

Appendix C

Archaeology

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C1 Archaeological Desk Study

Westminster City Council
Ebury Bridge Estate Renewal
Archaeological Desk Based
Assessment

EBE-ARP-ZZ-XX-RP-CE-000001

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 257461-00

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Appendix A

Archaeological Watching Brief - Method Statement

1 Introduction

1.1 Site location

The Ebury Bridge Estate site is located centrally in Westminster, about half way between Victoria Railway Station and the River Thames, see Figure 1.

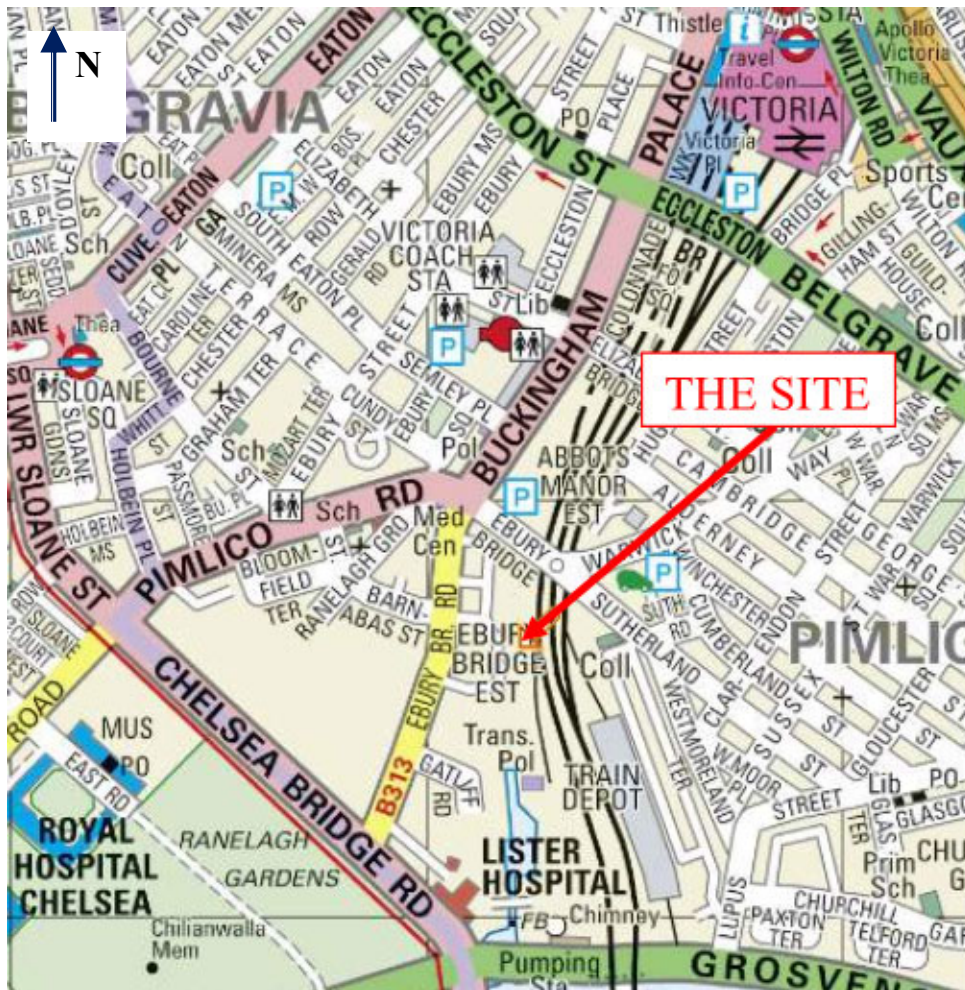


Figure 1: Site Location

1.2 Development objectives

The redevelopment involves demolition of the existing buildings and construction of several new residential buildings, within a reconfigured landscape. Up to the lodging of a Planning Application the configuration of buildings will likely be modified, this also reflected in the positions of engineering site investigation locations.

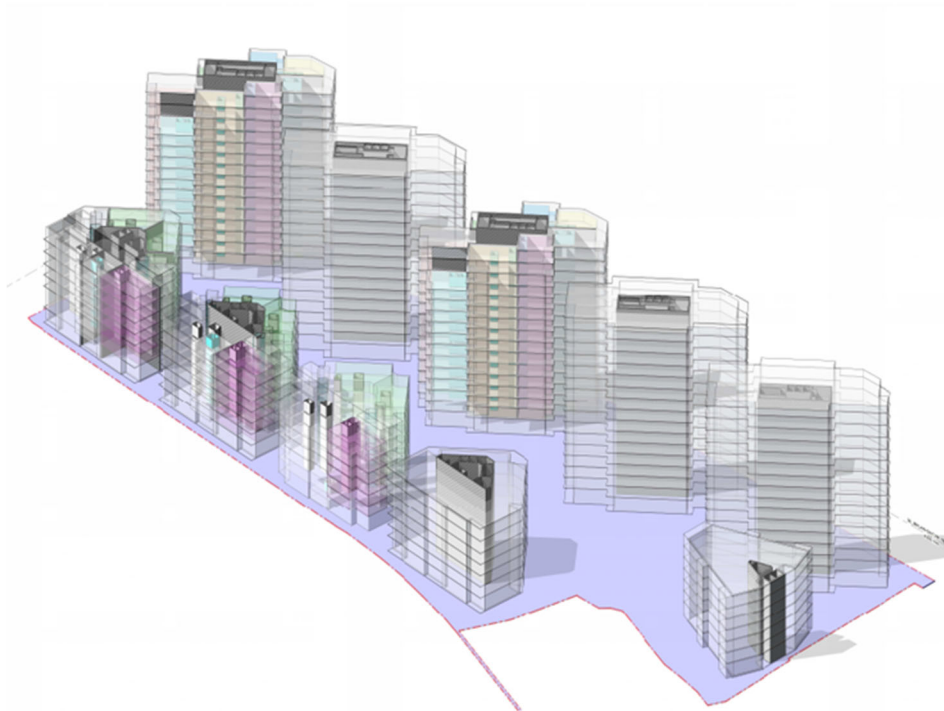


Figure 2: General Impression of the Proposed Development

The architect for the project is AStudio. Ove Arup and Partners Limited are the lead consultants for the project, providing consultancy services including archaeology.

During Stage 3 Detailed Design, also related to the Planning Application to WCC, positions of buildings, and hence basements, are being modified. This will have no significant effect on the findings and archaeological mitigation recommendation addressed in this report.

1.3 Archaeological summary

This report presents the findings of an Archaeological Desk Based Assessment (DBA) of the site based on a review of currently available archaeological and historic information relating to the site and its setting. The DBA has been carried out by Arup for Westminster City Council (WCC) to support the objectives of urban regeneration of the site. It is not intended for and should not be used by any third party.

The site lies within Tier 3 of WCC policy related to archaeological value and potential of the site, for addressing planning and mitigation requirements.

The Desk-Based Assessment has established that at the study site there is: a low potential for prehistoric man-made assets; a high potential for prehistoric palaeo-environmental soil formations and ecological content; a low potential for Roman remains; a low potential for Saxon remains; a low potential for medieval remains; a moderate potential for post-medieval material; and, a high potential for features of modern occupation.

In summary, at a shallow depth, the made-ground will likely include: residual elements of post medieval occupation; the 19th century Grosvenor Canal, originally part of the mid-18th century but short-lived Chelsea Water Works; a rather marshy landscape of osier beds; later canal-side building trades comprising small wharfs and light weight surface-set sheds.

Mid and late 19th century development and then further redevelopment in the early-mid 20th century and including the insertion of a substantial canal and wharfs followed by local authority housing would have significantly impacted on the older made-ground formations and older landscape character.

The wider Westminster area appears not to have been a favourable location for settlement during the prehistoric period, with just a little prehistoric evidence found within and on top of sub-surface alluvial formations related to the River Thames flood plain and slightly elevated 'eyots' (slightly upstanding gravel islands set in floodplain abraded channels).

Several scattered finds of Palaeolithic age have been recovered from within the study area, and possible votive offerings have been recovered from the Thames. Areas may survive of once shallow natural soils and these retaining environmental evidence of the slow creation of the landscape following the last glaciation. Such formations may contain ecological materials of heritage interest.

No definitive Roman sites are known from within Westminster, although Roman finds have been found throughout the area.

The Domesday Book records a flourishing manor and estate called 'EIA'.

The study area was likely located within the hinterland outside of any known Saxon settlement of this time.

During the medieval period, a settlement grew up around the manor complex and the creation of this facility would have included for agriculture, making of flood protection ditches and bunds and ad hoc grave/sand quarrying.

In areas where locally intact archaeological horizons are not truncated and are now buried beneath substantial depths of recent made-ground there is a possibility that they may be impacted upon by the proposed works.

The archaeological potential can be further advanced by archaeological watching briefs on engineering site investigation and, as necessary, by archaeological field evaluation.

At most it is likely that local archaeological works will be sufficient for mitigating development impacts. *In situ* preservation of any discovered archaeological deposits is not considered a necessary requirement.

2 The Site and Natural Setting

2.1 Site location

The site is located in Westminster City. The site is bounded by:

- Ebury Bridge to the north.
- Grosvenor Waterside Development to the south.
- the railway lines into and out of Victoria Station to the east.
- Ebury Bridge Road to the west.

The approximate National Grid coordinates of the site are TQ286783. The site location is indicated in Figure 1, and the present site layout plan is shown in Figure 3.

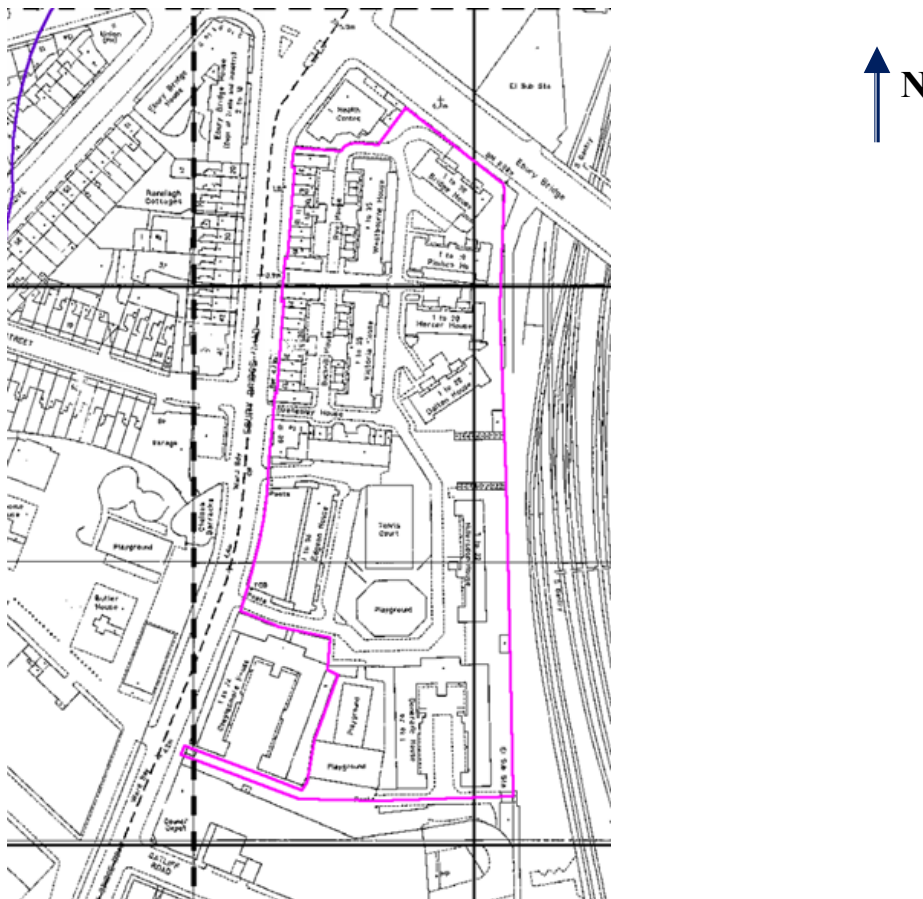


Figure 3: Present Site Layout

2.2 Present use

The site currently consists of a mix of medium size buildings used for residential purposes as shown in Figure 3. Some buildings have been decanted to facilitate the re-development proposals.

2.3 Topography

The ground level within the estate is generally flat between +4.1 to +4.5mOD. Ebury Bridge at the northern boundary of the site rises to the east. A retaining wall at the northern boundary of the site retaining the approach road to Ebury Bridge. Approximate Retained height is between 1.5m and 4m.

The River Thames is located approximately 300m to the south of the site. The existing ground level at the site is below the +5mOD contour line which is considered by the Environment Agency to define the zone that would be most vulnerable to flooding if the existing system of tidal defences along the River Thames (such as barriers, walls and embankments) were to be breached by an extreme surge tide event. Figure 4, which is taken from an Envirocheck study presents the Environment Agency assessment of the limits of the tidal floodplain in the site area. The site is shown to be within the indicative tidal floodplain area in Zone 3.

