



**PADDINGTON GREEN**  
POLICE STATION

# **Structural Method Statement (Part 1)**

Structural Method Statement (Part 1) –  
November 2022 - GLA0711

NOVEMBER 2022



# Structural Methodology Statement

## Paddington Green Police Station

November 2022



**Client**  
West End Gate Project Office  
131-139 Church Street  
London  
W2 1NA



**Engineer**  
The Clove Building  
4 Maguire Street  
London  
SE1 1NQ

# STRUCTURAL METHODOLOGY STATEMENT

## Paddington Green Police Station

Walsh have prepared this report in accordance with the instruction of our client: Berkeley Homes Plc.

The report is for the sole and specific use of the client, and Walsh shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared and provided. Should the Client require to pass copies of the report to other parties for information, then no professional liability or warranty shall be extended to other parties by Walsh in this connection without the explicit agreement thereto by Walsh.

Revision	Date	Notes	Prepared by	Checked by	Approved by
1	29.09.22	First Issue	RB	SG	TF
2	11.11.22	Issue	RB	SG	TF
3	15.11.22	Reviewed St. Edward Comments	RB	SG	TF
4					
5					
6					

## Contents

<b>Executive Summary.....</b>	<b>5</b>
<b>1. Introduction.....</b>	<b>7</b>
<b>2. Site Context.....</b>	<b>9</b>
2. 1. Site Location and layout.....	9
<b>3. Proposed development .....</b>	<b>11</b>
3. 1. Overview.....	11
3. 2. Block I.....	11
3. 3. Block J.....	11
3. 4. Block K.....	11
3. 5. Basement .....	12
3. 6. Ground floor.....	12
3. 7. Foundation and Basement Substructure .....	12
3. 8. Waterproofing.....	13
3. 9. Construction Sequence.....	14
3. 9. 1. Existing structure demolition.....	14
3. 9. 2. Basement construction.....	14
<b>4. Desk Study .....</b>	<b>16</b>
4. 1. Historical Development.....	16
4. 2. Existing local basements.....	17
4. 2. 1. West End Gate.....	17
4. 3. London Underground .....	17
4. 4. Thames Water.....	20
<b>5. Ground and Groundwater Conditions.....</b>	<b>22</b>
5. 1. Published Geology .....	22
5. 2. Unpublished geology.....	22
5. 3. Geotechnical design parameters.....	25
5. 4. Hydrology and hydrogeology.....	25
<b>6. Screening assessment .....</b>	<b>27</b>
6. 1. Groundwater.....	27
6. 2. Land Stability/Ground Movement.....	28
6. 3. Surface water flow and flooding.....	29
<b>7. Preliminary Ground Movements .....</b>	<b>31</b>
7. 1. General.....	31





7. 2. Party Wall Structures.....	31
7. 3. Temporary works strategy .....	34
7. 4. Displacements .....	36
7. 5. Settlement .....	37
<b>8. Non-Technical Summary .....</b>	<b>39</b>
<b>Appendix A Existing building plans</b>	
<b>Appendix B Proposed Development Plans</b>	
<b>Appendix C Ground Investigation Report</b>	

## EXECUTIVE SUMMARY

Walsh Associates have prepared a Structural Methodology Statement (SMS) to be submitted as part of the planning process for the construction of a new basement as part of the redevelopment of the Paddington Green Police Station Site. Key findings are summarised below.

Table 1: Executive Summary

Detail	Summary
Site Location and Layout	The site is the former Paddington Green Police Station, located off Edgware Road, London.
Local Planning Authority	City of Westminster
Historical development	Formerly industrial, later becoming the Paddington Green Police Station. Existing single storey basement across the entire site.
Proposed Development	Three towers over a single storey basement, basement footprint slightly locally extended, excavation required to form deeper cores and a local two storey basement area.
Anticipated Ground Conditions	Langley Silt, Lynch Hill Gravels, London Clay formation. Historic Made Ground potentially present at shallow depth.
Potential Basement Impact on Groundwater	There is a large basement to the north of the PGPS basement, proposed basement will not obstruct groundwater generally, locally the B2 level will obstruct groundwater, however the site is shielded from the north by existing basement developments.

Detail	Summary
Potential Assets/neighbours affected by ground movements.	<p>Edgware Road Station on the Bakerloo Line is present to the south of the site. The station tunnel and running line tunnels some 19m laterally from the building line and therefore site outside the influence zone of piling.</p> <p>Buildings to the north of the site are piled and unlikely to be affected by ground movements.</p> <p>Thames Water and Highways Assets around the perimeter of the site could potentially be affected by ground movements. Initial temporary works design assessments indicate that ground movements can be restricted to values of low consequence.</p> <p>A detailed Ground Movement Analysis will be carried out once the design has developed; with asset impact assessments for the LUL tunnels, Thames Water, and highways assets.</p>
Potential impact of basement on surface flow and flooding	<p>Surface water discharge rates will be restricted greenfield runoff rates through the provision of site specific SUDS. All surface runoff will be discharge to the public combined water sewer via a new direct connection.</p>

# 1. INTRODUCTION

Walsh Associates have prepared a Structural Methodology Statement (SMS) to be submitted as part of the planning process for the construction of a new basement as part of the redevelopment of the Paddington Green Police Station Site.

This report contains the following information as required by the Westminster City Council Supplementary Planning Document (see Table 2 Ref: 5):

- A. *A thorough desk study to include the site history, age of the property, site survey, geology, historic river courses and underground infrastructure, including utilities services, drains and tunnels. This should also identify other basement developments in the area, so that cumulative effects can be considered.*
- B. *An appraisal of the existing structure including drawings to show the arrangement of the existing structures. The appraisal should identify previous alterations and any obvious defects. It should also assess the condition and location of the building with adjoining buildings. This should include opening up works to investigate the existing structure, which should be summarised on a set of drawings.*
- C. *A site investigation which can be demonstrated to be relevant to the site together with trial pits to show the existing foundations and the material they are founded on, for all walls which may be impacted by the proposals. If groundwater is present, the levels should be monitored for a period of time.*
- D. *Details of the engineering design which should be advanced to detailed proposals stage. Relevant drawings should be provided to show how the designers have addressed the following: • ground conditions and groundwater • existing trees and infrastructure • drainage • flooding • vertical and horizontal loading • structural engineering general arrangement and details; drawing showing underpinning, piled wall etc.*
- E. *An analysis of the Upper Aquifer (when it exists) and how the basement may impact on any groundwater flow.*
- F. *Details of flood risk, surface water flooding, critical drainage areas explaining how these are addressed in the design. A full flood risk assessment should be carried out in those areas identified as requiring one at Figure 4 of the guidance.*
- G. *An assessment of movements expected and how these will affect adjoining or adjacent properties. This needs to include both short term and long-term effects. The design and construction should aim to limit damage to all buildings to a maximum of Category 2 as set out in CIRIA Report 580.*
- H. *Details of sequences of construction and temporary propping to demonstrate how the basement can be built to prevent movements exceeding those predicted. It should show how the horizontal and vertical loads are supported and balanced at all stages of construction and consider the interaction between permanent works and temporary works*

Site specific reference documentation specific to the development site are summarised below.

Table 2: Reference information

Ref	Title	Author	Date
Ref: 1 – Wal Drain	5362-WAL-ZZ-XX-RP-C-0300, Drainage Strategy, Paddington Green Police Station	Walsh	10.22
Ref: 2 – GE SI	Ground Investigation Report Paddington Green Police Station, London W2. Report Reference C15340	Ground Engineering	08.21
Ref: 3 – WSP DS	Paddington Green Police Station, London, Preliminary Geo-Environmental Risk Assessment (Desk Study)”	WSP	02.2021
Ref: 4 – Concept SI	Paddington Green Police Station, Factual Report	Concept SI	04.16

Standard and codes referred to in the production of this report and its recommendations are summarised below.

Table 3: Standards and codes

Reference	Title	Author	Date
Ref: 5- SPD	Basement Development in Westminster. Supplementary Planning Document	WCC	24.10.2014
Ref: 6- BS 5930:2015+A1:2020	Code of practice for ground investigations	BSI	2020
Ref: 7- BS EN 1997-1:2004	Eurocode 7: Geotechnical design. General rules (+A1:2013) (Incorporating Corrigendum February 2009)	BSI	2004

## 2. SITE CONTEXT

Details of the proposed development site are summarised in the following report sections.

### 2.1. Site Location and layout

The site is located at Paddington Green Police Station, within the City of Westminster, where the A40 Westway enters the centre of Westminster on the junction with Edgware Road. The site is surrounded predominantly by residential, commercial, medical, and educational properties as well as public infrastructure. The National grid reference is TQ 526970, 181757 and the postcode is W2 1XJ.

The site is a largely triangular island site, with an approximate maximum 150m length in the east-west direction, and an approximate maximum width of 60m in the south-north direction. The total site area is approximately 0.5ha.

The site is bound by Edgware Road to the east, Newcastle Place to the north, Paddington Green to the west and by Harrow Road and the Marylebone Flyover (A40) to the south. The site is adjacent to Edgware Road London Underground Station, and a short distance from both Paddington and Marylebone mainline and London Underground stations.

West End Gate and 14-17 Paddington Green development sites to the north of Newcastle Place, form Phase 1 and Phase 2 of the Applicant's West End Gate Masterplan, which are currently under construction.

The existing police station building on site was constructed in 1971 and closed in 2018. The building includes a 17 storey accommodation/section house on the eastern side of the site, a three storey main office on the eastern edge of the site plus an 8 storey annex at the western side of the site. All buildings are underlain by a single storey basement housing parking and plant facilities. A single storey building is present in the western area of the building that previously housed high security cells. The existing building is founded on piled foundations.

