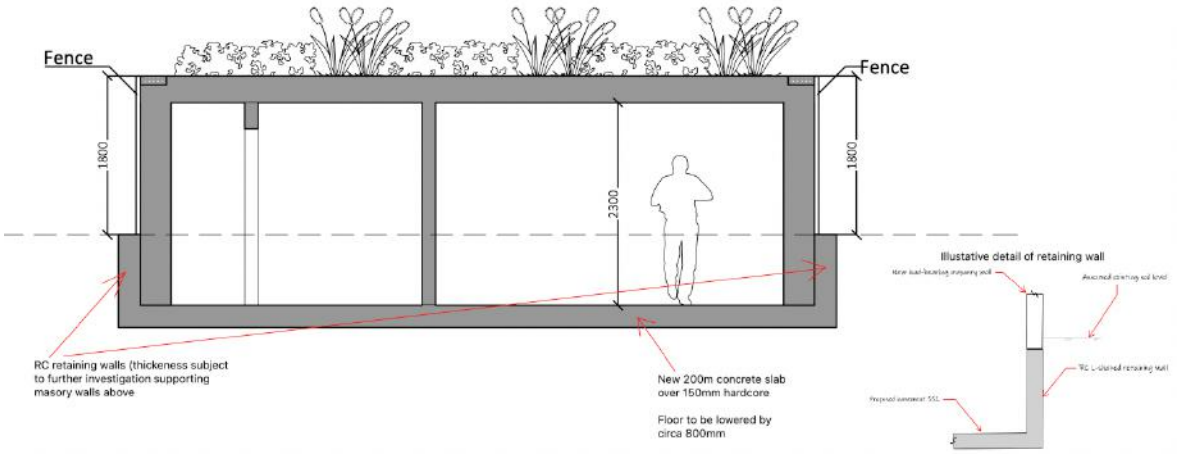
• As excavation progresses, horizontal waling beams and lateral props should be installed to provide temporary support to the reinforced concrete (RC) retaining walls (to the front and rear retaining walls and between the side retaining walls).

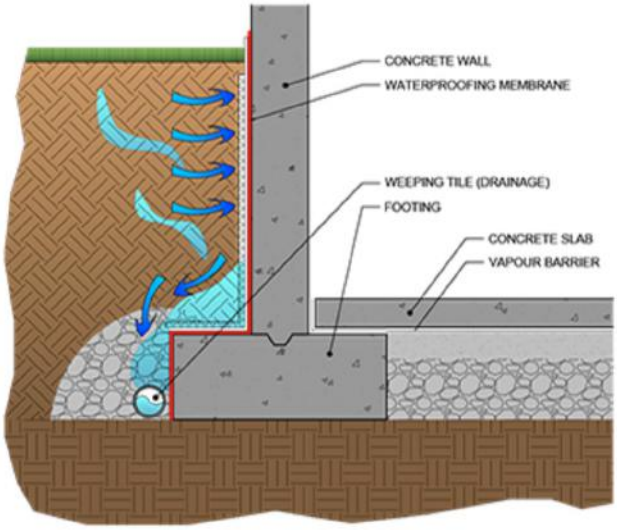
• Where necessary and adjacent to existing boundary treatments, temporary underpinning measures subject to the condition of the soil may be necessary, but given these comprise primarily timber fences the risks are limited and their safeguarding should be easily managed.

• The retaining walls will require a waterproof membrane and weeping tile to prevent water ingress to the building. The weeping tile will allow the flow of water around the lower ground floor elements. Similarly, a permeable hardcore will be used to allow for drainage.

• An attenuation tank is also to be used to allow for surface water run off. This water will be re-used as grey water for watering the water gardens and green roof. Further calculations as to the size of the tank will need to be explored, however a sufficient tank size could be accommodated onsite along with the use of a mechanical pump for use in an extreme event. These details will be prepared at detailed drawing stage.

Appendix A





Details of weeping tile and waterproof membrane