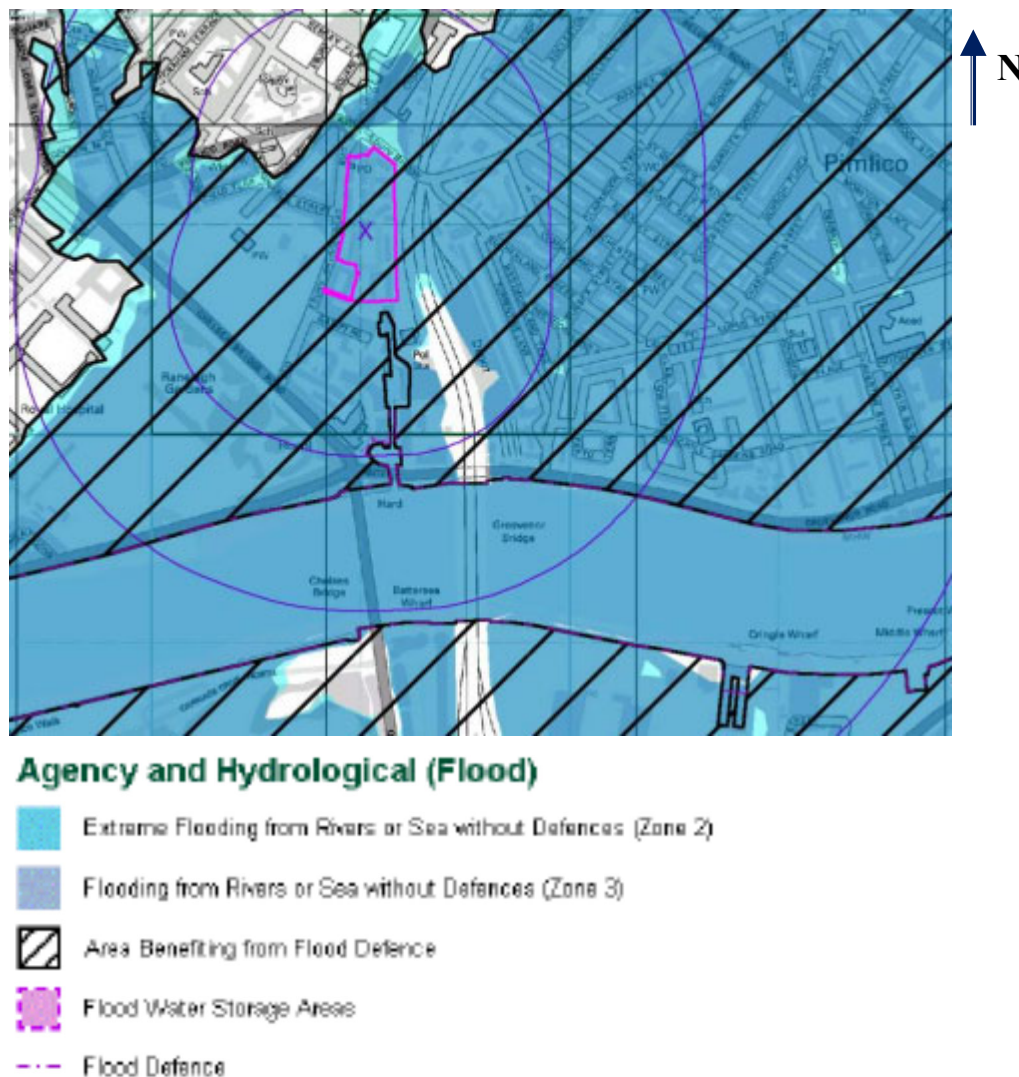


Figure 4: Limits of Tidal Floodplain

2.4 Geology

The 1:10,560 scale geological map of the site area published by the Geological Survey of England and Wales in 1936 indicates the superficial geology below the site to consist of Made-Ground above Alluvium which overlies Floodplain Gravel. The solid geology consists of London Clay overlying the Woolwich and Reading Beds (re-named Lambeth Group), Thanet Sand and Upper Chalk.

1995 Geological map

Figure 5 shows the site on the 1:50,000 scale geological map published by the British Geological Survey (BGS) in 1995. The site is shown to be underlain by Made-Ground underlain by the London Clay Formation, Lambeth Group, Thanet Sand Formation and Chalk. Remnants of Alluvium and Kempton Park Gravels may be present on site.

It should be noted that the change in names used in the recent geological maps, the floodplain Gravel now referred to as Kempton Park Gravels.

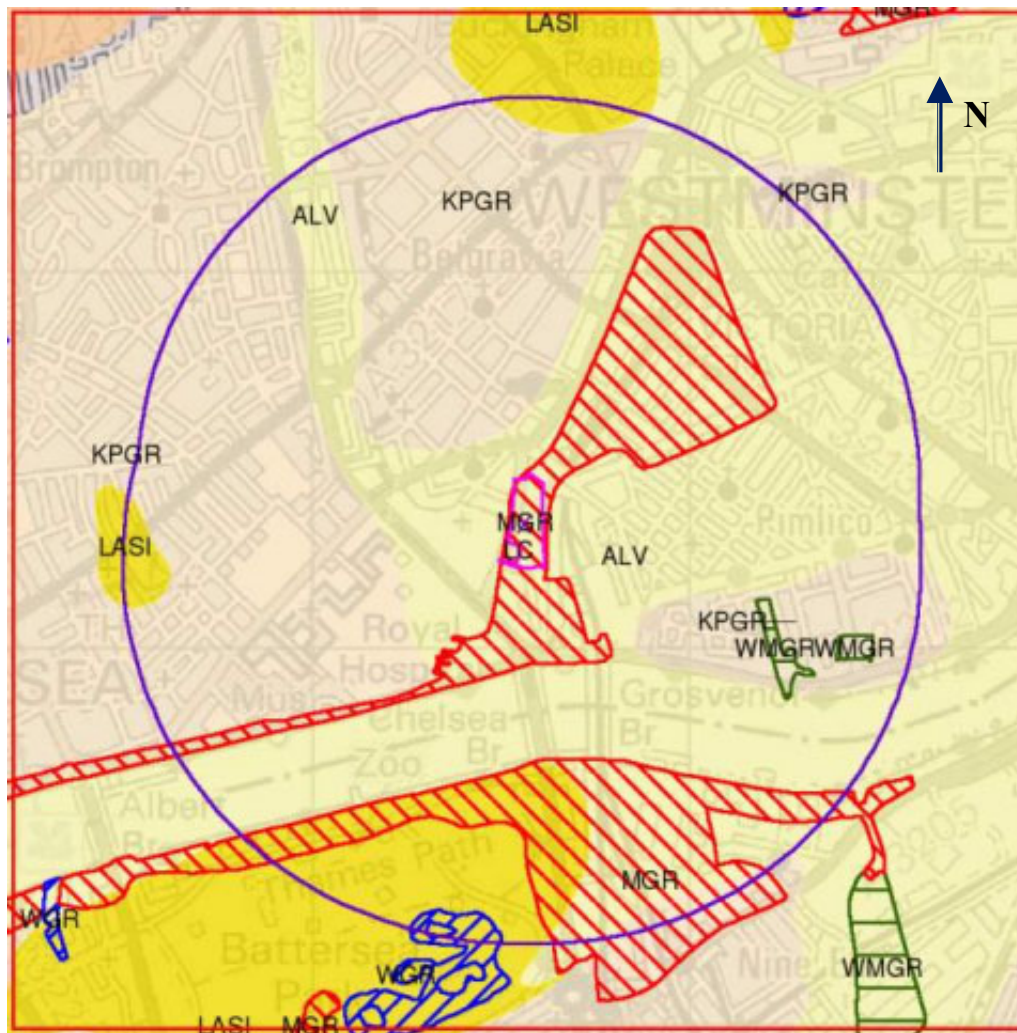


Figure 5: Geological Map (1995)

2.5 Superficial soils

Superficial soil formations of the locality have been best archaeologically investigated on the Chelsea Barracks redevelopment site immediately to the west, likely also characterising formations on Ebury site where still retained:

Pleistocene Gravels: +3 to -2.5m OD and up to 4m thick reflecting on glacial and post glacial geomorphological regimes and where there were various types of land readjustment and associated with powerful water forces creating new, variously scouring old and variously reworking gravels (Shepperton and Kempton Park gravels then overlain by floodplain alluviums).

Pleistocene Sands: Comprising orange sand and occasional silts and clays, with some evidence for fluvial bedding. With a surface +3 to +4mOD and up to 4 m thick and possibly a remnant element capping of the Kempton Park formation or being an early stage of formation of the floodplain. Intact surfaces could include for human activities.

Holocene Sands: Comprising grey sands and silts recorded +0.5 and -2.5m OD and up to 2.5m thick. Found in the eastern part of the site towards Ebury Estate and likely to be infill of migrating river channels and with evidence of down cutting to London Clay.

Flood and backwater deposits: Surface 0 to +2m OD and up to 4m thick. Generally comprising clayey peats and silts from a waterlogged environment (described marshy on early maps). Composition suggests they were created by over-bank flooding and with sluggish water flow – later controlled by drainage ditches etc. The deposits likely retain good assemblages of ecofacts for determining the natural environment and progressive changes brought about in early urbanisation of Pimlico.

2.6 Old rivers

The site lies in the delta formed by the River Westbourne and River Tyburn, see Figure 6. The land was low-lying and marshy.

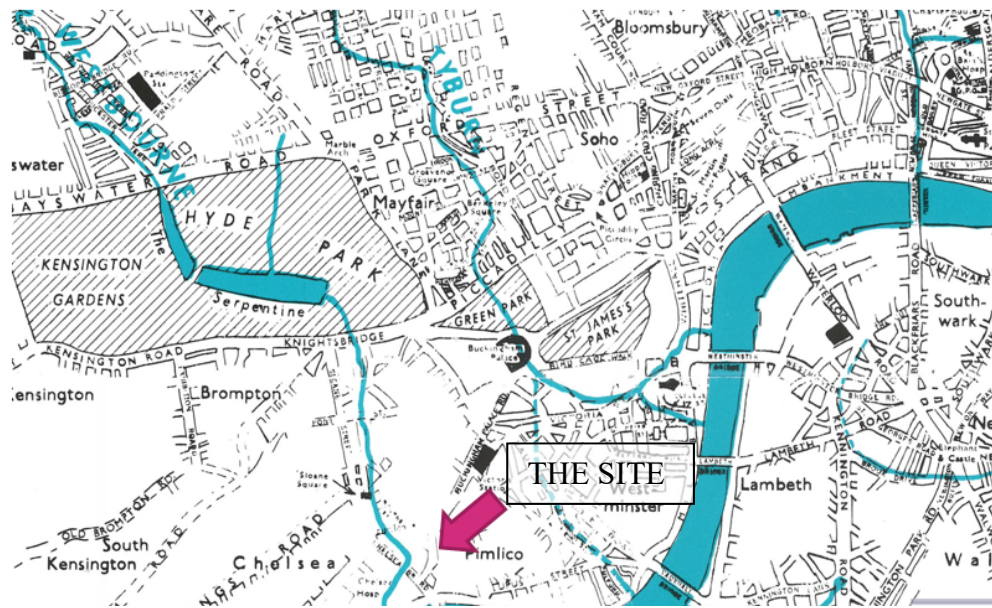


Figure 6: Old Rivers in London

It is understood based on early estate plans that the Westbourne River crossed the site at some point before it was diverted to the path shown on Figure 6 and the River Tyburn was diverted through the site to keep the land marshy for osier beds.

In addition, there are several braided channels on the site as reported by Mike Morley in the paper titled “The Battersea Channel: a former course of the River Thames”, see Figure 7.

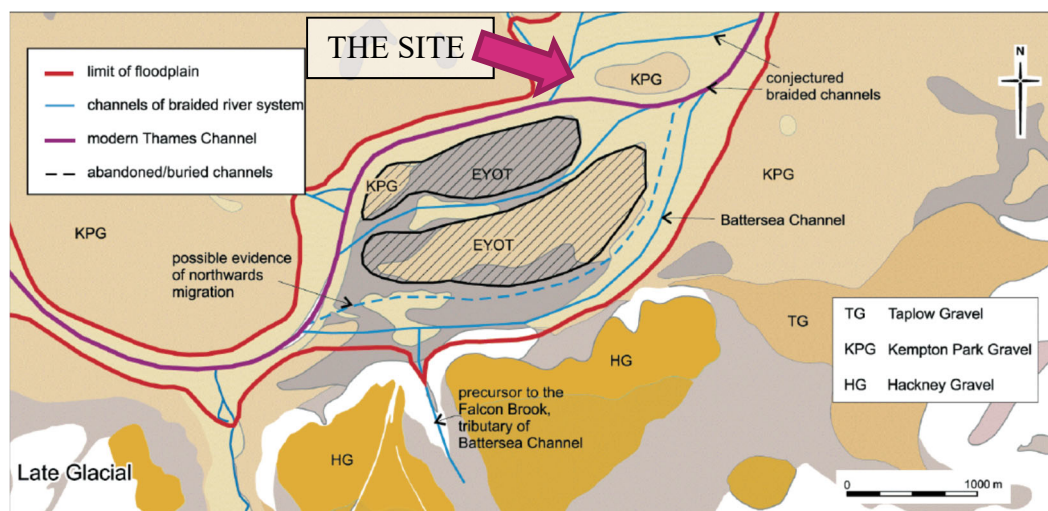


Figure 7: Braided Channels and Eyots

The site is on the inside bend of the River Thames which means that the River would have overflowed and created abraded channels between Waterloo Bridge and Chelsea Bridge. It is understood that the main tract of the River Thames has crossed the site in the post Ipswichian period.

2.7 Ground conditions

A summary of soil formations based on boreholes is given in Table 1 and Table 2 and this is generally confirmed from local geotechnical site investigations.

Table 1: Summary of BGS data

Stratum	Top of stratum (mOD)	
	TQ27NE138	TQ27NE653
Made Ground	+4.6	+5.2
Mud	+2.2	--
Sand with Peat & Organic (Alluvium)	+1.3	+4.6
Terrace Gravels	+1.1	-2.9
London Clay	-0.9 (Blue Clay-probably not London Clay)	-3.5

Table 2: Summary of BGS data in infilled Grosvenor Canal

Stratum	Top of stratum (mOD)		
	TQ27NE479	TQ27NE480	TQ27NE139
Made Ground	--	--	+4.5
Concrete Slab	+0.0	+0.0	--
Brick/Hardcore/Ash/Made Ground	-0.3	-0.2	--
Mud	--	--	+2.1
Sand or Sand and Gravel	-1.8	-0.9	+1.2
London Clay	-4.6	-5.2	-4.9

The base of the Grosvenor Canal is approximately +0.0mOD with a 0.2 to 0.3m concrete base slab

2.8 Existing ground investigation data

The data available from previous site investigations on site and Arup projects near the site are given below.