Drawings and plans of the existing buildings are provided in Appendix A



Figure 1: Site Plan

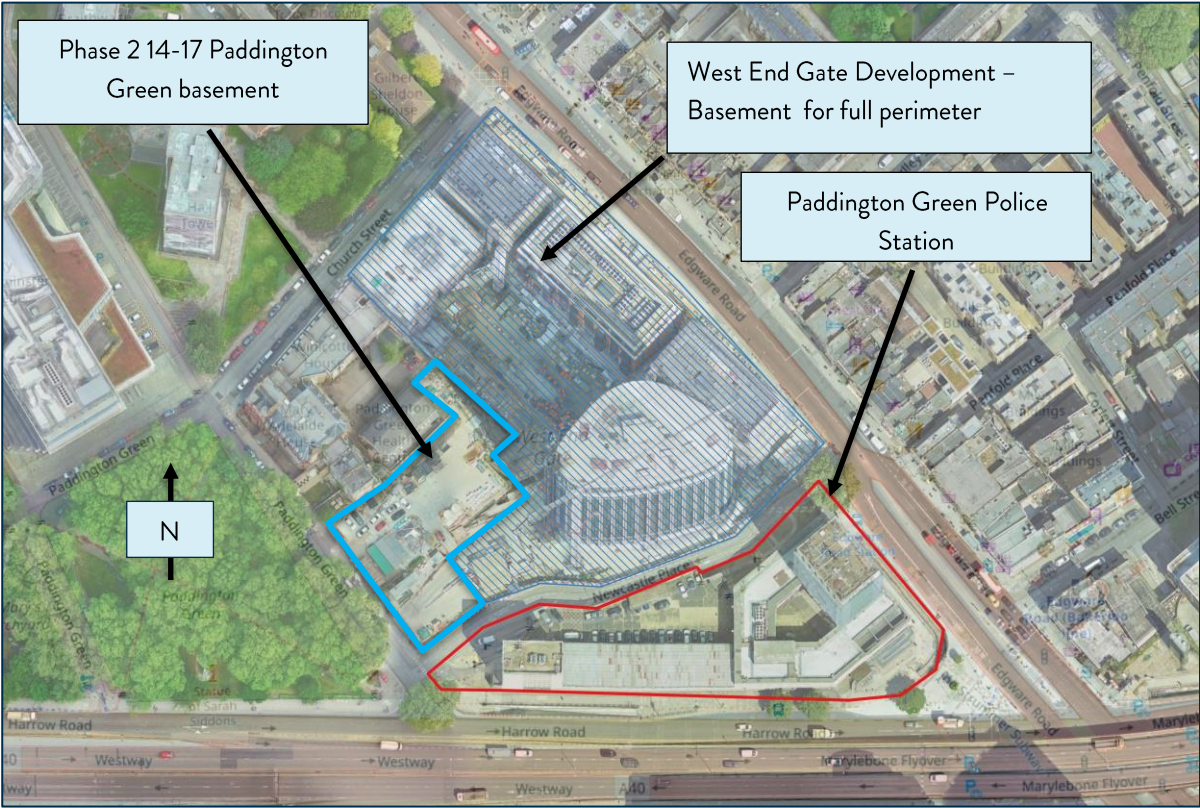


Figure 2: Existing Site Elevations – South Elevation September 2022



## 3. PROPOSED DEVELOPMENT

### 3.1. Overview

The proposed development comprises the demolition of the existing building and redevelopment of the site to provide three buildings of 39, 24 and 17 storeys in height, providing residential units (including affordable units)(Class C3), commercial uses (Class E), a community use (Class F.2), landscaping, tree and other planting, public realm improvements throughout the site including new pedestrian and cycle links, provision of public art and play space, basement level excavation to provide associated plant, servicing, disabled car parking and cycle parking and connection through to the basement of the neighbouring West End Gate development.

The 3 blocks have different structural frame requirements due to their different aspect ratios and heights, but essentially there are 3 blocks rising from the ground floor slab/podium slab level. Block I will be 24 storeys, Block J will be 17 storeys and Block K will be 39 storeys high. All 3 blocks will be utilising PT slabs for the residential floors which are 210mm thick. Proposed development plans are provided in Appendix B

The majority of the layouts are single spans going from the central core to the perimeter columns which sit behind piers in the GRC element on the unitised curtain walling system.

The lateral wind pressure on the facade is transferred horizontally to floor plates via cladding brackets. The floor slab acts as a diaphragm and are restrained laterally by lift and stair cores, these stiff vertical elements act as a cantilever and carry the wind forces down to the piled foundations. The piles transfer horizontal and vertical forces into the surrounding soils.

### 3.2. Block I

This is a 24-storey building with PT structural slabs. The core walls will be 350mm thick, with columns predominantly around the perimeter of the building spaced at 6.5m centers. There will be some internal columns to break up the larger spans. Columns vary in thickness with a minimum of 300mm but there are some 220mm thick walls to be accommodated in party walls. The columns and walls are supported on either a piled raft or pile caps at the B1 and B2 levels.

### 3.3. Block J

This is a 17-storey building with PT structural slabs. The core walls will be 250mm thick, with columns predominantly around the perimeter of the building spaced at 6.5m centers or less. There will be some internal columns to break up the larger spans to the south of the building. Columns vary in thickness with a minimum of 300mm, but there is 220mm thick wall to be accommodated in party walls. The columns and walls are supported on either a piled raft or pile caps at the B1 level.

### 3.4. Block K



This is a 39-storey building with PT structural slabs. The core walls will be 600mm thick, with columns predominantly around the perimeter of the building spaced at 6.5m centers or less. There will be some internal columns to break up the larger spans to the south of the building. Columns vary in thickness with a minimum thickness of 300mm but generally 500mm thick. The columns and walls are supported on a piled raft at the B1 level.

### 3.5. Basement

The basement will generally comprise a single B1 level, except under block I and to the north of block I where there will be a B2 double basement.

The current basement is formed of a diaphragm wall (D-Wall). To the south and east of the site this wall will be retained and will form part of the new basement box. During enabling works phase to reduce the current basement level to the new basement level which is approximately 1.55m down from the existing level the D-Wall will be propped using buttress piles to ensure the wall is fully supported at all stages and simplify the temporary work on the site. To the west and a section to the east, along with the B2 basement these sections will be formed with a 750mm secant piles wall. The basement continues northwards towards the existing West End Gate sheet piled retaining wall.

A 250mm thick liner wall will be introduced in the areas with the sheet piled and 325mm to allow for tolerance to the secant piled walls.

The new basement slab will be 350mm thick generally, increasing to 3m thick to support punching/piled rafts beneath the blocks.

### 3.6. Ground floor

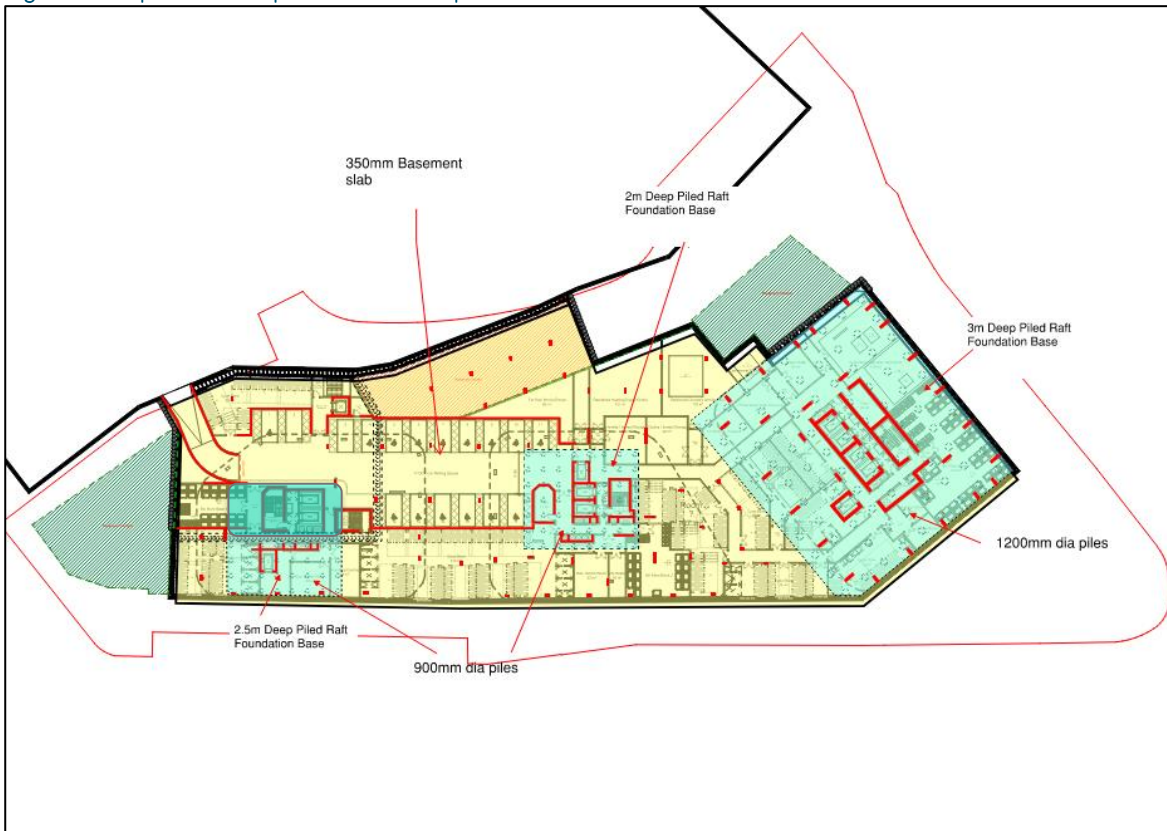
The ground floor slab will be a 350mm thick slab within the demise of the blocks and 350mm thick in the podium areas of the slabs. Reinforced concrete transfer beams will also be introduced under the ground floor slab under blocks I and J and under the podium areas so that the residential columns can be accommodated with the car park layouts below. The 350mm thick ground floor slab will cover the entire footprint of the site with allowance for construction loading as well as road and finishes build up. It will also provide lateral propping support to the perimeter retaining walls.

### 3.7. Foundation and Basement Substructure

Foundation loadings are anticipated as in the regions of 300-350kPa for Blocks I and J and 440-510kPa for Block K, and pile foundations will be required either under a piled raft or a series of pile caps.

Figure 9-1 shows the proposed basement. Basement B1 slab SSLs are at 27.35mOD and 28.15mOD respectively and basement B2 slab SSL is at 25.15mOD. Based on Section 3, the River Terrace Deposits is at circa 25mOD. The foundation solutions may include piled raft and/or pile caps, and this will be further developed to completion in the next design stage.

Figure 3: Proposed development basement plan



Block K piles are expected to be 1200mm diameter with 6000-7300kN characteristic load, spaced at 2.7-3.6m throughout the raft. Blocks I and J piles are expected to be 900mm diameter, with loads in the region of 3500kN-5000kN.

A 325mm thick perimeter liner walls will be provided throughout the new basement. The existing diaphragm wall will be reused at temporary construction stage by the contractor to form the new basement. The existing diaphragm wall will require temporary propping to ensure required load path in the wall is provided. This is proposed to be done using a buttress piled system.

It is considered likely that a rotary bored pile will be preferable for the bearing piles due to the thick London Clay strata present beneath the site and to prevent the requirement for breaking out the concrete piles within the basement, which would be necessary with a CFA piling approach.

### 3. 8. Waterproofing

The proposed basement waterproofing system will be:

- Car Parking and plant rooms generally – Grade 2
- Habitable areas and lift pits – Grade 3

### 3. 9. Construction Sequence

The following construction phase has been proposed:

- Demolish existing superstructure including the Ground Floor (GF).
- Start demolishing existing basement from West to East (e.g. Block I towards Block K).
- Start constructing new basement from West to East; including foundations and GF slabs.
- Construct Block I – superstructure frame.
- Construct Block K – superstructure frame.
- Construct Block J – superstructure frame.