On site

A geo-environmental intrusive site investigation for the site occurred in 2014 and details of the investigation are given in WYG (2017). Two phases of intrusive site investigation were undertaken, September and October 2014, comprising: one machine excavated trial pit to a depth of 1.35m, one hand excavated trial pit to a depth of 1.1m, and two machine excavated trial pits to depths of 2.2m to 3m below ground level.

The presence of obstructions prevented the planned drilling of three cable percussive boreholes which were replaced by two machine excavated trial pits

supplemented with historical borehole information to verify the ground conditions.

In addition to the BGS recorded boreholes three borehole records were supplied to WYG in 2014 by the client's architect, see Table 3. These boreholes were drilled in 1953 for the construction of Edgson House in the southwest of the site.

Table 3: Summary of WYG-site data

Stratum	Top of stratum below ground level (m)	Top of stratum (mOD)
Made-Ground	Ground Level	Approximately +4.4mOD
Soft cohesive strata (Alluvial Clay?)	0.9 to 1.5	+3.5 to +2.9
Sand (Alluvial Sand?)	8.8 to 9.5	-4.4 to -5.1
Floodplain Gravel	Approximately 10	-0.1 to -0.5
London Clay	8.8 to 10	-4.4 to -5.6
Borehole depth	10.4m to 12.2m	--

Made-ground, encountered in all exploratory holes, comprised gravelly sand with gravel or brick, concrete, sandstone, flint, slate and granite with cobbles. A brickwork arch was encountered in the trial pit north of the site between 0.8m and 2.0m below ground level, described during site works as possibly the remnants of an air raid shelter, however this was unconfirmed and further investigation was recommended.

Two foundation pits were also excavated to assess the depth and construction details of existing boundary wall foundations.

Grosvenor Waterside

In 2004 at Grosvenor Waterside development site, to the south of Ebury Estate, 8 engineering trial pits and 2 boreholes were archaeologically monitored and logged. All encountered about 1 to 4m thicknesses of modern made ground, the deeper deposits back filling and covering former elements of Grosvenor Dock, Basin and some associated surrounding elements. The made ground overlaid soft silty and sandy-clay alluvium, this over terrace gravels and followed by London Clay (PCA 2004).

Ebury Meanwhile

A site investigation consisting of trial pits and dynamic probing was carried out by a geotechnical contractor 'Concept' for Ebury Meanwhile project which are temporary structures for community space and workshops, see Figure 8.

DP06 was commenced as a window hole to a depth of 4.8m and continued as a dynamic probe hole, as the window hole collapsed at 4.8m depth when groundwater was encountered.

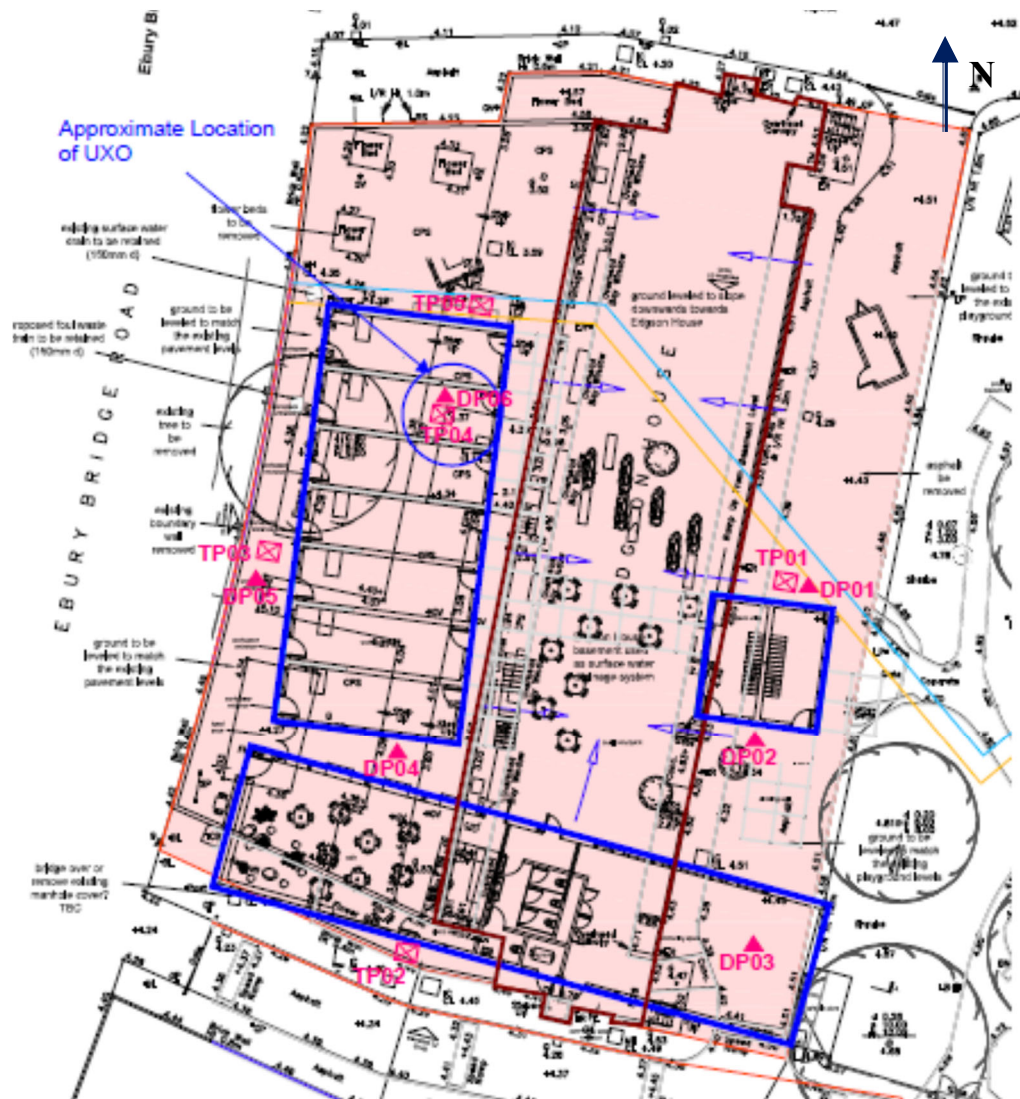


Figure 8: Ebury Meanwhile Site Investigation (Concept 2019)

The summary of the Ebury Meanwhile engineering investigation is given in Table 4 below.

Table 4: Ebury Meanwhile Data

Details	Top of stratum (mOD)					
	DP01	DP02	DP03	DP04	DP05	DP06
Made Ground	+4.4*	+4.4*	+4.4*	+4.4*	+4.4*	+4.4*
Alluvium - cohesive	+1.6	+1.0	+2.1	+1.8	+0.3	+1.6
Alluvium - Sand	+0.0	-0.9	-0.6	+0.0	-0.7	+0.1
Floodplain Gravel (if present)	--	-5.0	-5.0	-4.0	-4.5	-4.5
London Clay	-5.1	-5.3	-5.3	-5.1	-5.5	-5.4
* Ground Level to be confirmed						

The dynamic probe holes encountered very little or no Floodplain Gravels. Ground water level is approximately -0.4mOD.

2.9 Groundwater

Based on geological maps and stratigraphic profiles obtained from the records of previous ground investigations near the site, it can be concluded that the groundwater regime at the site is likely to comprise two aquifers:

- an upper aquifer of perched water overlying the London Clay, and;
- a lower aquifer, within the strata lying below the London Clay.

Upper aquifer

The London Clay and the clayey portions of the Lambeth Group formations act as an aquiclude, impeding flow between the two aquifers. Clayey Alluvium above the Terrace Gravel will also act as an aquitard for surface infiltration in the area reaching the Terrace Gravel. As such, the upper aquifer can be considered to be a confined aquifer.

Given the distance to the River Thames, no tidal variation of the groundwater at site is expected. Regionally, groundwater is assumed to flow towards the River Thames.

Lower aquifer

From the early 18th century, abstraction of groundwater in the London basin caused the groundwater level in the lower aquifer to be artificially depressed. The Chelsea Waterworks in the 18th and early 19th century pumped and circulated some water into its reservoirs, just to the north of the site. Significant amounts of groundwater pumping once occurred to the north of Victoria Station, at the famous ‘Stag Brewery’. This trend continued until the 20th century, when industrial demand for water started to dwindle. From about 1965, as the rate of abstraction of water needed by industry continued to fall, the groundwater level in the lower aquifer in London began to rise. In principle, if left unchecked, the rising groundwater in London could regain its pre-industrial levels.

Since the late 1990s, a long-term programme of de-watering (undertaken by Thames Water Ltd in association with the Environment Agency under the GARDIT programme) has started to arrest and reverse the increase in groundwater levels under London.

3 Archaeological Desk-Based Assessment Process

3.1 Introduction

This archaeological Desk Based Assessment (DBA) has been commissioned by Westminster City Council prior to the proposed redevelopment of the site (Figures 1 & 2).

This archaeological DBA for Ebury Estate, City of Westminster has been prepared in respect of potential redevelopment proposals and also forms part of the Environmental Statement, submitted in support of the planning application and to aid with the consideration, as necessary, of an archaeological mitigation agenda.

This report has been prepared in accordance with the standards specified by the Chartered Institute for Archaeologists (CIfA 2017).

An archaeological DBA is undertaken in order that the local authority may formulate an appropriate response to any identified archaeological resource. The report aims to assess the archaeological potential of the site and to examine the likely impact of the proposed development upon an archaeological resource if present. The need for site assessment and mitigation will be addressed in the planning application archaeological strategy statement. The DBA also supports the developer and its project teams in planning and procuring the scheme.

The DBA also provides an important report to the developer and his team, aiding with risk assessment, development programming and providing opportunities for heritage topics supporting scheme design and onward place making. The report will be used to support onward geotechnical site investigation, and as necessary with site evaluation.

This archaeological DBA has been written and researched by Arup. Research has included: visits to the City of Westminster Local History and Archives Library; visit to the RIBA Library; a visit to the London Metropolitan Archive; an examination of historical maps, relevant reports and publications; a search of the Greater London Historic Environment Record (GLHER); and, a site visit.

3.2 Report objectives

As defined by the Chartered Institute for Archaeologists (CIfA 2017), an Archaeological Desk-Based Assessment aims to:

Determine as far as is reasonably possible from existing records, the nature of the archaeological resource within a specified area. It will be undertaken using appropriate methods and practices which satisfy the stated aims of the project, and which comply with the Code of Conduct, Code of approved practice for the regulation of contractual arrangements in field archaeology, and other relevant by-laws of the CIfA.

A Desk-Based Assessment should consist of:

A collation of existing written, graphic, photographic and electronic information in order to identify the likely character, extent, quality and worth of the known or potential archaeological resource in a local, regional, national or international context as appropriate.

The Desk-Based Assessment is required, in order to assess the merit of the archaeological resource and lead towards one or more of the following:

- The formulation of a strategy to ensure the recording, preservation or management of the resource.
- The formulation of a strategy for further investigation, whether or not intrusive, where the character and value of the resource is not sufficiently defined to permit a mitigation strategy or other response to be devised.
- The formulation of a proposal for further archaeological investigation within programme of research.

The degree to which archaeological deposits survive on site will depend upon previous land-use and so consideration is given to the destructive effect of past and present activity from a study of the information available. In order that the appropriate archaeological response may be identified the impact of the proposed development is also considered.

The potential for surviving archaeological evidence at the site is expressed in this report as ranging between the scales of:

- High: The available evidence suggests a high likelihood for past activity within the site and a strong potential for archaeological evidence to survive intact or reasonably intact;
- Medium: The available evidence suggests a reasonable likelihood for past activity within the site and a potential that archaeological evidence may survive although the nature and extent of survival is not thought to be significant;
- Low: The available evidence suggests archaeological evidence of significant activity is unlikely to survive within the site, although some minor land-use may have occurred.
- Uncertain: Insufficient information to assess.

Buried archaeological evidence cannot be 100% identified during a DBA. The assessed potential is based on available evidence but the physical nature and extent of any archaeological resource surviving within the site cannot be confirmed without detailed information on the below ground deposits or results of on-site fieldwork.

Where potential or known heritage assets are identified, the heritage significance of such assets is determined by reference to existing designations where available. For previously unidentified sites where no designation has been assigned, an estimate has been made of the likely historic, artistic or archaeological importance of that resource based on professional knowledge and judgement.

- **NATIONAL:** The highest status of asset, e.g. Scheduled Monuments (or undesignated assets of schedulable quality and importance), Grade I and Grade II* Listed Buildings. Well preserved historic landscape, whether inscribed or not, with exceptional coherence, time depth, or other critical factor(s)
- **REGIONAL:** Designated or undesignated archaeological sites; well preserved structures or buildings of historical significance, historic landscapes or assets of a reasonably defined extent and significance, or reasonable evidence of occupation / settlement, ritual, industrial activity etc. Examples may include burial sites, deserted medieval villages, Roman roads and dense scatter of finds.
- **LOCAL:** Undesignated sites with some evidence of human activity but which are in a fragmentary or poor state, or assets of limited historic value but which have the potential to contribute to local research objectives, structures or buildings of potential historical merit. Examples include sites such as historic field systems and boundaries, agricultural features such as ridge and furrow, ephemeral archaeological evidence etc.
- **NEGLIGIBLE:** Historic assets with very little or no surviving archaeological interest or buildings and landscapes of no historical significance. Examples include destroyed antiquities, buildings of no architectural merit, or relatively modern landscape features such as quarries, field boundaries, drains and ponds etc.
- **UNKNOWN:** Insufficient information exists to assess the importance of a feature (e.g. unidentified features on aerial photographs).

Adjustments to the above classification are occasionally made, where appropriate; for some types of finds or sites where there is no consistent value and the importance may vary from local to national. Levels of importance for any such areas are generally assigned on an individual basis, based on professional judgement and advice.

The assessment of heritage significance conforms to recommendations of Historic England in its advice on heritage significance (Historic England, 2019).

The expected magnitude of the impact of the proposed development works is determined by identifying the level of effect from the proposed development upon the 'baseline' conditions of the site and the heritage resource identified in the assessment. This effect can be either adverse (negative) or beneficial (positive). In some DBAs it is not possible to confirm the magnitude of impact upon a heritage resource, especially where anticipated buried deposits exist. In such circumstances, a professional judgement is applied. The magnitude of impacts are assessed using the following criteria.

For adverse (negative) impacts:

- **HIGH:** Substantial impacts fundamentally changing the baseline condition of the receptor, leading to total or considerable alteration of character or setting – e.g. complete or almost complete destruction of the archaeological resource; dramatic visual intrusion into a historic landscape element; adverse change to

the setting or visual amenity of the feature/site; significant increase in noise or changes in sound quality; extensive changes to use or access. Substantial harm to or loss of a Grade II listed building, park or garden. Substantial harm to or loss of designated heritage assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, Grade I and II* listed buildings, Grade I and II* registered parks and gardens, and World Heritage Sites,

- **MEDIUM:** Impacts changing the baseline condition of the receptor materially but not entirely, leading to partial alteration of character or setting – e.g. a large proportion of the archaeological resource damaged or destroyed; visual intrusion into key aspects of the historic landscape; and changes in noise levels or use of a site that would result in detrimental changes to historic landscape character.
- **LOW:** Detectable impacts which alter the baseline condition of the receptor to a small degree; e.g. a small proportion of the surviving archaeological resource is damaged or destroyed; minor severance, change to the setting or structure or increase in noise; and limited encroachment into character of a historic landscape.
- **NEGLIGIBLE:** Barely distinguishable adverse change from baseline conditions, where there would be very little appreciable effect on a known site, possibly because of distance from the development, method of construction or landscape or ecological planting, that are thought to have no long-term effect on the historic value of a resource.

For beneficial (positive) impacts:

- **NEGLIGIBLE:** Barely distinguishable beneficial change from baseline conditions, where there would be very little appreciable effect on a known site and little long-term effect on the historic value of a resource.
- **LOW:** Minimal enhancement to key historic landscape elements, parcels or components, such as limited visual improvements or reduction in severance; slight changes in noise or sound quality; minor changes to use or access; resulting in a small improvement in historic landscape character.
- **MEDIUM:** Changes to key historic elements resulting in welcome changes to historic landscape character. For example, a major reduction of severance or substantial reductions in noise or disturbance such that the value of known sites would be enhanced.
- **HIGH:** Positive changes to most or all key historic landscape elements, parcels or components; visual changes to many key aspects of the historic landscape; significant decrease in noise or changes in sound quality; changes to use or access; resulting in considerable welcome changes to historic landscape character.

4 Planning Background

4.1 The National Planning Policy Framework

The revised National Planning Policy Framework (NPPF) was published in February 2019 and replaces the previous NPPF published on 24th July 2018. The NPPF constitutes guidance for local planning authorities and decision-takers both in drawing up plans and as a material consideration in determining applications.

Chapter 16 of the NPPF concerns the conservation and enhancement of the historic environment, with the following statements being particularly relevant to the proposed development:

189. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance' and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum, the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

190. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

Additionally:

199. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible¹. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

In considering any planning application for development, the local planning authority will now be guided by the updated policy framework set by the NPPF, Annex 1. 1 Copies of evidence should be deposited with the relevant historic environment record, and any archives with a local museum or other public depository.

212. The policies in this Framework are material considerations which should be taken into account in dealing with applications from the day of its publication. Plans may also need to be revised to reflect policy changes which this

replacement Framework has made. This should be progressed as quickly as possible, either through a partial revision or by preparing a new plan.

213. However, existing policies should not be considered out-of-date simply because they were adopted or made prior to the publication of this Framework. Due weight should be given to them, according to their degree of consistency with this Framework (the closer the policies in the plan to the policies in the Framework, the greater the weight that may be given).

214. The policies in the previous Framework published in March 2012 will apply for the purpose of examining plans, where those plans were submitted on or before 24 January 2019. Where such plans are withdrawn or otherwise do not proceed to become part of the development plan, the policies contained in this Framework will apply to any subsequent plan produced for the area concerned.

4.2 The London Plan

The London Plan, first published July 2011, was updated March 2016. A new draft London Plan was issued in 2016 and is out for consultation. The draft London Plan includes the following policy regarding the historic environment in central London, which should be implemented through the Local Development Framework (LDF) being compiled at the Borough level:

Policy HC1 Heritage conservation and growth

A Boroughs should, in consultation with Historic England and other relevant statutory organisations, develop evidence that demonstrates a clear understanding of London's historic environment. This evidence should be used for identifying, understanding, conserving, and enhancing the historic environment and heritage assets, and improving access to the heritage assets, landscapes and archaeology within their area.

B Development Plans and strategies should demonstrate a clear understanding of the historic environment and the heritage values of sites or areas and their relationship with their surroundings. This knowledge should be used to inform the effective integration of London's heritage in regenerative change by:

- 1) setting out a clear vision that recognises and embeds the role of heritage in place-making.*
- 2) utilising the heritage significance of a site or area in the planning and design process*
- 3) integrating the conservation and enhancement of heritage assets and their settings with innovative and creative contextual architectural responses that contribute to their significance and sense of place.*
- 4) delivering positive benefits that sustain and enhance the historic environment, as well as contributing to the economic viability, accessibility and environmental quality of a place, and to social wellbeing.*

C Development proposals affecting heritage assets, and their settings, should conserve their significance, by being sympathetic to the assets' significance and

appreciation within their surroundings. The cumulative impacts of incremental change from development on heritage assets and their settings, should also be actively managed. Development proposals should seek to avoid harm and identify enhancement opportunities by integrating heritage considerations early on in the design process.

D Development proposals should identify assets of archaeological significance and use this information to avoid harm or minimise it through design and appropriate mitigation. Where applicable, development should make provision for the protection of significant archaeological assets and landscapes. The protection of undesignated heritage assets of archaeological interest equivalent to a scheduled monument should be given equivalent weight to designated heritage assets.

E Where heritage assets have been identified as being At Risk, boroughs should identify specific opportunities for them to contribute to regeneration and place-making, and they should set out strategies for their repair and re-use.

4.3 Local Guidance: Westminster's City Plan

Westminster's City Plan is now available in draft format for 2019-2040. The Plan contains the following policies of relevance to the subject site

40. Westminster's heritage

A. Westminster's unique historic environment will be valued and celebrated for its contribution to the quality of life and character of the city. Public enjoyment of, access to and awareness of the city's heritage will be promoted.

B. Development must optimise the positive role of the historic environment in Westminster's townscape, economy and character and will:

1. ensure heritage assets and their settings are conserved and enhanced, as appropriate to their significance;

2. secure the conservation and continued beneficial use of heritage assets through their retention and sensitive adaptation

which will avoid harm to their significance, while allowing them to meet changing needs;

3. place heritage at the heart of place making and good growth, maintaining the unique character of our heritage assets and delivering high quality new buildings and spaces which enhance their settings.

ARCHAEOLOGY

N. Westminster's Scheduled Monuments and their settings will be preserved, and opportunities taken to enhance and communicate their significance, where appropriate.

O. Applicants for development which involves excavation or ground works in Westminster's Archaeological Priority Areas or other areas suspected of having archaeological potential will demonstrate that they have properly evaluated the

archaeological potential and significance of the site and assessed and planned for any archaeological implications of proposals.

P. Archaeological deposits will be preserved in situ wherever possible. Where it has been demonstrated that the conservation of archaeological remains in situ is impossible or deposits are considered to be of lesser significance, full investigation, recording and an appropriate level of publication and archiving will be required, including public display and interpretation, where appropriate.

NON-DESIGNATED HERITAGE ASSETS

R. Non-designated heritage assets (including local buildings of merit, archaeology and open spaces of interest within and outside conservation areas) will be conserved. When assessing proposals affecting non-designated heritage assets, a balanced judgement will be made regarding the scale of any harm or loss of the asset and the benefit of the proposed development.

4.4 Archaeological Priority Areas (APA) and summary history

The Draft Westminster City Plan defines Ebury Site within GLAAS Tier 3 designation: 'Pimlico'. Tier 3 is defined as:

A landscape scale zone within which the Greater London Historic Environment Record (GLHER) holds evidence indicating the potential for heritage assets of archaeological interest. The definition of Tier 3 APAs involves using the GLHER to predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future. Tier 3 APAs will typically be defined by geological, topographical or land use considerations in relation to known patterns of heritage asset distribution.

4.5 Historic England's account of Pimlico:

4.5.1 Summary and Definition

The APA covers the confluence of the Thames and Tyburn rivers. For much of its history this was a low lying marshy area that was sparsely populated until the 19th century when the land was reclaimed and developed. The APA is classified as Tier 3 because it is an extensive topographically distinct area that has a high potential for the preservation of organic remains due to its former wetland landscape and also for the extensive infrastructure of the Chelsea Waterworks.

4.5.2 Description

The area covered by the APA is a flood plain which is crossed by both the Tyburn and Westbourne rivers before they enter the Thames and several former water channels have been found during excavations. Such a landscape could have been an attractive area during the prehistoric period due to the good agricultural potential of the land and the abundant supply of fresh water. Finds dating from the prehistoric period such as pottery, tools and weapons have been found

throughout the APA. The most dramatic find was the Battersea Shield, an outstanding piece of late Iron Age decorative parade armour, recovered from the river near Chelsea Bridge which was presumably a votive offering. Further prehistoric finds or more substantial remains associated with trackways or platforms may have been preserved within the former wetland environment.

The area to the south of Horseferry Road and north of Vauxhall Bridge Road was known as Tothill Fields. Tournaments, a market and an annual fair were held here in the medieval period and in later centuries the area was used for military practices, duels and animal baiting. By the 18th century the area to the south of Vauxhall Bridge Road was covered by extensive market gardens.

The Civil War defences of London are thought to have run through the APA in a northwest to south-east direction. One of the forts that punctuated the defences is thought to have been located near to Vincent Square although there has been debate about whether a fort would have been located there or closer to the river. The defences continued until they reached the river at a point between Vauxhall Bridge and the Tate Gallery. Remains of the defences may be present within undeveloped parts of the APA such as Vincent Square.

Since Tothill Fields was an unsettled area away from the city centre it was used for mass plague burials particularly during the London plague outbreak of 1665-1666. Some of the plague pits are thought to be located close to Vincent Square and a group of buildings known as pest houses are also thought to have been built in the same area. The pest houses were built in the 1640s and were used to quarantine people suffering from the plague. More than 1000 Scottish prisoners who had been captured at the Battle of Worcester in 1651, and later died before they could be transported to the Caribbean as slaves, were also buried in Tothill Fields. Vincent Square has never been developed and is still used as a playing field for Westminster School. It is therefore possible that remains of plague victims may survive beneath the playing field.

The only significant historic settlement within the APA was Ebury which is listed in the Domesday Book as Eia and was located in the vicinity of what is now the south-western end of Buckingham Palace Road. A moated manor house that was used by the Bishops of Westminster was located close to the Ebury settlement in the area that is now bounded by Sutherland Row, Sutherland Street, Warwick Way and Cumberland Street. In later years the former manor site was occupied by a number of buildings which became known as the Neat Houses which appear on the Rocque map of 1746 and later maps from the late 18th and early 19th centuries.

Few other significant buildings were built within the APA until the 19th century. One exception was Peterborough House which was built on the riverside in the 17th century to the south of the junction between Millbank and Thorney Street and was later known as Grosvenor House after renovations in the 1730s. It was demolished in the early 19th century.

From the 1720s the Chelsea Water Company built a complex network of canals and channels eventually covering 100 acres from which water was pumped by

windmills, horsemills and later steam engines to the fashionable new suburbs of Westminster.

Unfortunately, as Thames water became increasingly noxious in the mid-19th century the waterworks was closed down and reclaimed.

In the early 19th century a number of industries were established in the southern section of the APA on the north bank of the Thames. Lead works, a distillery and steel works were built in the area that is now bounded by Grosvenor Road, Lupus Street and Claverton Street. The steel works were established in 1807 and a large dock, called Belgrave Dock, was built next to them which can be seen on early OS maps but has since been filled in.

Another significant building that was built in the APA in the 19th century was the Millbank Penitentiary which occupied the same site that is now covered by the Tate Gallery. The prison opened in 1816 and consisted of six hexagonal wings surrounding a central area where the governor's house was located. The entire facility was surrounded by a perimeter wall and lookout towers. The prison closed in 1890 and was demolished between 1892 and 1903. Structural remains of the penitentiary have been found during a number of archaeological investigations.

The APA was still a predominantly low lying and sparsely populated marshy area until the 19th century. However, the Grosvenor Estate was developed by Thomas Cubitt from the 1820s and at the same time the level of the land was raised using soil that had been excavated during the construction of St Katharine's Dock near Tower Hill. The neat and ordered street pattern that can be seen between Warwick Way, Sutherland Street, Lupus

Street and Belgrave Road was a product of the 19th century developments. The area became increasingly built up as the century progressed and by the second half of the 19th century the vast majority of the APA had been built upon.