#### 3. 9. 1. Existing structure demolition

Existing structure shall be demolished to facilitate the demolition of the basement and ground floor slabs. Buttress piles will be introduced, and this will significantly reduce the amount of temporary work required to support the existing D-Wall retaining structure.

Existing foundation demolition and removals shall be approached with care to ensure existing D-Wall toe is not undermined and cause excessive movement of the retaining structure.

#### 3. 9. 2. Basement construction

The proposed construction technique will utilise secant piled wall construction locally and the retention of the existing D-Wall which will be propped by the basement and ground floor slabs in the permanent case. In the temporary Case the D-Wall will be retained using buttress pile temporary works to allow the formation to be lowered.

Piling for the new foundations is suggested to be performed at or near the level of the existing building foundations approximately around 29.7mOD (TBC once existing footing form and level is confirmed).

A typical construction sequence sketch proposed for the development is shown in Figure 9-2, as follows:

EXISTING BASEMENT SECTION  
SCALE 1/20

STAGE 1  
SCALE 1/20

STAGE 2  
SCALE 1/20

STAGE 3  
SCALE 1/20

STAGE 4  
SCALE 1/20

STAGE 5  
SCALE 1/20

STAGE 6  
SCALE 1/20

STAGE 7  
SCALE 1/20

STAGE 8  
SECTION THRU HARBOR ROAD  
SCALE 1/20

STAGE 9  
SECTION THRU EDWARDS ROAD  
SCALE 1/20

SEE DRAWING 15 FOR DETAILS OF THE EXISTING BASEMENT WALL AND THE PROPOSED TEMPORARY WALL.

## 4. DESK STUDY

### 4.1. Historical Development

The site's historical development has been reviewed by WSP (Ref: 3) and is summarised below:

Table 4: Summary of historical development

Date	Site description and use
1848 – 1850	Site fully occupied, developments indistinct.
1868 – 1872	Site fully occupied, Metropolitan Music Hall was shown fronting Edgware Road. Union Hall and White Lion Place – a row of terraced houses was shown in the centre of the site. Public Houses were present in the south fronting Harrow Road and in the east fronting Edgware Road. Access roads and yards were shown between buildings.
~1894 – 1895	Buildings in the southwest of the site replaced by “Boot & Shoe Manufactory”, “Furniture Depository”. Union Hall is no longer present.
~ 1942 – 1945	Site occupied by various warehouses, northern area includes various stores (coke, timber etc.) smithy, Airwork Trading, Suitcase Factory, Wood Working, Garage, Slaughterhouse. A larger courtyard was present in the middle and a smaller yard in the east of the site. AG Dixon Ltd. Was present in the south, fronting Harrow Road. Additional business were present directly to the southeast of the site including a Tool Factory, Tailors, Sheet Metal Works, Fancy Goods Warehouse, Turkish Bath, Motor Showrooms, Leather Goods and Furniture.
~1953 – 1954	Buildings around the middle courtyard area were cleared AG Dixon Ltd. Relabeled as Warehouses.
~1967	Site has been cleared, labelled as ‘Coach Park (National Car Parks Ltd)’ and “Site for future Police Station.
~1969 - 1974	Site shown in its current layout.

The Police station building was constructed in the late 1960's and includes a single level basement at approximately 29.7mOD. Typical ground levels around the perimeter of the site are 32mOD. The construction of the basement will have removed much of the Made Ground associated with the site's prior development.

The existing basement walls around the perimeter of the existing site extend to levels of between 22.5mOD to 26.1mOD, approximately 6m to 10m below ground level.



## 4. 2. Existing local basements

### 4. 2. 1. West End Gate

The West End Gate site to the north includes a single storey basement enclosed in a sheet piled wall. The sheet piles are typically 14m long constructed with an approximate toe level of 18mOD around the basement perimeter.

## 4. 3. London Underground

The Bakerloo Line and Edgware Station box are present to the southeast of the site as illustrated below.

Figure 5: LUL Assets

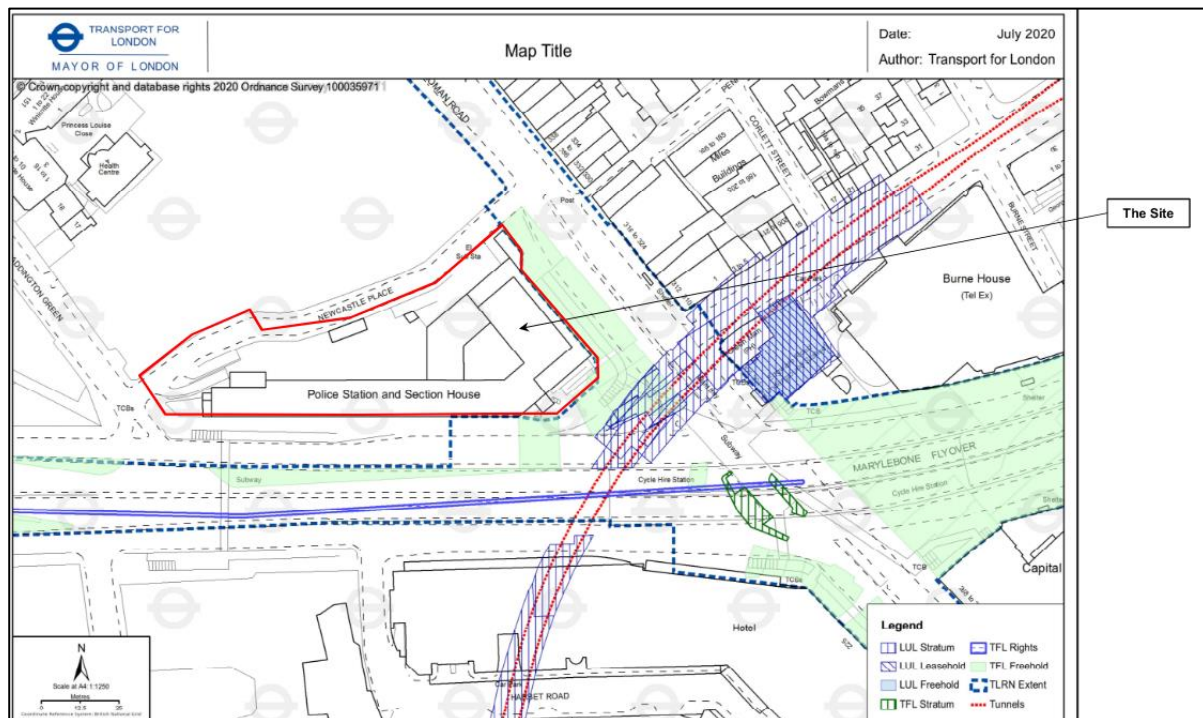


Figure 6: LUL Station Box detail

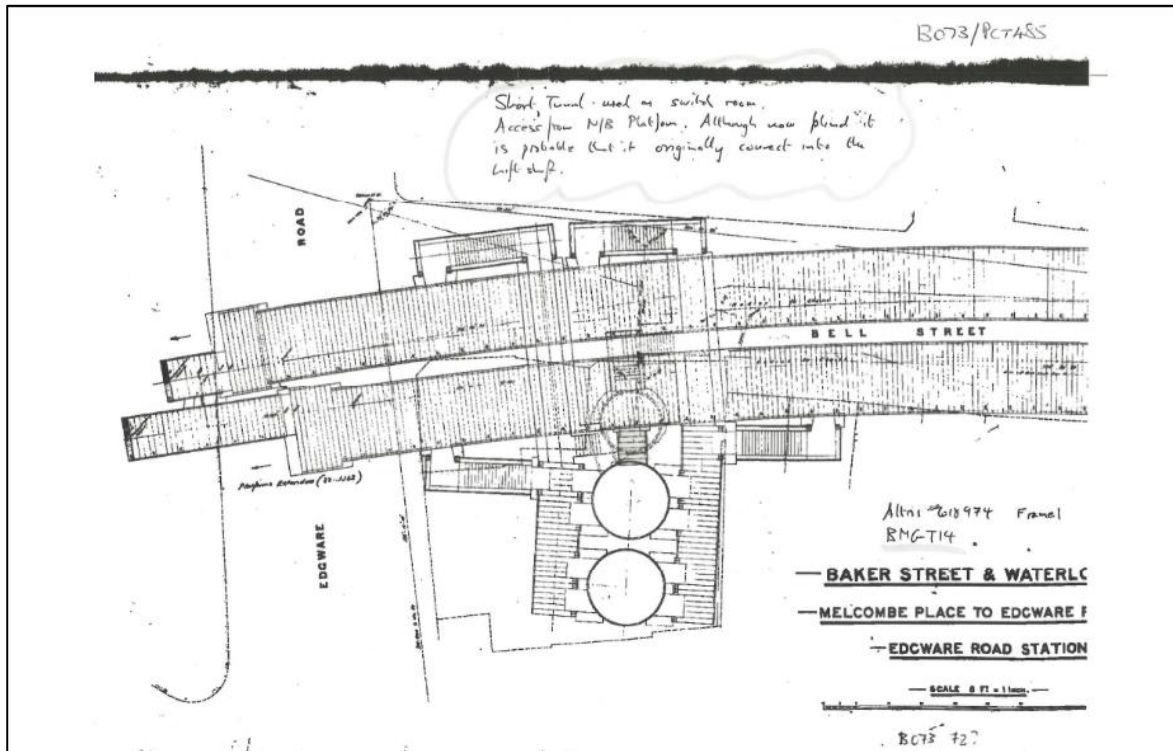


Figure 7: LUL Alignment (as per WSP data)

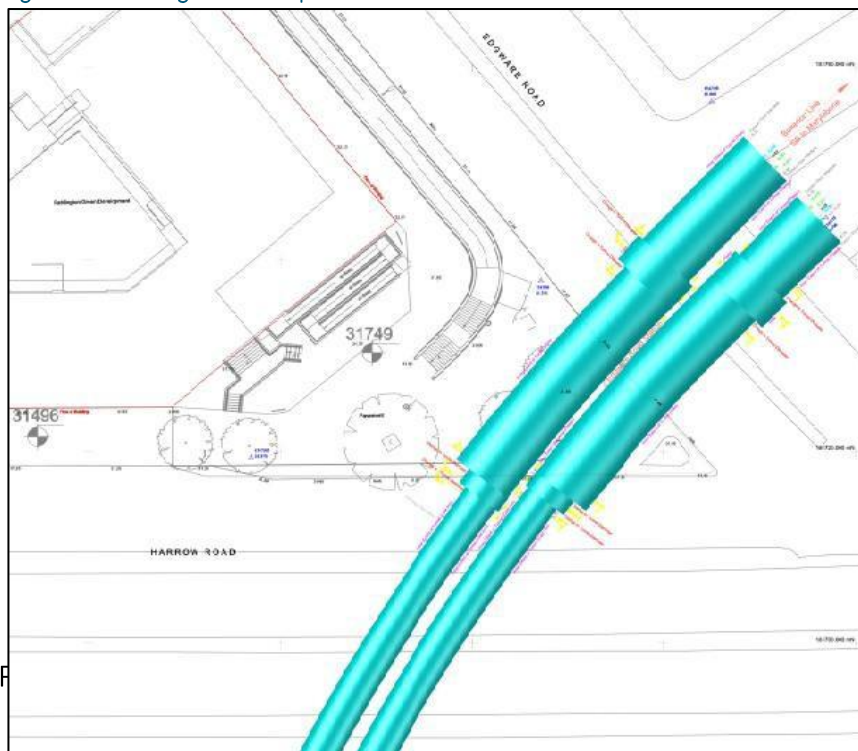


Table 5: LUL Tunnel Details

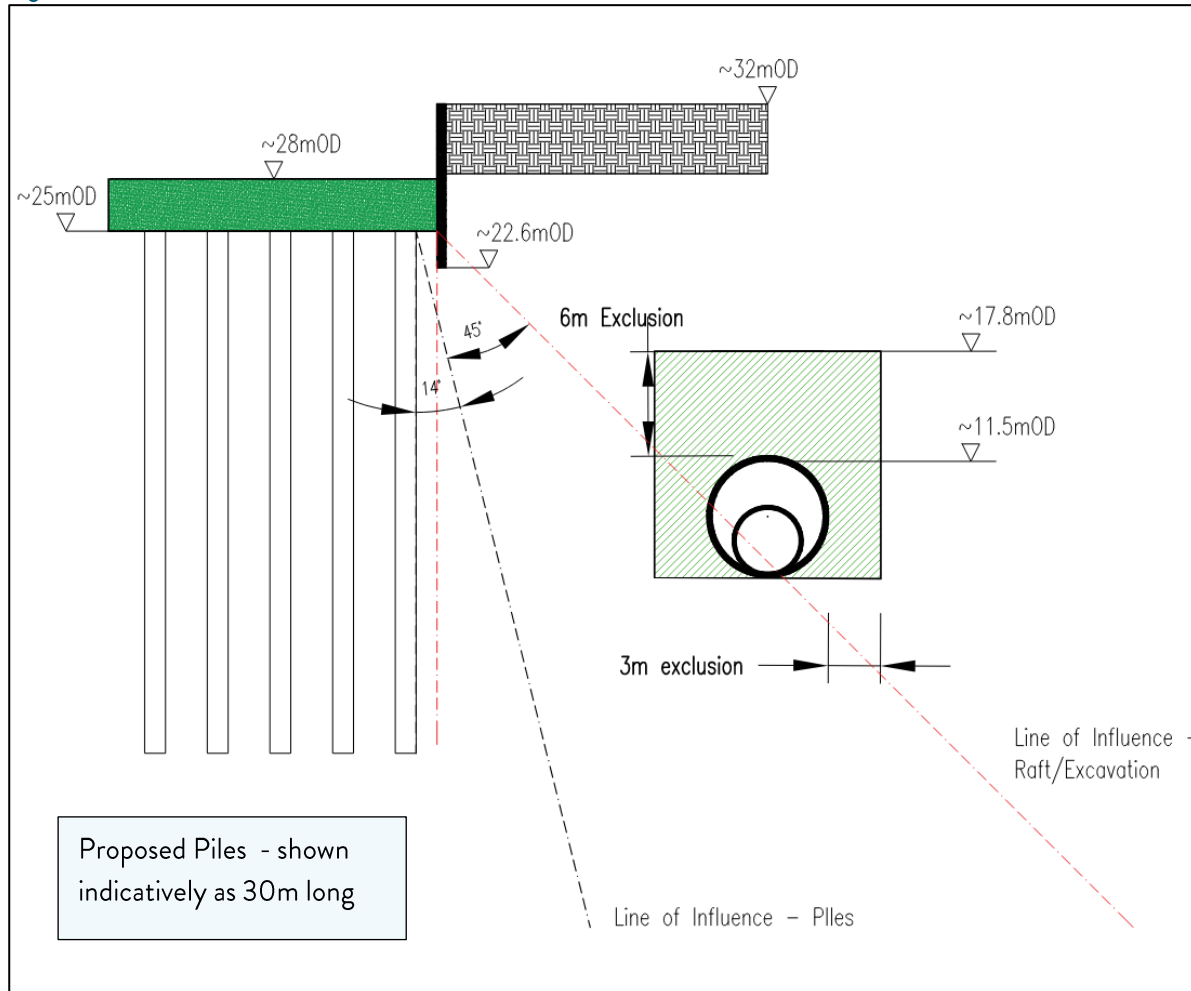
Asset	Crown Elev. (mOD)	Internal Diameter	Shape	Lining details
Platform Tunnel	+10.9 to +11.8	$D_{int} = 6.4\text{m}$	Circular	Plaster/Tiles (Cast-iron segments expected behind as drawn on historical drawing included in Appendix G.3)
Running tunnel	+9.3 to +9.7	$D_{int} = 3.66\text{m}$	Circular	Cast-iron segments

The LUL assets sit outside the piling influence zone, a detailed LUL Ground Movement Assessment will be carried out as the design develops. Displacement limits and monitoring requirements shall be agreed with LUL prior to commencing construction.

An indicative section through the tunnel is shown below; it is noted that horizontal movements/temporary works do not affect the tunnels – excavation unloading in the temporary condition may marginally reduce stresses at the tunnel axis level in the short term.



Figure 8: Indicative LUL Section



#### 4. 4. Thames Water

Thames Water assets are present around the perimeter of the site, locations are summarised below. A Thames Water Ground Movement Assessment (GMA) shall be undertaken in the next design stage and agreed with Thames Water.

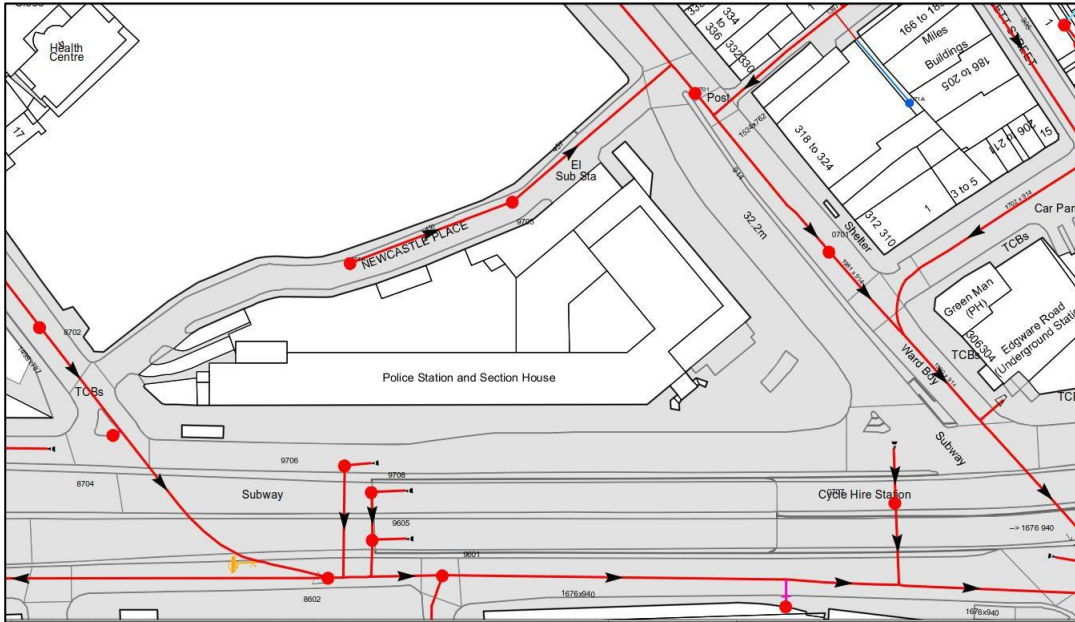
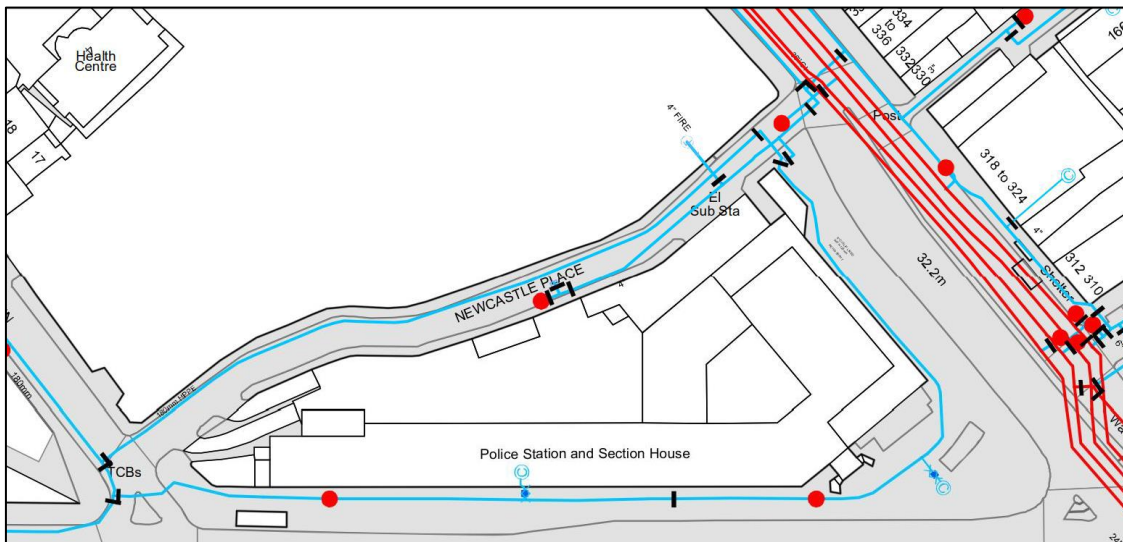
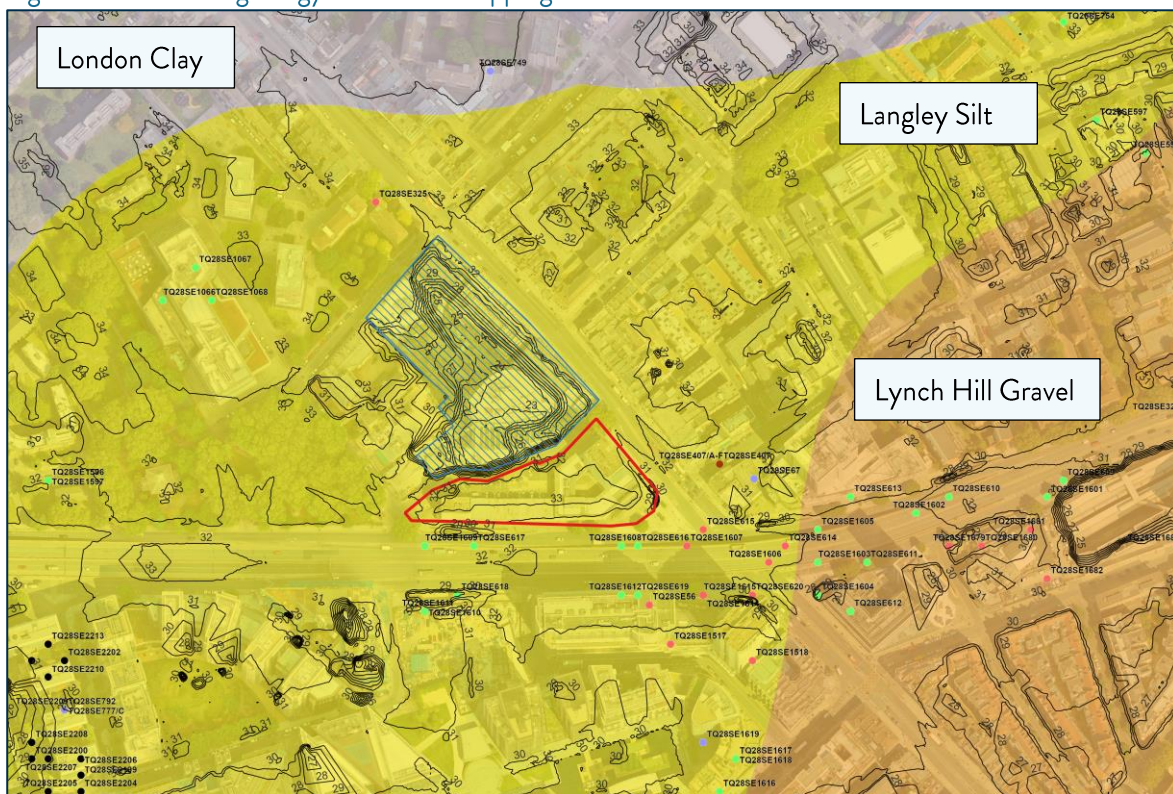