4.5.3 Significance

For much of its history the APA was a marshy, wetland area unsuitable for permanent settlement. However, such an environment may have preserved environmental evidence and prehistoric features as seen in comparable locations elsewhere in the Thames valley. It would be desirable to better understand the context for the deposition of such a remarkable object as the Battersea Shield. Prehistoric waterlogged timber structures and/or further votive offerings could be considered of national importance.

The open ground of Tothill Fields seems to have attracted a range of unusual uses reflecting its proximity to Westminster, some of which may have left archaeologically recognisable remains. Vincent Square is an area of particular interest since it has never been developed and remains of the Civil War defences and a 17th century plague burial ground may be present there. Even if plague burials are not located in Vincent Square they are located somewhere in the APA and could number several thousand. If located and studied the skeletons could provide information on the social background of the plague victims and also on the plague itself which could benefit modern disease research. The bodies of the Scottish prisoners from the Battle of Worcester could also reveal information on

their backgrounds and also whether torture, starvation or general neglect led to their deaths.

The Chelsea Waterworks played an important role in the development of London's infrastructure and the health of its citizens. It may be possible to improve understanding of how the works operated and how effective or not it was at controlling water quality. Remains of the settlement at Ebury, Peterborough House, the pest houses, the riverside industries and Millbank Penitentiary could also be of local interest.

4.5.4 Key References

London 6: Westminster, S. Bradley and N. Pevsner, Yale University Press, 2003

Westminster and Pimlico Past, I. Watson, Historical Publications Ltd, 1993

5 Previous Archaeological Assessment of the Site

An archaeological desktop report was carried out by Mills Whip Projects for the City of Westminster (2014). This study has not been logged by GLHER, thus is not referenced in Chapter 8 of this DBA. A more comprehensive account of the site's history and archaeology are provided in Chapters 6 to 8 below.

The Mills Whip report states for the 2014 situation:

The subject site does not contain any Scheduled Ancient Monuments, does not lie within a Designated Area nor does it lie within an Area of Special Archaeological Priority as defined by the City of Westminster. To the north lies the Ebury Village Area of Special Archaeological Priority. *(Note: this status has now changed, as addressed above in Chapter 4).*

The summary of the report is given below:

The site lies in the delta formed by the River Westbourne and River Tyburn. The land was until recently low-lying and marginal. There is no evidence for significant prehistoric, Roman, Saxon, mediaeval or early post mediaeval occupation on or near the site. In the early 18th century a network of reservoirs were cut across the whole area, including the site. In the early 19th the Grosvenor Canal was formed from a remodelled reservoir, the remaining reservoirs being backfilled. By the early 20th century most the Canal had been backfilled. The present Ebury Bridge Estate was partially built on the backfilled Canal.

It is suggested that geotechnical boreholes could provide adequate archaeological data to determine the appropriate archaeological strategy. These works can be secured by [planning] conditions.

6 Historical Development

An extensive account of the development of the site over the last two hundred years is to be found in a previous study related to redevelopment proposals:

*Ebury Bridge Estate. Heritage Study HTA Architects (A. Sullivan)
30.11.2011*

This provides a focus on the present urban configuration of the site and how this was achieved. In summary, it notes the phased infilling of the Grosvenor Canal and development stages of the Estate. This is described below in greater detail and draws attention for basements and foundations that will have impacted on the as found ground conditions. This arrangement, original and the changed character is confirmed by a review of maps and photographs, also summarised below. The staged and elements of this development are not further considered within the remit of this DBA other than where relevant to impacts on the underlying ground conditions and the potential archaeological resources.

Historical maps and aerial photographs have been reviewed, in order to monitor the development of the site and changes in site usage where relevant to this DBA.

Map regression is based on post-medieval maps and plans and then Ordnance Surveys from the mid-19th century onwards:


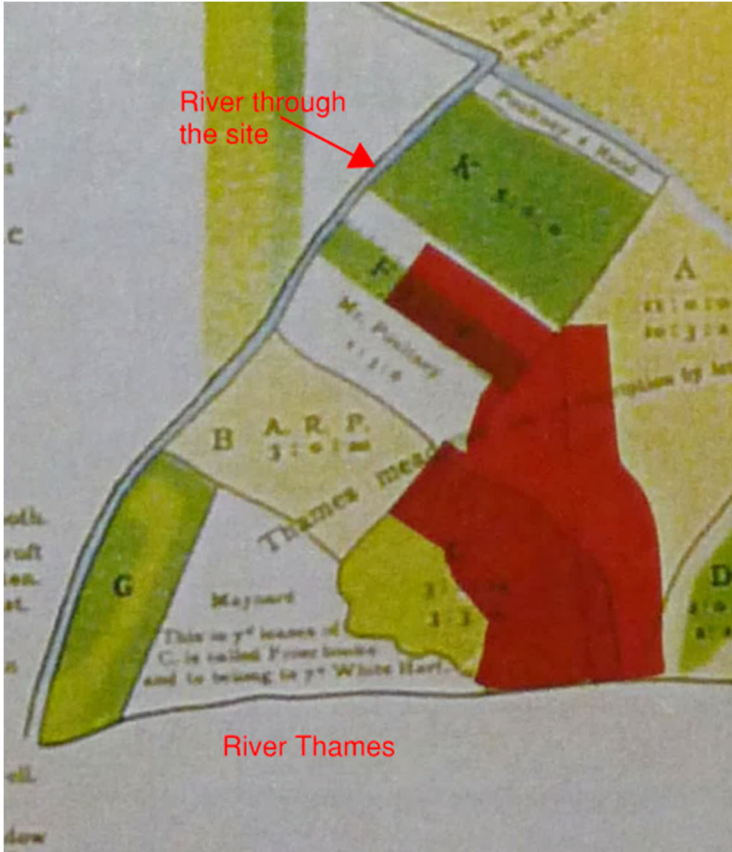
Early non-Ordnance Survey maps at large scale are regarded here as survey accurate and offer potentially useful information about the early development of the site. Small-scale ones are to be regarded as illustrative of landscape character. Ordnance Survey (OS) maps are issued at two different ranges of scales that show different levels of detail. OS maps at 1:1,250 scale and 1:2500 scale can show significant detail, whereas maps at 1:10,560 scale (imperial) and 1:10,000 scale (metric) can show general changes but typically lack detail. The available high-resolution OS maps of the site area are reviewed here.


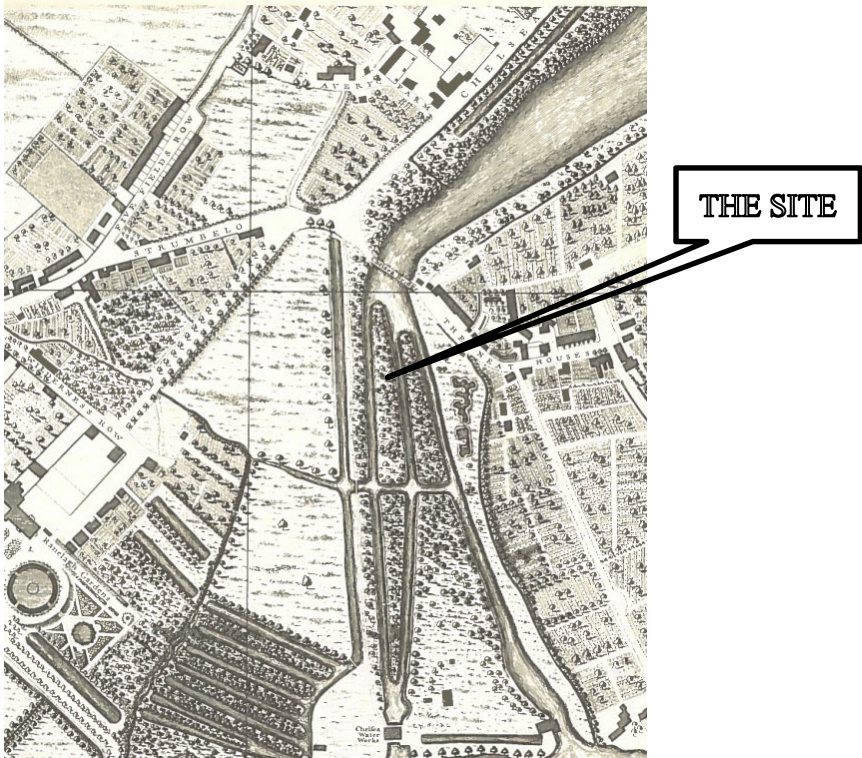
When using the older historical maps, it is important to recognise that there may have been a delay of several years between mapping fieldwork and the publication of the map. Therefore, some caution should be applied when using maps to date development where the date of survey is not registered.


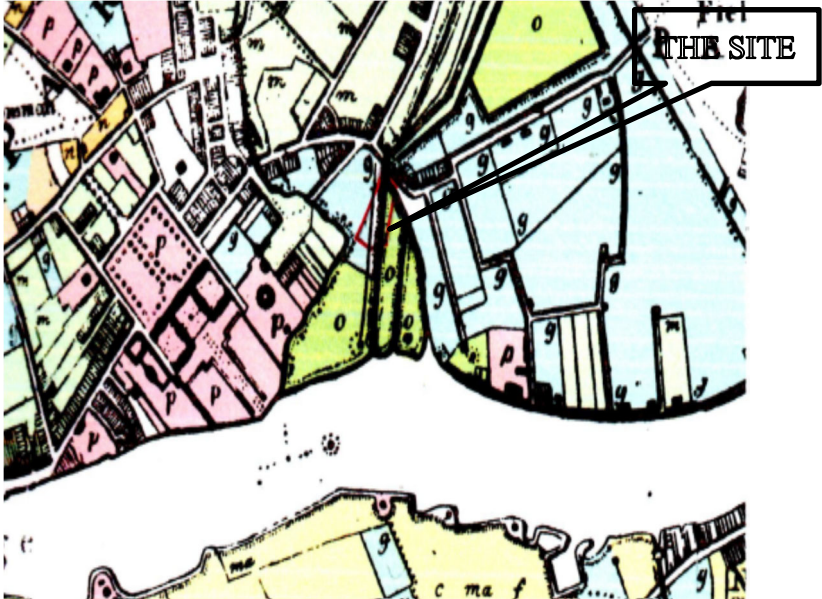
6.1 Chronological summary of the site history based on maps


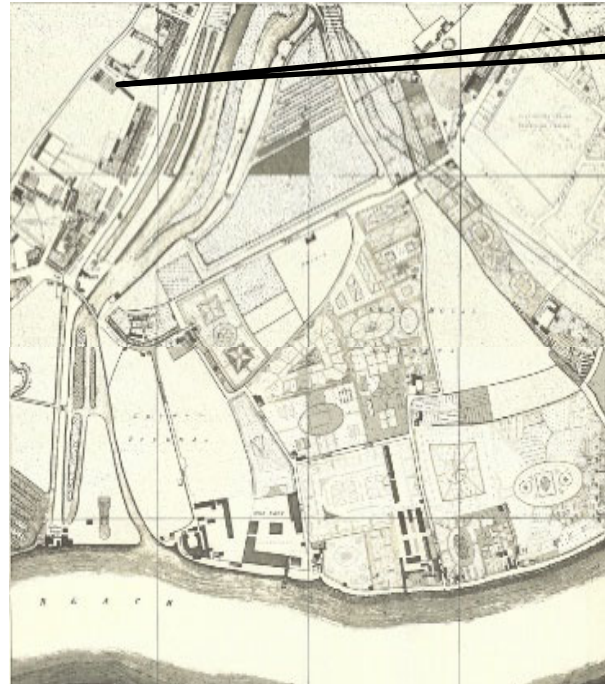
Table 5 below presents a chronological summary of the history on and around the site, appreciated from reasonably reliable historic map sources.