Figure 10: Thames Water Mains



## 5.1. Published Geology

Figure 11: Published geology from BGS mapping

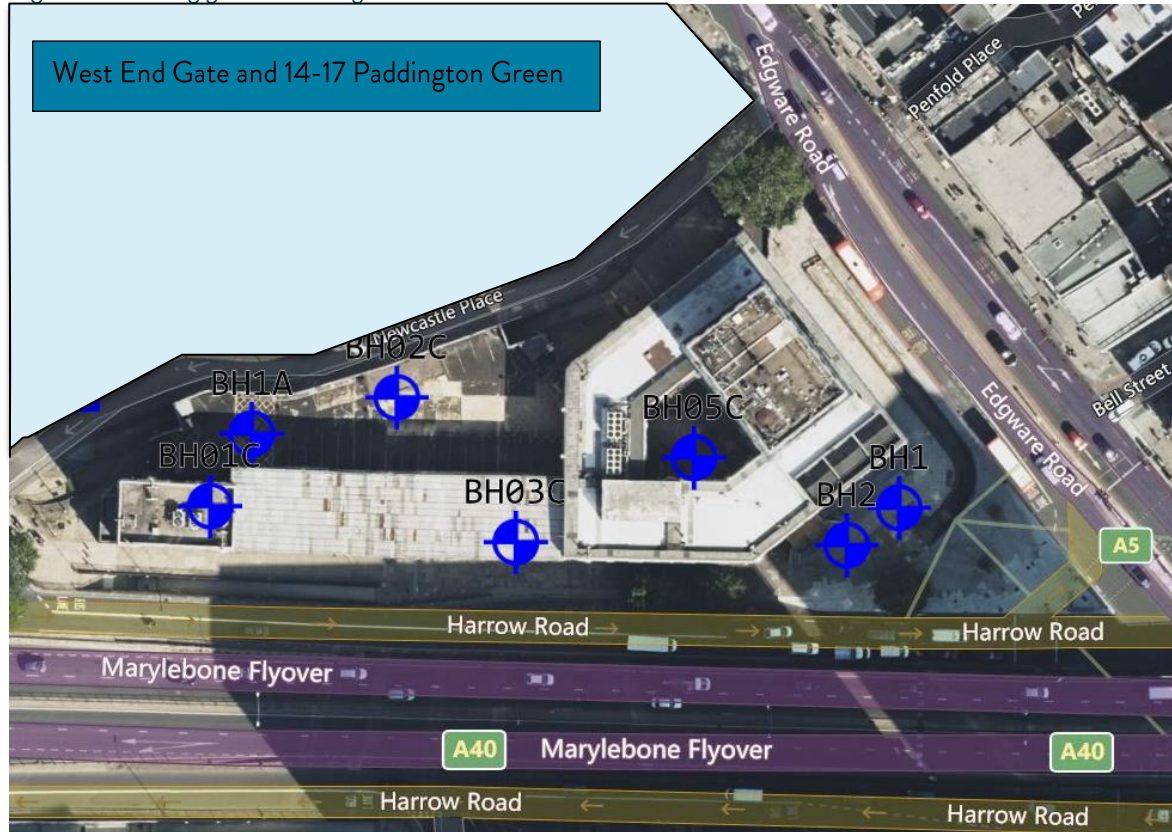


## 5.2. Unpublished geology

Seven deep boreholes have been excavated on site to date, their locations are illustrated below. The boreholes were excavated by separate contractors in multiple SI phases as referenced in Table 2 of this report.



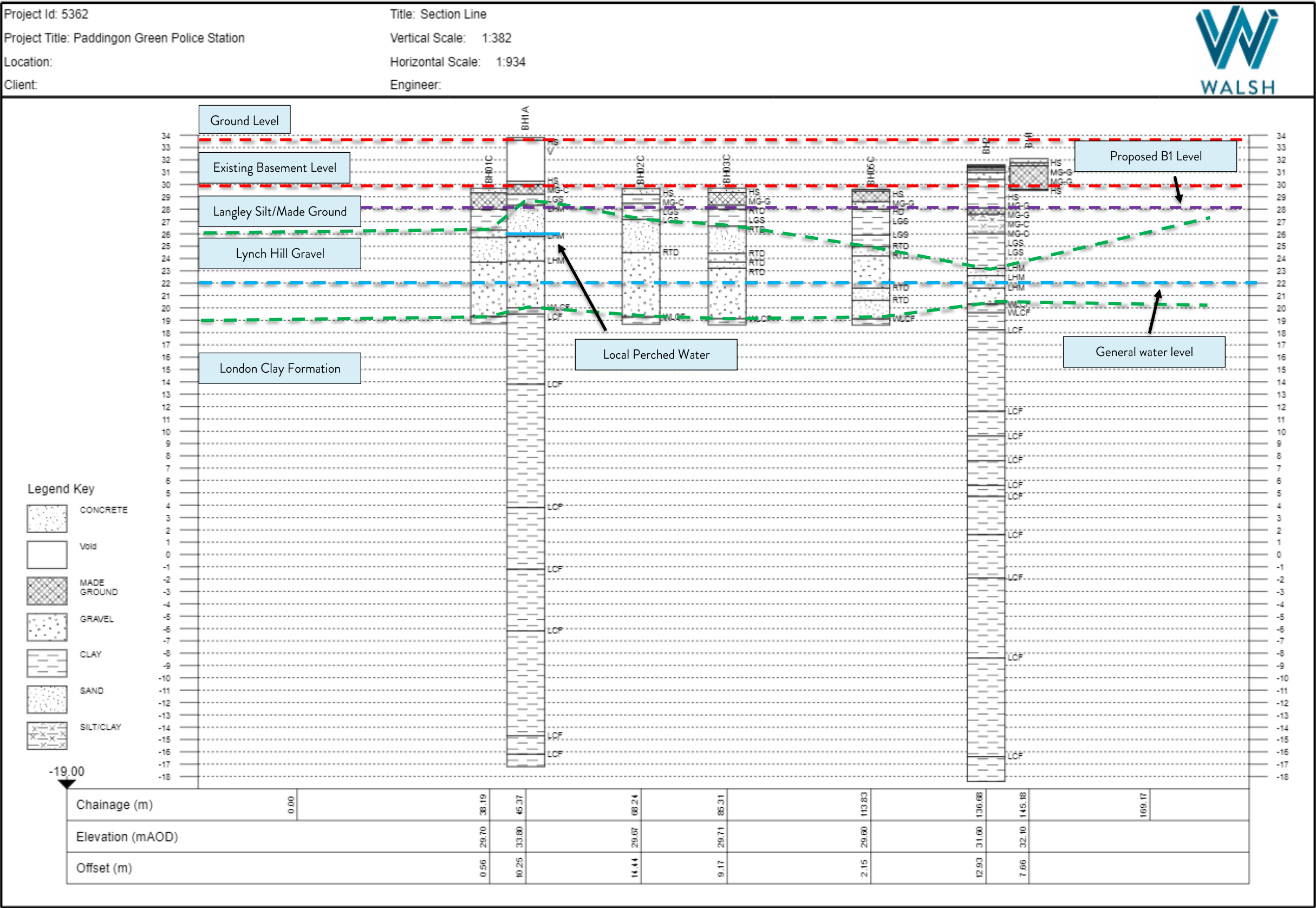
Figure 12: Existing ground investigation data



A cross section through the boreholes is provided in Figure 13 to illustrate the ground conditions on site. The ground investigation report is included in Appendix C of this report.



Figure 13: Geological Cross Section



### 5.3. Geotechnical design parameters

Geotechnical design parameters derived from the ground investigation are summarised below.

Stratum	Design Level (Depth to top) mOD	Bulk Unit Weight $\gamma_b$ (kN/m <sup>3</sup> )	Undrained Cohesion $c_u$ (kPa) [c']	Friction Angle $\phi'$ (°)	Young's Modulus $E_u$ (MPa) [E']
Made Ground	+32.2	18	n/a	30	- [30]
Langley Silt	+28	19	40	25 <sup>d</sup>	25 [18.75]
Lynch Hill Gravel Member (Granular)	+25	19	-	36	[50]
London Clay Formation	+19.3	19	60+9z [5]	24 <sup>c</sup>	36+5.4z [27+4z]

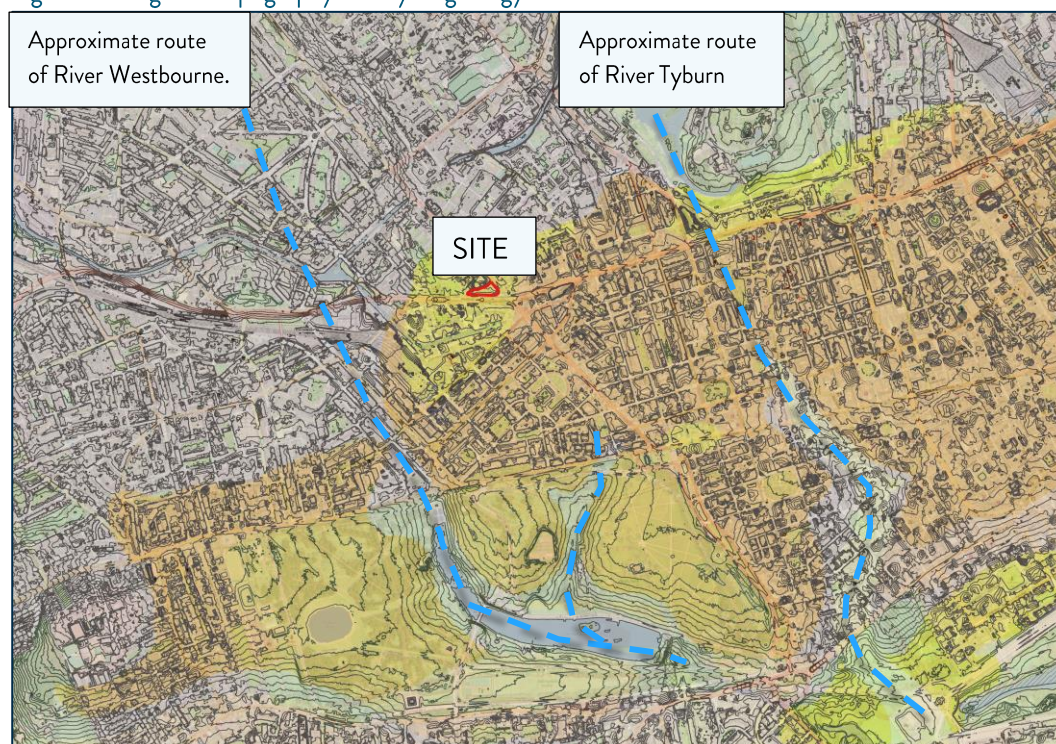
Groundwater is assumed to be at 22mOD.

### 5.4. Hydrology and hydrogeology

Groundwater flow is expected through the Lynch Hill Gravels above the London Clay. Regionally ground levels drop to the south towards the River Thames, locally groundwater flow may also be affected by the presence of the former River Tyburn and River Westbourne, two of London's 'Lost' rivers. The regional topography and geology of the site is illustrated below.



Figure 14: Regional topography and hydrogeology



Regional flow is anticipated to be towards the south generally, potentially vectoring to the east and west as influenced by historic flow channels. The extensive existing basement to the north of the site obstructs groundwater flow from the north in the current condition. The majority of the PGPS basement is at 28mOD and remains above the general water level, there is a small area of B2 which may require a cut off wall to extend below the water level; this area will be localised and will not generate a significant groundwater obstruction particularly given the presence of the WEG basemen to the north.

## 6. SCREENING ASSESSMENT

Walsh has carried out a screening assessment to review and assess risks associated with the proposed development. The assessment considers groundwater, ground movements, and surface flow and flooding.

### 6.1. Groundwater

Table 6: Groundwater Screening

Question	Response	Action Required
1a. Is the site located directly above an aquifer?	Yes.  The site is located over the Lynch Hill Gravel, which is designated as a Secondary A aquifer.	
1b. Will the proposed basement extend beneath the water table surface?	Yes.	None, See comments below table
2. Is the site within 100m of a watercourse, well, or potential spring line?	No.	None
3. Will the proposed basement development result in a change in the proportion of hard surface?	No.  Most the site is currently covered by hardstanding.	None
4. As part of site drainage, will more surface water than at present be discharged to ground (e.g. via soakaways and/or SUDS)?	No.  The drainage strategy <sup>8</sup> on site will be designed to attenuate surface water run off on site with controlled release to local sewers at rates agreed with service providers. Site will achieve a greenfield run off rate.	None
5. Is the lowest point of the proposed excavation close to, or lower than, the mean water level in any local pond or spring lines?	No.  There are no evident ponds or spring lines near to the site.	None

The proposed development will locally extend the basement beneath groundwater level however the impact is considered to be negligible given the presence of the deep basement and retaining walls to the north (up-hydraulic gradient) of the site. Groundwater in the area flows generally to the south; the West End Gate site to the north obstructs water flow from this direction therefore groundwater flow onto the northern site aspect is negligible. Furthermore there are no shallow residential basements or similar that may be affected by a rise in groundwater to the north.



## 6.2. Land Stability/Ground Movement

Table 7: Land Stability/Ground Movement Screening

Question	Response	Action required
1. Does the site include slopes, natural or man-made, greater than about 1 in 8?	No. The topography of the site is relatively level.	None
2. Will the proposed re-profiling of the landscaping at site change slopes at the property boundary to greater than about 1 in 8?	No.	None
3. Does the development neighbour land including railway cuttings and the like with a slope greater than about 1 in 8?	No.	None
4. Is the site within a wider hillside setting in which the general slope is greater than about 1 in 8?	No.	None
5. Is the London Clay Formation the shallowest stratum on site?	No.	None
6. Will any trees be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained?	No.	None
7. Is there a history of shrink/swell subsidence in the local area and/or evidence of such at the site?	No.	None
8. Is the site within an area of previously worked ground?	No.	None
10. Is the site within 5m of a highway or pedestrian right of way?	Yes.	Impact assessment
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No. Adjacent buildings have basement levels and are piled and insensitive to ground movements.	None

Question	Response	Action required
14. Is the site over (or within the exclusion zone of) any tunnels?	Yes.  Site is near Edgware Road Station served by the Bakerloo Line. The assets sit outside the piling zone of influence, a detailed GMA will be provided for LUL approval at developed design stage.  Thames Water assets are present around the site perimeter, an impact assessment will be required.	Analysis and impact assessment required.

### 6.3. Surface water flow and flooding

Table 8: Surface water screening

Question	Response	Action required
1. 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.  All surface water will be discharged to the sewer network. Volumes of surface water run-off from the site are not anticipated to increase significantly. Surface water will be attenuated on site and discharged in a controlled manner to the sewer network.	Drainage strategy has been developed by Walsh (see Table 2)
2. Will the proposed development result in a change in the proportion of hard surfaced/paved external areas?	No.	None
3. Will the proposed basement result in a change to the profile of the inflows of surface water being received by adjacent properties or downstream watercourses?	No.  The nearest feature is the Paddington Basin, some 150m to the south of the site.	None
4. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No.  Made Ground previously removed to develop existing basement. Additional material removed to as part of the proposed development. No increase in area for infiltration.	None

Question	Response	Action required
5. Is the site in an area known to be at risk from surface flooding or is it at risk from flooding because the proposed basement is below the static water level of a nearby surface water feature?	No. The site is in a Flood Zone 1.	None

## 7. PRELIMINARY GROUND MOVEMENTS

### 7.1. General

The proposed development has the potential to generate ground movements as below:

1. Vibration during demolition
2. Installation movements caused by construction of the perimeter retaining walls
3. Horizontal displacement of temporary works and propping
4. Heave movements caused by basement excavation
5. Long term settlement movements/stress changes caused by final construction loadings.

### 7.2. Party Wall Structures

The party wall and adjacent structures being considered in this impact assessment are indicated in Figure 10-1, including the UKPN substation at the northeast corner, Harrow Road subway to the south and Edgware Road subway around the southeast corner of the building. The structures elevations are shown in Figure 15.

Figure 15: Party Wall Structures



#### UKPN Substation (Pre 1969-1974)

The UKPN electrical substation (number 35016) is a single-storey masonry structure as shown in



Figure 16. The foundation of the electrical substation is currently unknown but likely to comprise shallow foundations or a raft.

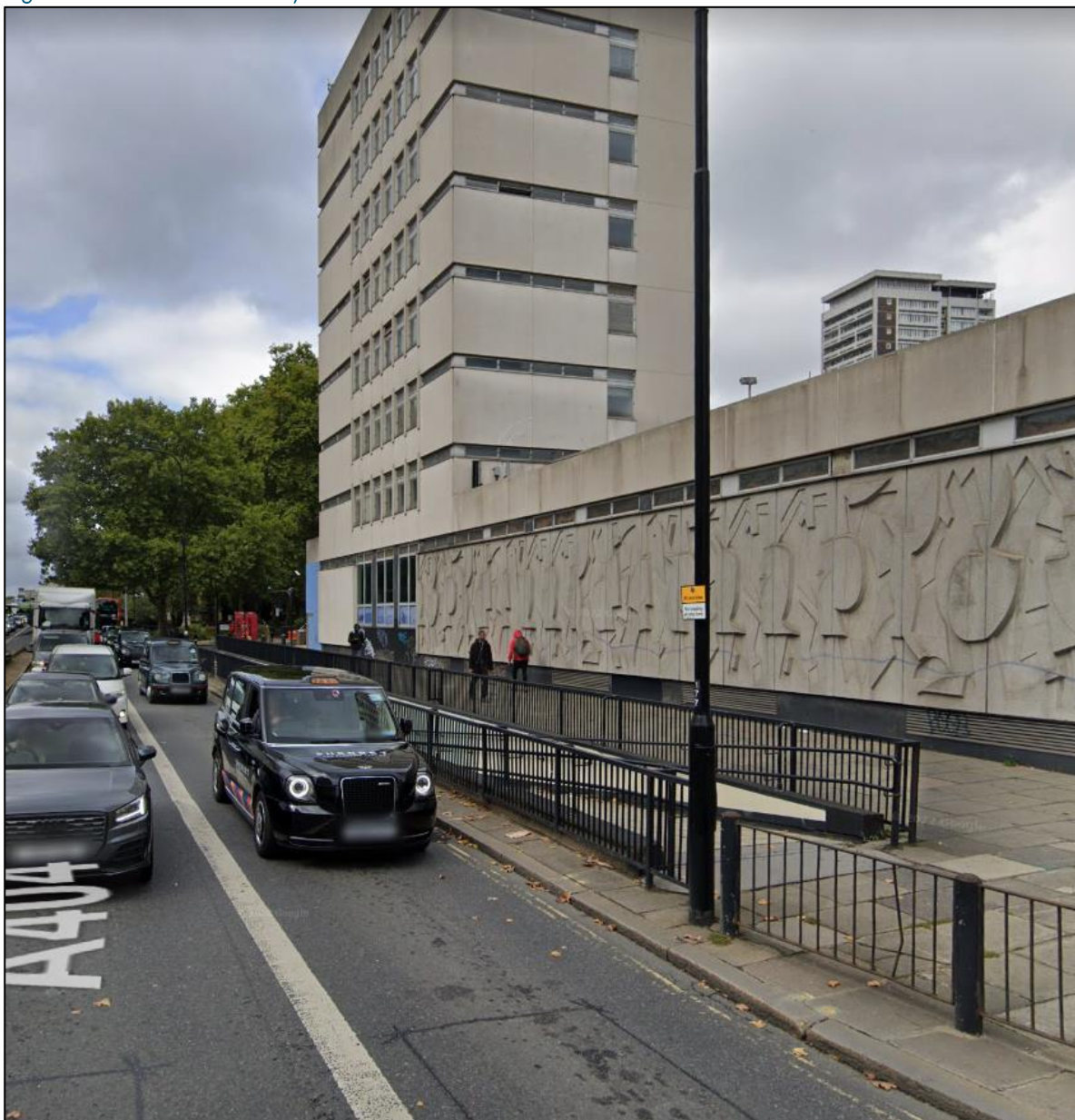
Figure 16: UKPN Substation



### Harrow Road Subway/Access

Harrow Road subway and its access, owned by the City of Westminster, is some 4.7m to the south of the police station southern façade (see Figure 10-3). The subway access comprises a ramp from the west and stairs from the east to the subway level. The ground level is at some 31.9mOD and the subway level is at approximately 28.4mOD. The subway runs south under Harrow Road/A40 and is likely to have been constructed as a reinforced concrete box.