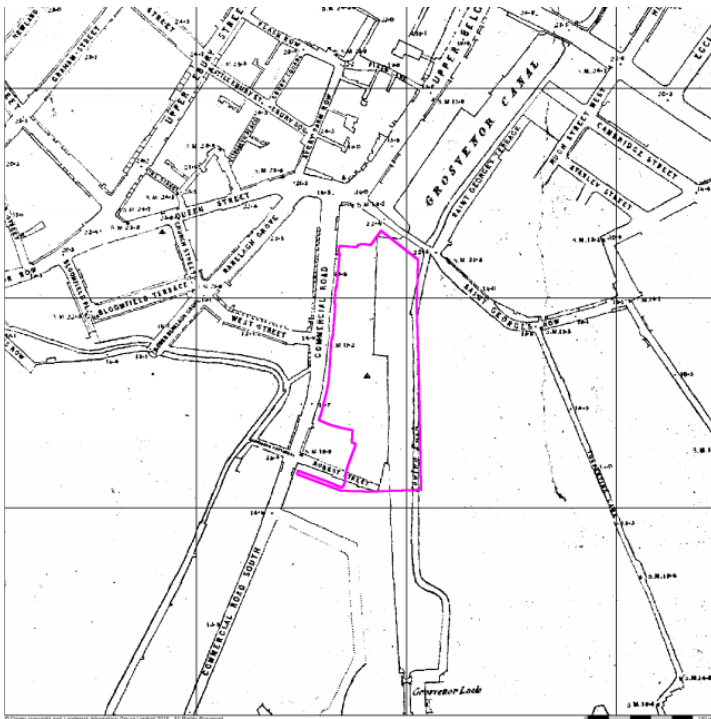
Table 5: Post-Medieval History of the Site from Map Surveys

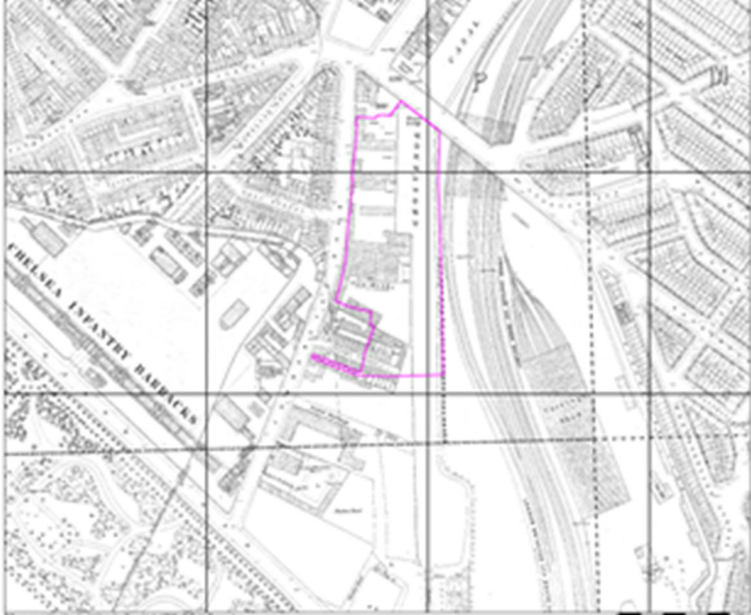
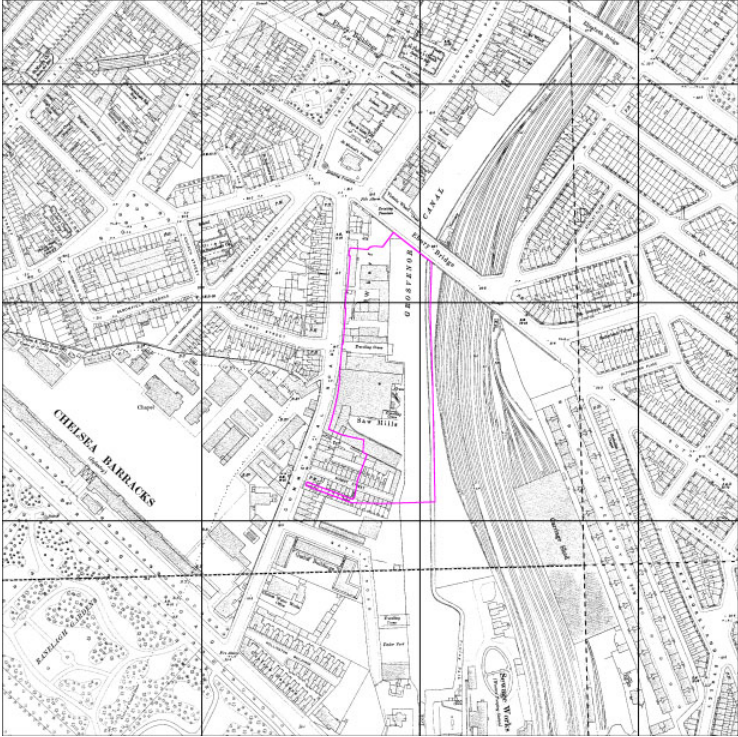
Source	Land uses at the site
<p>Ebury Estate 1614</p> <p>North or red marked area – generally known as Hollow Meadow</p>	
<p>Ebury Manor c.1663</p>	<p>The site was part of the Ebury Estate in 17th century etc the small river now running to the west ran through the site (didn't have a right-angle bend). This older routing is confirmed by several other maps. Old bits of channel may be still be present; associated with the osier beds of the 18th century for willow wands for basket making. The soil will be soft organic soils and with wood post and plank revetments.</p> 

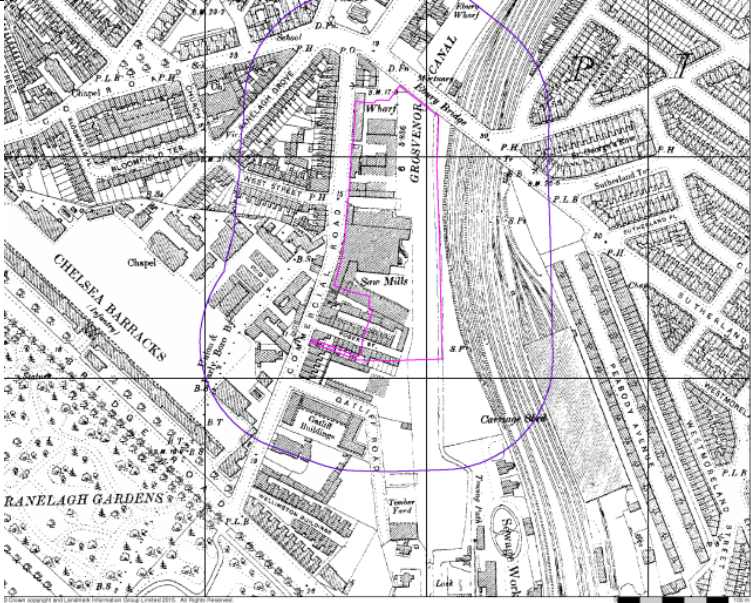

Source	Land uses at the site
Desmaretz 1717	<p>The site was a marshy land variously used as meadow.</p> 
John Rocque Map (1746)	<p>The 1746 map is one of the oldest London surveys but at the largest scale available. There are several water channels or 'cuts' occupying most of the site. North of the site is the Chelsea Bridge, connecting Chelsea to the 'Neate Houses', later rebuild and now known as Ebury Bridge.</p> 

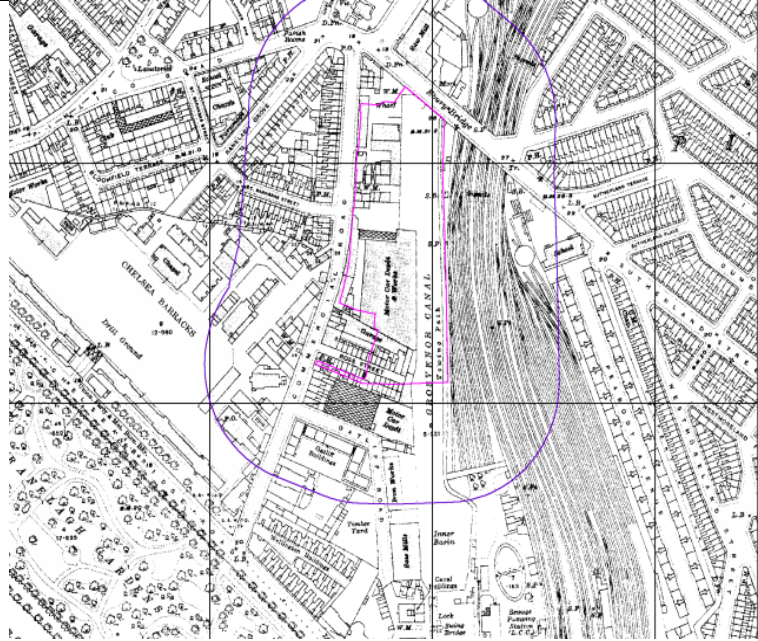
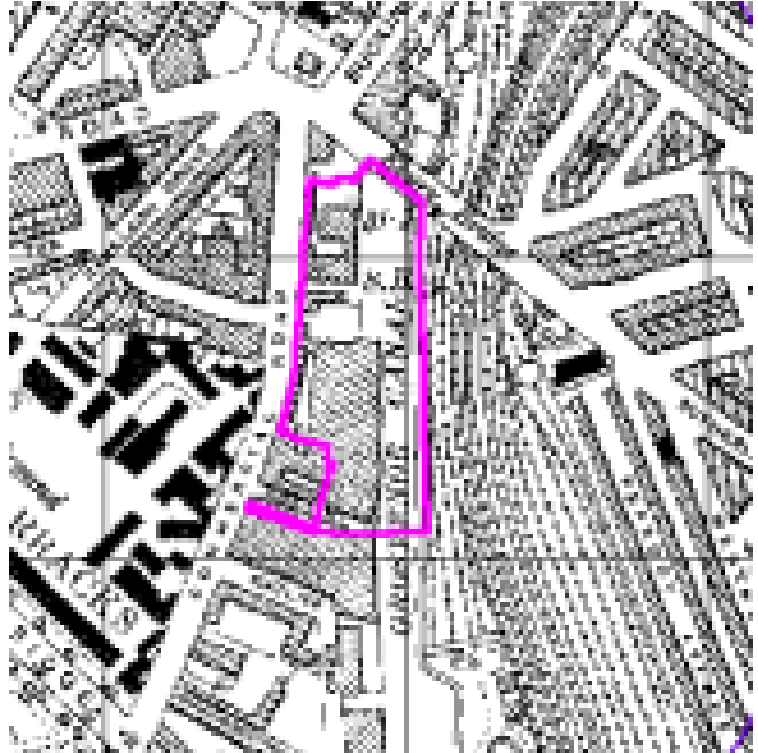
Source	Land uses at the site
Cary's Map of 1787	<p>Continuing to show the open 'field' character of the site and with further illustration of the elements of Chelsea Water Works and with increasing urbanism to the north and west</p>  <p>This historical map from 1787 shows the Chelsea Water Works area. The River Chelsea flows from the bottom right towards the top right. The Water Works are located on the riverbank. To the north and west of the Water Works, there is a large open area labeled 'Field'. The map also shows several streets, including Queen St, Kemp's R, and Bridge St. The area is characterized by a mix of open fields and early urban development.</p>
Milne 1800	<p>Site defined as market gardens and for servicing the needs of urban London.</p>  <p>This 1800 map shows the site defined as market gardens. The area is characterized by a dense pattern of small, irregular plots, typical of market gardens. The site is located near the River Chelsea. A callout box labeled 'THE SITE' points to a specific area within the market gardens. The map also shows surrounding urban areas and the River Chelsea.</p>

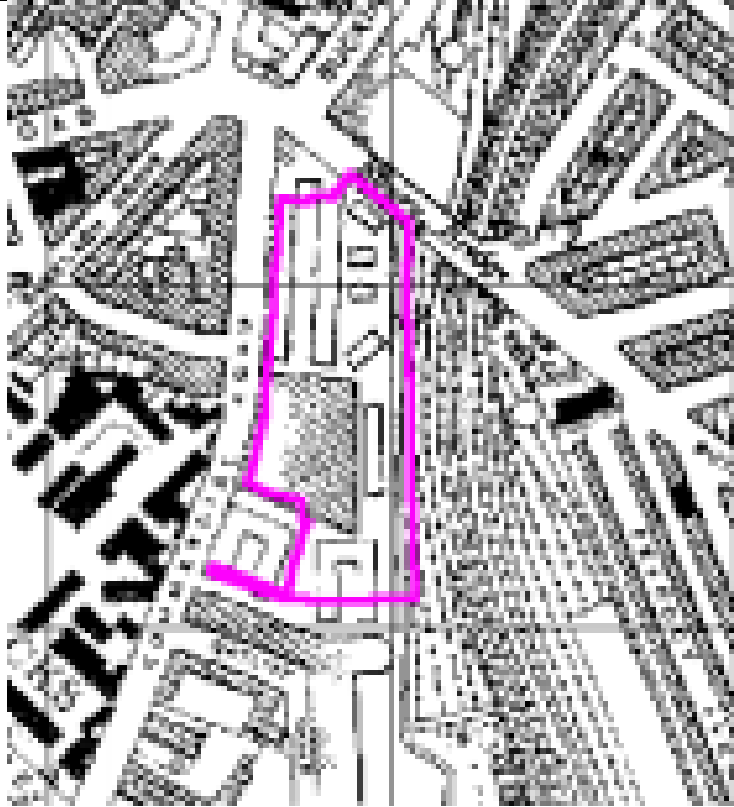
Source	Land uses at the site
<p>Horwood 1797-1803</p>	<p>Continued use of the site for the Chelsea Water Works and with features associated with water filtration and osier growing. This plan also details the routing of the Westbourne River, as a meander feature of the parish boundary</p> 
<p>Figure: Horwood Map (1813)</p>	<p>The site has “cuts to supply water to Chelsea Water Works and for barge servicing of Pimlico Wharf”.</p>  <div data-bbox="1070 1256 1257 1335" style="border: 1px solid black; padding: 2px; display: inline-block;"> THE SITE </div>

Source	Land uses at the site
Greenwood 1827	 <p>This historical map from 1827 shows the Ebury Bridge Estate area. The Grosvenor Canal runs diagonally from the top right towards the bottom right. To the west of the canal is the 'GARDEN GROUND'. Various streets are labeled, including 'Grosvenor Street', 'Wharf Street', 'Grosvenor Canal', 'Wharf', 'Garden Ground', 'Oxier Beds', 'Chelmsford Water Works', 'Grosvenor Canal', 'Wharf', 'Garden Ground', 'Oxier Beds', 'Chelmsford Water Works', 'Grosvenor Canal', 'Wharf', 'Garden Ground', 'Oxier Beds', 'Chelmsford Water Works'. The map shows a dense urban layout with many small buildings and plots.</p>
OS Map (1850)	<p>Grosvenor Canal has been engineered and constructed on the eastern part of the site allowing for wharf to the west</p>  <p>This OS Map from 1850 shows the same area as the 1827 map. The Grosvenor Canal is clearly visible, running diagonally. A pink line highlights the canal and the wharf area to the west. The map shows a more detailed urban layout with many small buildings and plots. The canal is labeled 'GROSVENOR CANAL' and the wharf area is labeled 'WHARF'.</p>

Source	Land uses at the site
OS Map (1872-74)	<p>The bridge north of the site is named as Ebury Bridge. Buildings in the western part and one building is named Saw Mills. Cranes, pump and weighing machine shown on site. New houses in the southern part of the site. South of the site Gatliff buildings have been constructed for the industrial classes.</p> 
OS Map (1895)	<p>More buildings on site. Northeastern part of the site is named “Wharf”.</p> 
OS Map (1896)	No change to the site.