Figure 17: Harrow Road Subway



### Edgware Road Subway/Access

Edgware Road subway and its access, is located around the southeast corner of the police station, at the closest distance of approximately 3.9m to the subway east access. The subway access comprises a ramp from the east side and stairs from the south side to the subway level. The ground level is at approximately 32mOD and the subway level is at 28.2mOD. The subway runs to the southeast beneath Edgware Road and Harrow Road, it is likely to have been constructed as a reinforced concrete box.



Figure 18: Edgware Road Subway



The Edgware Road Subway is to be filled in as part of the works; therefore long term stability/impacts are not significant to this structure.

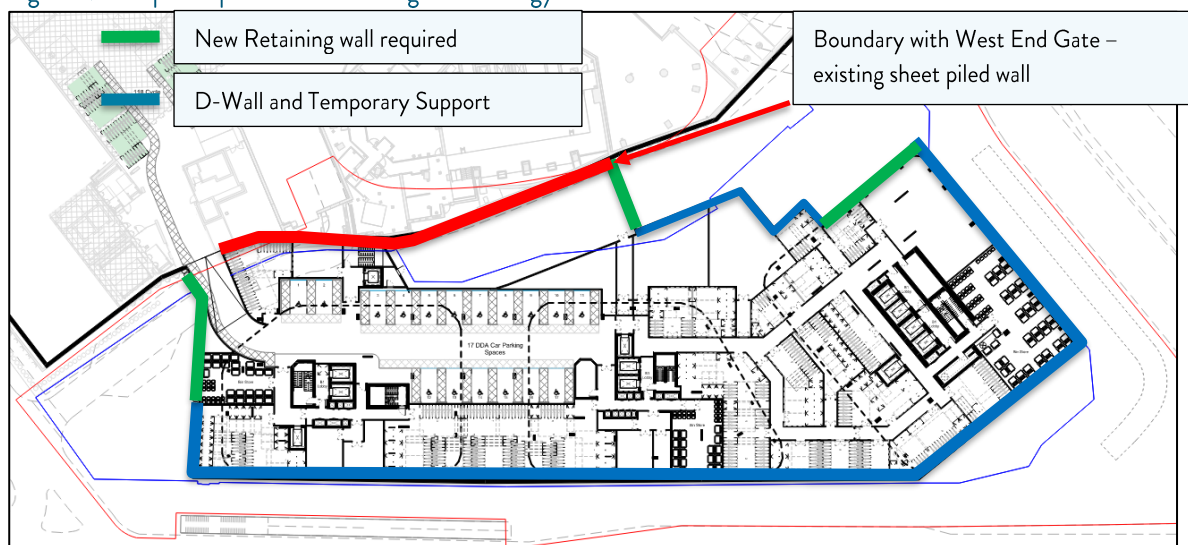
### 7.3. Temporary works strategy

The general temporary works strategy is set out below:

1. Demolish existing structure to basement slab level;
2. Install temporary support to existing D-Wall where required;
3. Break out basement slab and excavate to formation level;
4. Construct foundations and structure.

It will be necessary to construct new retaining walls in some locations; the general strategy is illustrated below:

Figure 19: Proposed perimeter retaining wall strategy

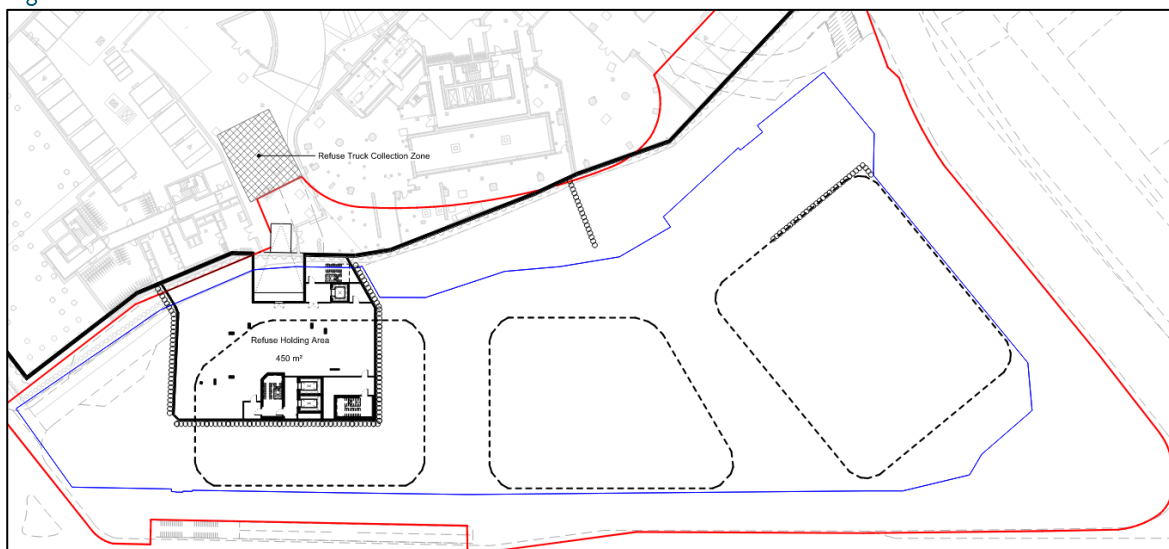


In addition to the B1 works, there is a small area of B2 basement in the northwest of the site. The retaining wall to form the B2 basement is proposed as a secant piled wall, it is primarily internal with limited potential to affect party wall structures or neighbouring assets.

There is a small area of B2 basement in the north and west of the site. This is to be constructed within a secant piled wall. The secant wall is within the site boundaries and has limited potential to affect groundwater and/or neighbouring properties.



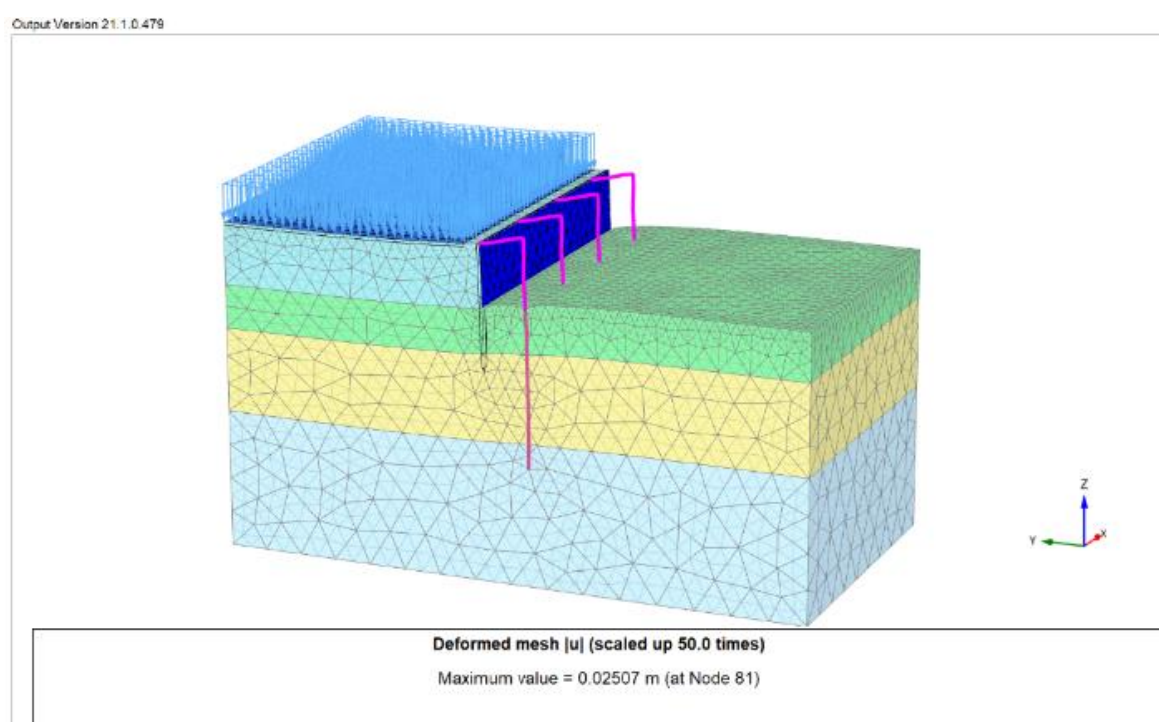
Figure 20: B2 area



## 7.4. Displacements

A preliminary assessment of lateral movements caused by the proposed temporary works strategy has been carried out, indicating lateral and vertical movements of the order of 25mm. These are typical movements assessed for developments of this type and not expected to affect perimeter assets and properties.