Source	Land uses at the site
	
<p>Goad Insurance map c. 1901</p>	 <p>See Section 3.2 for a description of the buildings on site.</p>
<p>OS Map (1916)</p>	<p>Saw Mills now is occupied by Motor Car Depot & Works.</p>

Source	Land uses at the site
	
OS Map (1920)	<p>No change.</p> 
OS Map (1938)	<p>The section of canal north of Gatliff Road was filled and the site is occupied with buildings except where Edgson house, Wainwright house.</p>

Source	Land uses at the site
	

6.2 Previous buildings on site

The previous major buildings on the site are shown on Figure 9.



Figure 9: Previous buildings on site – Goads Insurance Plans c. 1901

The site in circa 1901 was occupied by 2-3 storey buildings. The northern most building and the southwestern building, both outside the current site boundary, have a basement. The site was occupied by:

- St George's Wharves in the northern part of the site, otherwise occupied by offices, dwelling, stables, fodder storage, stores, smithy, timber stores, paint shop and coal store.
- Geo Smith & Co Ltd Saw Mills in the middle of the site. Elsewhere occupied by offices, timber store and workshops, saw mill, timber shed for oven drying and travelling cranes.
- South of the site is occupied by dwellings, London General Omnibus Co Ltd., Stables and Girls refuge home.

It is possible some buildings were founded on timber piles.

Figure 10 shows a major destructive fire that occurred in 1916 to the Gamage Bell Taxi Depot, once the major saw mill.



Figure 10: Major Fire Along the Grosvenor Canal

6.3 Current buildings on site

The Grosvenor Canal was partly infilled from 1928 to 1929 and the reclaimed land became the site for the Ebury Bridge Estate. The site is occupied by twelve multi-storey buildings.

Phase 1 of the construction commenced in 1929 and the first blocks to be completed were Bridge, Pimlico, Mercer, Dalton and Wellesley Houses followed by Rye, Buckmill, Westbourne and Victoria Houses, see Figure 3.25. These comprised nine 5-storey blocks of load bearing brick construction on piled

foundations with hollow tile floors and tiled roofs. Piling was necessary due to much of the area being reclaimed from the canal.

Phase 2 commenced in 1934 and Cheylesmore, Doneraile and Hillersdon Houses were constructed. Building began to the design of Mr A. J. Thomas FRIBA MI Struct E which comprised three U-shaped blocks enclosing an open courtyard and 2 straight blocks. Those built are constructed of loadbearing brick with reinforced concrete floors and tiled mansard roofs over six floors with the top as attic. Edgson House was constructed in Phase 3.



Figure 11: General View of the Current Buildings on Site

Details of the 'Houses are given in Table 6 below and noting if there are basements.

Table 6: Current building details

	Development phase	Number of storey	Basement
Rye House	Phase 1 1929-31	5	Yes (see heritage report)
Bucknill House		5	Yes (see heritage report)
Westbourne House		5	
Victoria House		5	
Bridge House		5	
Pimlico House		5	
Mercer House		5	
Dalton House		5	
Wellesley House		5	
Hillersdon House	Phase 2 1934 - 38	6	
Doneraile House		6	
Edgson House	Phase 3 1953 - 55	9	1 level (see historical drawing)

Small areas of landscaping laid to grass with trees are present between the blocks and with landscape and playground near Edgson House.

It is understood that a number of small buildings north of Hillersdon House include an electricity substation and switch rooms with a further substation located at the southeast corner of the site. It is also understood that the low concrete-roof structure west of Edgson House was a local facility pump house.

6.4 Chelsea Water Works

Chelsea Water Works Company was established by letters patent in 1723 "For the better supplying the City and Liberties of Westminster and parts adjacent". Ninety acres of cuts and canals were filled from the Thames at high tide, the water retained by sluice gates and fed on to Hyde Park and St James's Park reservoirs by pumps operating off a tidal mill.

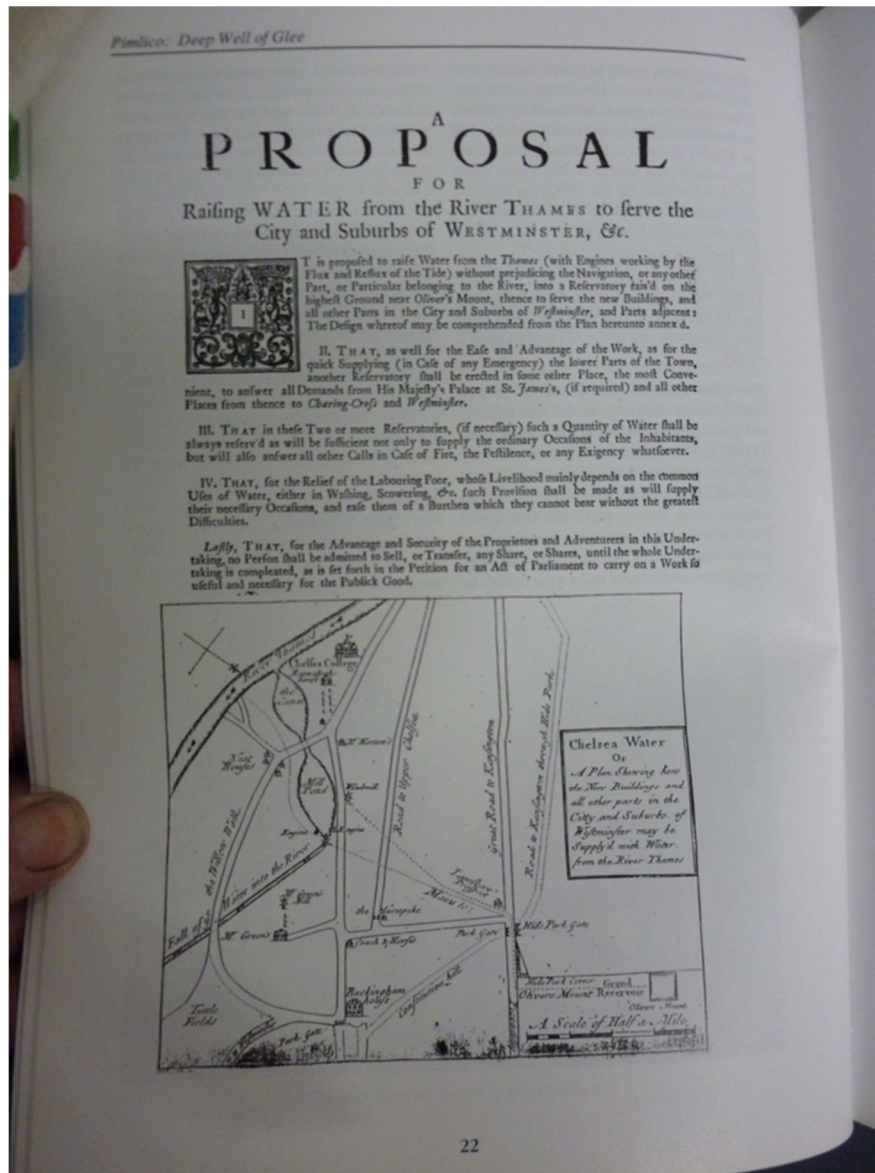


Figure 12: Petition Proposing the Development of Chelsea Water Works in 1723

6.4.1 Steam engines for pumping water

In 1741-42 the Company installed the first steam engine and the first iron mains was built in 1746, this following severe water shortages during the winter of 1739-40, water drawn from the Thames with a suction pipe, soon all rather polluted. Sand filtration beds were introduced in 1829 by its engineer James Simpson. By 1835 the Company at Chelsea was supplying 2,000,000 gallons daily to 13,000 houses. Local distribution to the properties was via a network of lead pipes, today such pipes known for affecting water quality and lead contamination being a severe health risk. A significant element of the Chelsea facility was the provision of interconnected marshy land for osier growing, young willow wands then used in basket making.

Two early Boulton and Watt London steam engines were sold to the Chelsea Water Company and became rather iconic industrial features in this part of London (see Figure 14), the smoke pollution rather annoying the wealthy residents (at Buckingham Palace!) to the north.

In 1778 a 27 ins. dia. engine having a stroke of 8 ft. was installed for waterworks use at Shadwell. In the same year another engine was erected at Chelsea and this one had a cylinder diameter of 30 ins. also by 8 ft. stroke; this engine seemed to have been of an experimental nature as it was set up for expansive working according to the provisions of the 1782 Patent and must, therefore have been the pilot exercise for that specification. Watt claimed the duty of 32 ‘millions’ for this engine which was very optimistic and possibly exaggerated. He ceased the use of expansive working soon after the inception of this engine. Other modifications were made to the unit including altering it to rotative working but this proved to give it an uncomfortable, jerky motion and it soon reverted to being non rotative. Also, it was subject to a bad accident when the pump end chain broke and the piston came in house with such force as to break the cylinder bottom, and crack the cylinder wall. A new cylinder bottom was cast locally and Watt managed to close up the crack in the wall.

One of the most celebrated of London was the single acting engine that was built in 1803 for the Pimlico Wharf Pumping Station of the Chelsea Waterworks. This engine had a cylinder of 48 ins. diameter by 8 ft. stroke to draw water from a depth of 126 feet by means of a 17-1/2 ins. diameter pump. It made between 13-1/2 to 14 strokes per minute and it was capable of delivering 175 cu.ft. of water into the reservoir at each stroke; its rated horsepower was 43.2.

Later, when the Grand Junction Waterworks Co. undertakings, extracting water off its canal, was found not supplying as good quality as that derived earlier from the Thames this resulted in a Boulton and Watt engine being purchased for Grand Junction’s waterworks at Chelsea – reverting to taking water from the river and pumping it into the old filter beds. The engine was then moved in 1840 to Kew Bridge where the Thames water was cleaner and facility far larger (200 foot water tower for local supply and a 7 mile mains north up to Campden Hill’s 6m gallon reservoir). The Chelsea engine survives at the Kew Bridge Steam Museum.

All of this story is very much tied in to the Metropolitan Water Works and solving Cholera epidemics and then the story expanding in to the world famous grand sewer system of Bazalgette and solving of the Great Stink.



Figure 13: View of Chelsea Water Works 1750



Figure 14: View of the Main Cut Leading North and Illustrating the Substantial Reservoir and Pair of Steam Pumping Engines immediately north of the Ebury Site

6.4.2 Grosvenor Canal

The original Grosvenor Canal was part the system of water channels, formed with post and plank revetments, initially for barges associated with the Grosvenor estate, then onwards for many informal light commercial and recreation uses bordering the main water company facilities. At site the canal was widened to allow barges to berth and pass each other.

By 1827 it had been substantially improved as land was leased off for commercial trades, effectively a formal basin when Victoria Station is now sited and with

engineering canal sides predicting the development of trade wharfs along the west side up from the Thames.

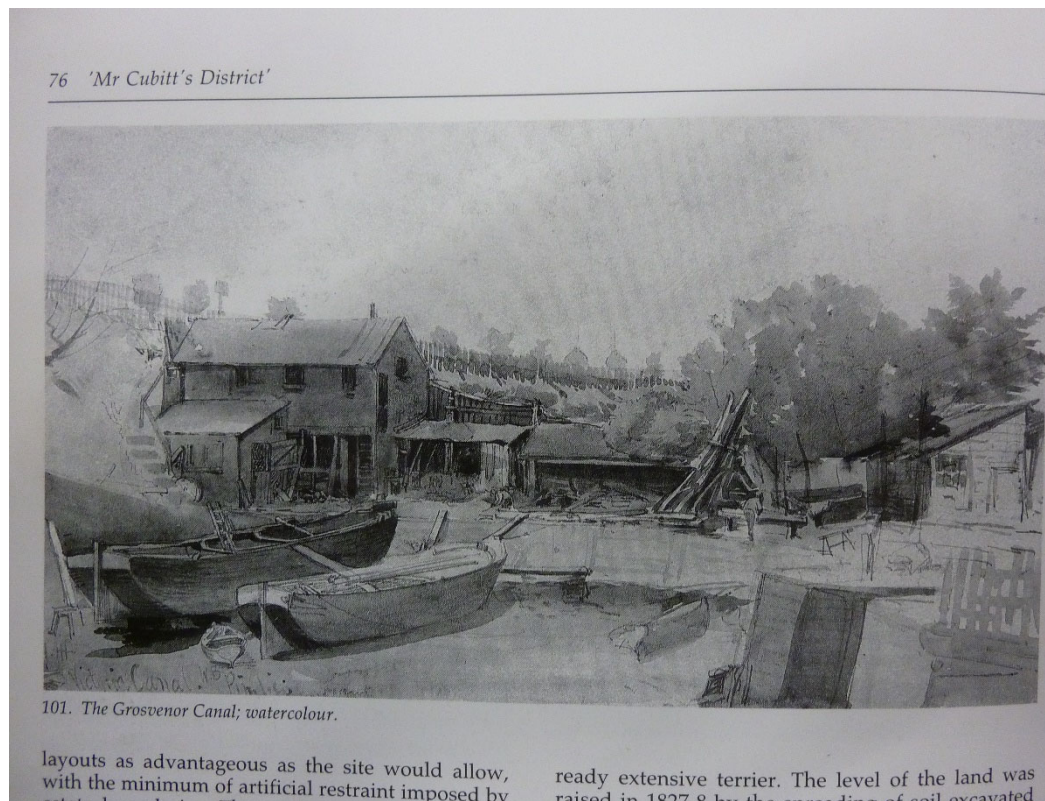


Figure 15: A Watercolour Painting of the Grosvenor Canal while still Retaining a Rather Informal Character and Before Major Engineering Improvements

In 1928-29, at the time of site redevelopment, the canal and basins to the south appear to have been fully reconstructed this may all be associated with the Company having been amalgamated with the Metropolitan Water Board in 1902. The lock was completely rebuilt and lengthened the canal base excavated to a deeper depth and lined with concrete walls and base. This may also have been necessitated by the juxta position with the approach railway lines into Victoria Station and then associated with substantial industrial warehouses and wharfs to the west and sewage works to the east— also allowing access to substantial barges brought through from the Thames via the lock and mooring/turning basins. The element of the canal running through the site at this time was infilled, the fill material used not presently known in detail.