Figure 21: Preliminary assessment, temporary works

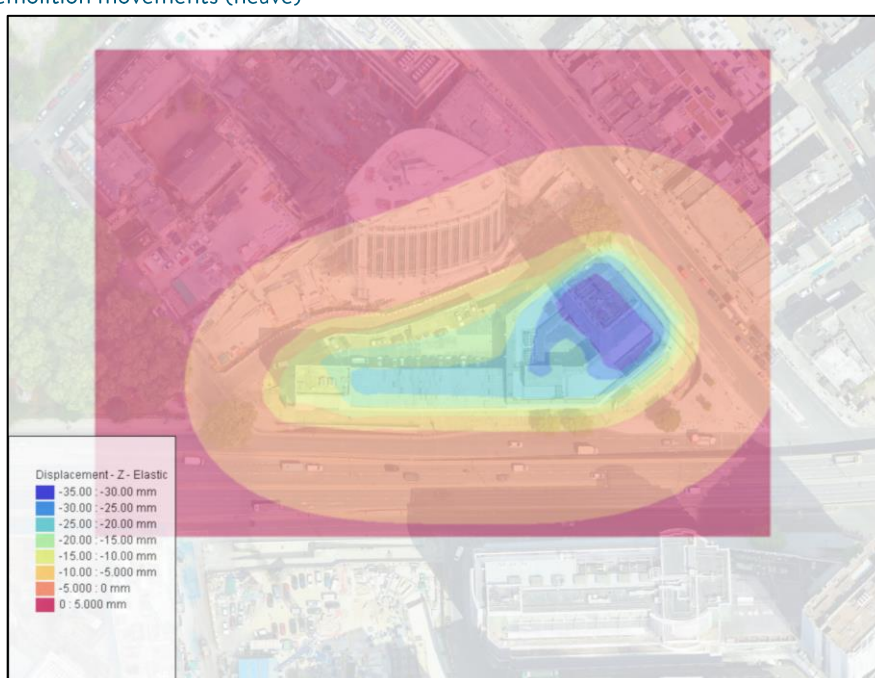


## 7.5. Settlement

Preliminary settlement calculations have been carried out using Oasys PDISP, initial heave/demolition loading displacements are illustrated below; demolition movements are predicted to be low, of the order of 0 to 5mm generally at the positions of assets around the site perimeter, locally 5mm to 10mm adjacent to the substation and Edgware Road Subway.

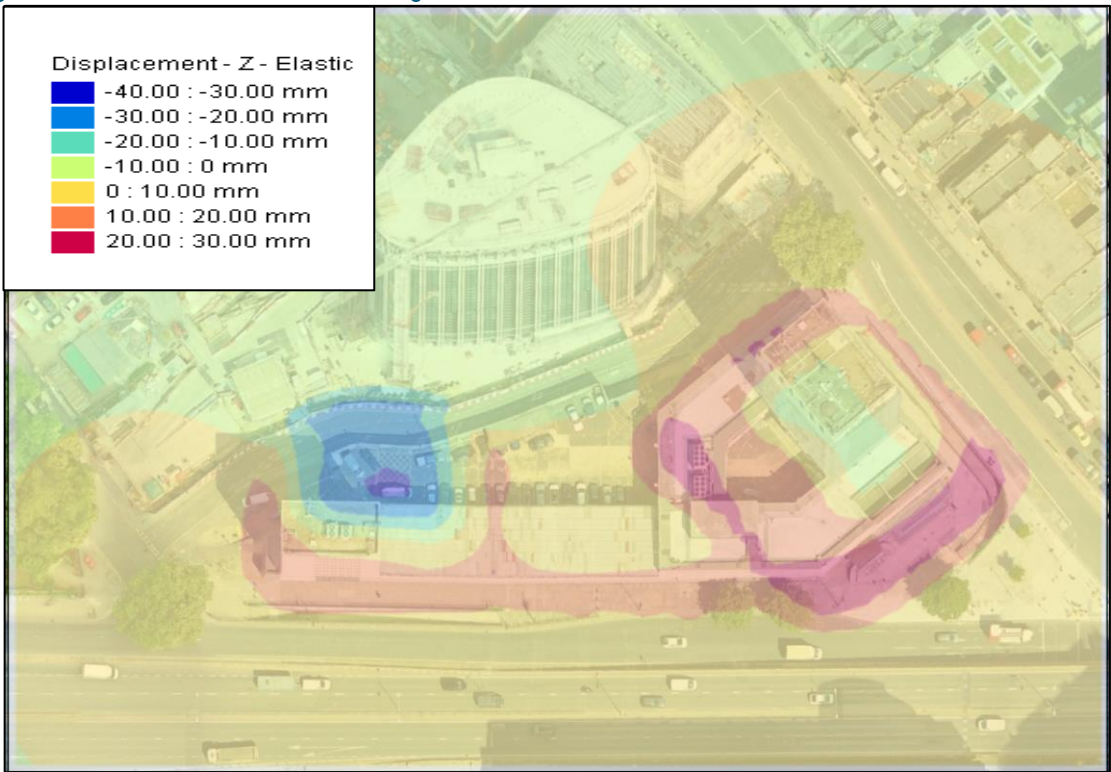
Movements are typical and low – a detailed impact assessment will be carried out once the design has developed.

Figure 22: Demolition movements (heave)



Predicted settlements arising from the proposed development are illustrated below, they are typically in the range of 20mm to 30mm (maximum) reducing to of the order of 10mm to 25mm generally in the locations of adjacent assets. Predicted initial settlements are typical of this type of structure; the overall development will be designed to a settlement tolerance to minimise differential movements; a detailed GMA and impact assessment will be carried out as the design develops.

Figure 23: Construction movements – long-term



## 8. NON-TECHNICAL SUMMARY

A Structural Methodology Statement is provided for the proposed redevelopment of Paddington Green Police Station; the following conclusions have been drawn based on a review of desk study data, and a site-specific ground investigation:

1. There is only a small area of basement that will extend beneath the groundwater level; groundwater flow is from the north and there is a large basement (West End Gate) in this direction that provides a water cut-off.

The impact of the PGPS basement is therefore considered to be negligible.

2. The demolition and construction of the new buildings will cause ground movements typical of developments of this nature. Preliminary analysis indicates that such movements can be restricted to less than 25mm around the perimeter of the site; values that are likely to be sustainable by the surrounding assets.

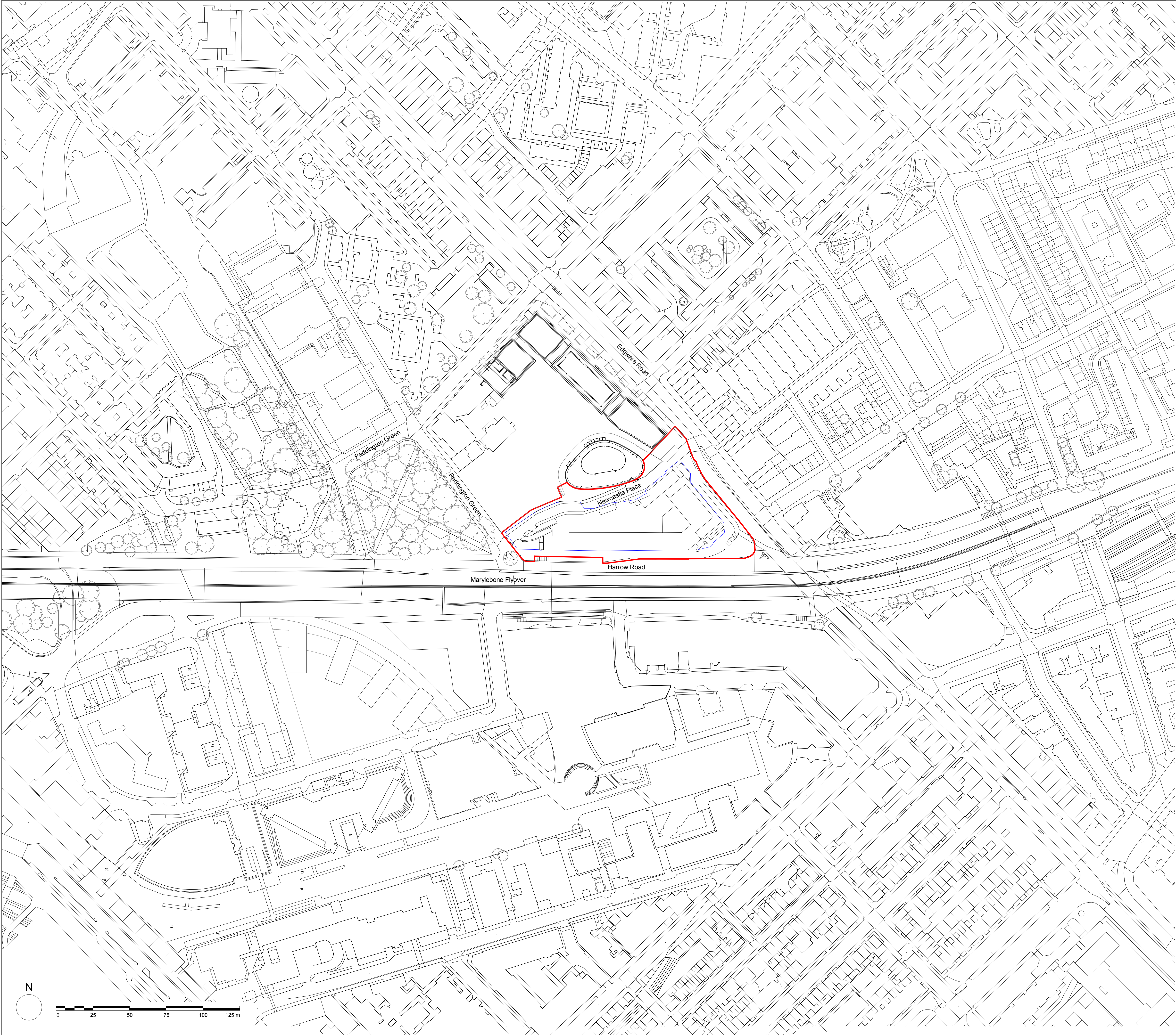
A detailed Ground Movement Assessment will be required once the design has developed to provide assurance to asset holders including Thames Water, London Underground Limited, UKPN, and TfL/Highways, regarding their assets. Where necessary, temporary works sequences and the wider structural design will be modified such that an acceptable level of movements is determined and agreed with the relevant stakeholders.

3. Sitewide drainage will be designed in accordance with current planning legislation, SUDS, and the London Plan. The development does not change hard-standing coverage across the site, therefore it is not expected that the proposed development will affect surface water flooding risks in the area. A Flood Risk Assessment has been undertaken, the drainage strategy aligns with greenfield run off rates in the long term.



# Appendix A Existing building plans





Do not scale from this drawing. All dimensions to be checked on site. All omissions and discrepancies to be reported to the Architect immediately

This work is copyright and shall not be reproduced or used for any other purpose without the written permission of Squire and Partners.

Key	
<span style="color: red;">—</span>	Planning Application Site Boundary
<span style="color: blue;">—</span>	PGPS Site Boundary

Issued for Planning	26/03/21	P1
Description	Date	Chk Rev

## SQUIRE & PARTNERS

Squire and Partners LLP  
The Department Store  
248 Ferndale Road, London SW9 8FR  
T: 020 7278 5555  
info@squireandpartners.com  
www.squireandpartners.com

Project  
Paddington Green Police Station  
London, W2

Title  
Existing Location Plan

Suitability	Status	Job Number
S2	For Information	15044
Date	Scale @ ISO A1	Job Number
26.03.21	1:1250	15044
Drawing Number	Revision	
15044-SQP-ZZ-ZZ-DP-A-PL01001	P1	