During the decades following WWII the canal is associated with Westminster refuse disposal, by barge removal to dumping grounds down river. The lock into the Thames near to Grosvenor Bridge and a basin are present today, forming backcloth to surrounding modern residential developments.

The former canal alignment at Bridge House by Ebury Bridge Road can be seen in Figure 15 and boats once passed through the arch to the canal traversing further north.



Figure 16: Former Canal Alignment at Bridge House -white paint over the brick arch portal

The eastern part of the site is the infilled Grosvenor Canal. The canal wall structure and floor may pose obstructions to future piling and excavation works. In addition, there is limited information on the infill material that was used to fill the canal. The canal location on the site is given in Figure 16. The canal is approximately 24m and 14m wide in the northern and southern part of the site – no noticeable settlement of the ground surface is noted along the route of the infilled canal.



Figure 17: Location of Grosvenor Canal Alignment (pale blue)

A section through the canal basin is shown in Figure 18. The canal is approximately 7.8m wide and the basin is approximately -0.5mOD. The base slab is approximately 0.6m thick; i.e. the excavation level is approximately -1.1mOD.

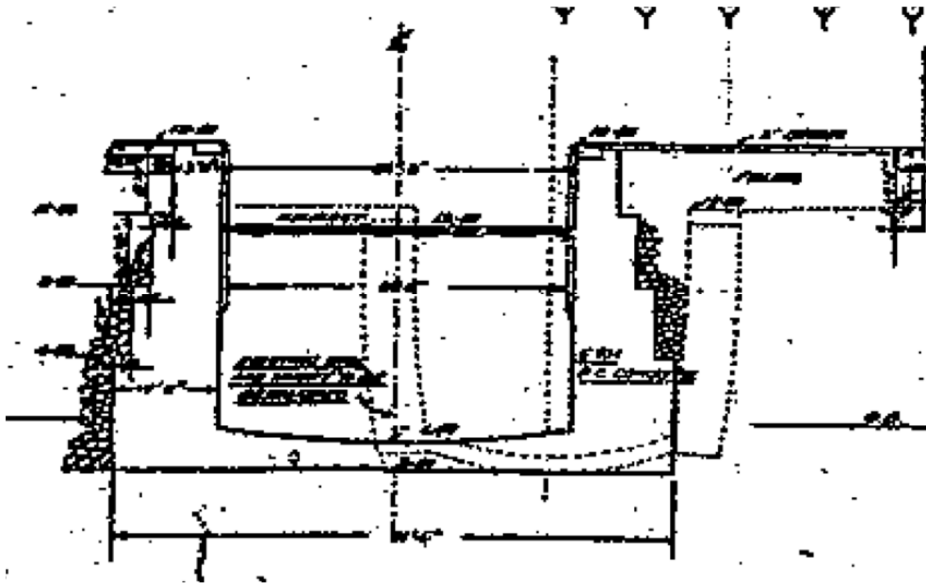


Figure 18: Grosvenor Canal Basin Wall Drawings

The canal wall is approximately 1.2m thick at the top increasing in steps to 2.25m at the bottom.

The canal was backfilled in stages and where still existing to the south of Ebury site is now a water feature rather than a commercial functioning facility. In 2004 Pre-Construct Archaeology Ltd logged the backfill [10].

1 to 2m of backfill of the main reservoir, has been found in three boreholes sunk to the north east of Ebury Estate, east of Victoria Station in Gillingham Street, this made-ground overlying 0.5 to 2m of various silty clay formations suggestive of overbank flooding and with dating materials of post-medieval times. Below this were thin to 1m layers of compact sand then sandy silty clay with root channels throughout - soil formations that were waterlain in a rural environment. Slightly above and below 0m OD was then 0.5 to 1.5m of floodplain sand, silt clay with carbonate concretions - followed by fluvial gravel surface sub horizontally at -1m OD [11].

6.5 Adjacent structures

6.5.1 Ebury Bridge

The old wooden bridge, bearing off timber piles, was replaced in 1847, see Figure 19. The date of the present bridge is unknown but it has a historic interest given it retains the arch over the former canal (now blocked off).



Figure 19: Ebury bridge 1847

6.6 Unexploded ordnance (UXO)

Pimlico suffered a great deal of damage from air raids during WWII. Bridge Housing Estate Rye, Buckmill, Victoria and Dalton Houses suffered general blast damage whilst Westbourne, Bridge, Pimlico and Mercer suffered more severe damage but were deemed repairable.

The bomb damage map obtained from the Westminster Archives is presented in Figure 20.



Figure 20: Bomb strikes on site (Westminster Archive Centre)

Figure 20 shows that a High Explosive UXO (blue spot) hit Westminster City Council's old depot, currently the garden of Edgson House. As this bomb was mapped with a precise location it should have been removed within a few days of the incident.

Two High Explosive Bombs exploded on rail tracks (Red spots) to east and with resultant one local fire (little red circles) which caused major impacts and effects to the railway corridor. VI and VII bombs caused substantial damage further away from the site, to the E. and NE.

6.7 Past impacts on the site

A review of historical OS maps shows that the site has been redeveloped several times. This will have generally disturbed as-found shallow ground conditions, each phase in turn generating new local ground formations. In the 17th to early 19th century there would also be a tendency for the ground surface to rise - with dumps for flood and canal bank protection then associated with urban development works. Some of the early dumps would have protected underlying soil formations, these likely to be 'superficial' natural soils related to the history of the River Thames.

It is possible that buried foundations and structures associated with previous phases of occupation are still present within the site contained within the made-ground. The structures associated with the Grosvenor Canal, dock walls and base slab, will likely still be present on site.

In addition, historical records indicate the existing buildings are supported on piles with basements for some of these.

In summary, impacts include:

- **Timber piles:** The Ebury bridge was previously a wooden bridge. It is possible that timber piles may exist in the northern part of the site. Early canal and reservoir banks may have been lightly piled with planking between piling posts.
- **Infilled Grosvenor Canal:** It is known that the site on the east side contains canal structures including brick and concrete canal walls and with unknown types of infill materials within the channel.
- **Previous foundations:** The site has been occupied by a set of buildings, associated with the Grosvenor Canal wharfs. Details of foundations and possible basements are not known. The heritage report for the Ebury site refers to thick concrete encountered at the previous depot area in the 1930s. It is assumed that many of the buildings will have shall strip and pad foundations, likely set in alluvial formations.
- **Existing foundations:** Piled foundations are assumed but there are no historical drawings confirming this, but the heritage report refers to piled foundations. The presence of infilled canal and thick Alluvium encountered in the area also suggest piled foundations.

- Existing basements: The Ebury heritage report states Rye House & Bucknill House have basement. Historical drawings of Edgson House show a single level basement.
- Air raid shelters: WYG 2014 encountered air raid shelters in the northern part of the site, their extent not known, now with a local history interest.
- A retaining wall forms the north boundary to the site where retaining the approach to Ebury Bridge road (see locations on design constraints map). The Groundwise report does not provide information on the asset owner. The retained height is between approx. 2.1m and 4.1m based on topographic survey. Some defects are noted on the pavement side of the upstand wall.
- Complex shallow infrastructure is known around and below all buildings on Ebury site.

Site constraints drawing is presented in Figure 21 below.

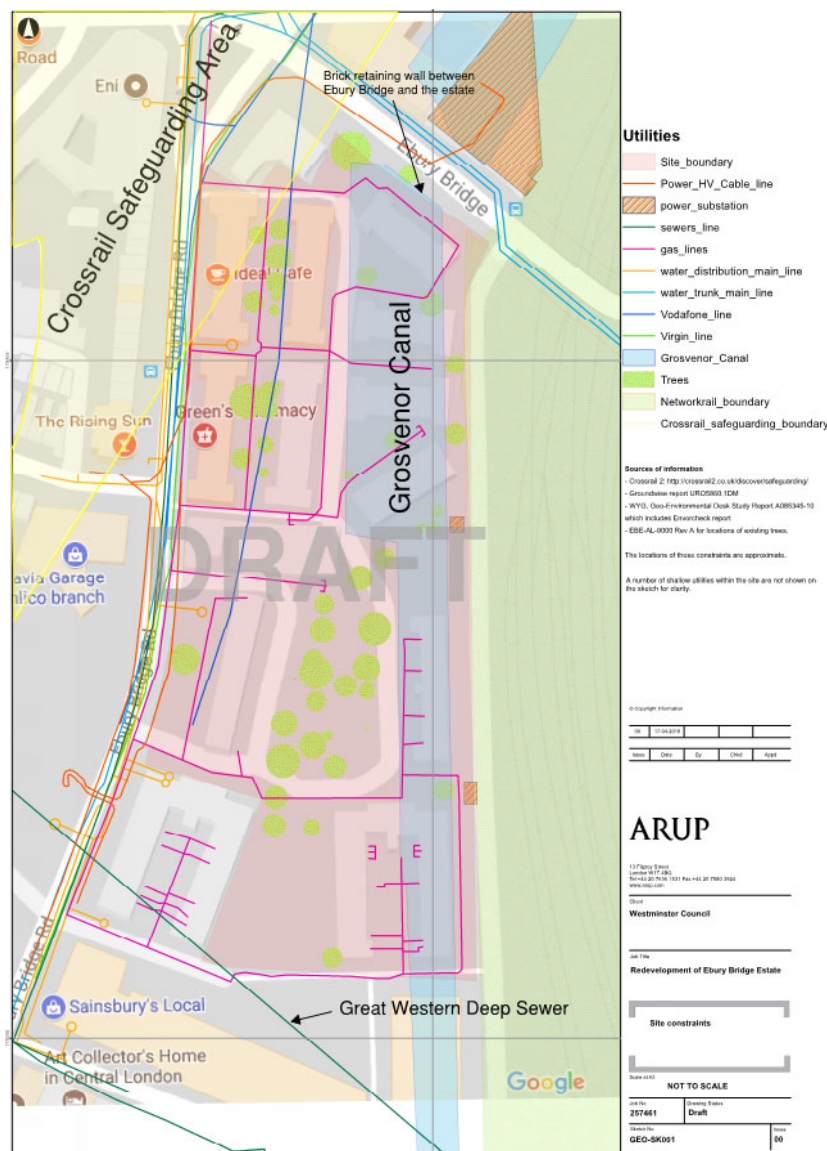


Figure 21: Site Constraints

7 Proposed Impacts on the site

7.1 Future foundation options

The foundations for the new development could be either piles founded in London Clay or raft set on undisturbed Terrace Gravels or London Clay.

At this preliminary stage, the following pile types are being considered for the concept design:

- Moderate column loads: Bored, cast-in-situ piles founded within the London Clay. Under-reamed bored piles in London Clay have not been considered due to health and safety risk associated with inspecting the under-reams.
- High column loads: Bored cast-in-situ piles founded in the Thanet Sand. The piles require boring with support fluid for stability and can be base grouted if needed to control pile settlement. However high loads are not expected as the buildings are about 15-20 storey high.

Due to the obstructions expected to be present on the site it may be difficult to construct CFA piles. Also, the CFA pile length would be limited to about 28m below ground level i.e. approximately -23.5mOD, and this is not sufficient for moderate column loads.

It is expected that the piles will be constructed from ground level. Substantial pile caps and ground beams are anticipated.

7.1.1 Crossrail Safeguard Zone

Crossrail 2 safeguard zone clips the north-west of the site.

Deep foundations will not be feasible within this zone. The foundation options being considered are as follows:

- Shallow raft or basement slab founding on undisturbed Terrace Gravels or London Clay.
- Ground beam cantilevering from the secant basement wall /deep foundations outside of the zone, see Figure 22. The remainder of the buildings outside the safeguard zone can formed on deep piled foundations or a basement raft.

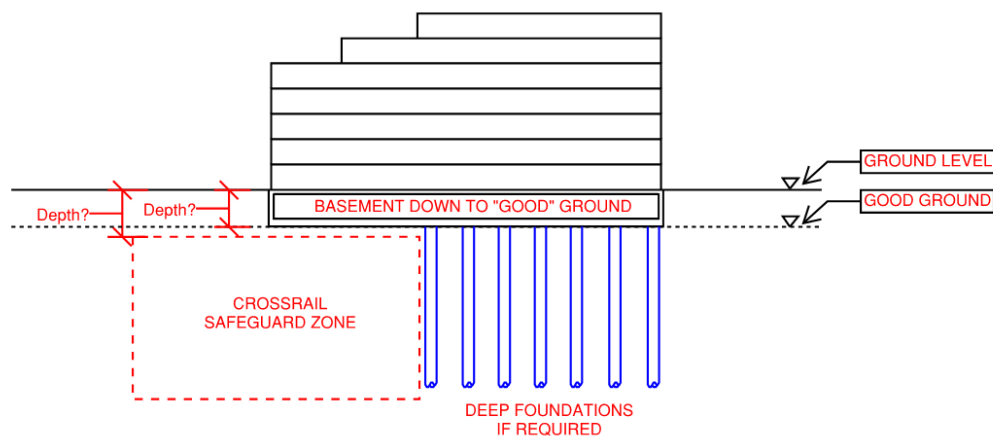


Figure 22: Case 1 – Crossrail Safeguard Zone

7.2 Basements

7.2.1 Existing basements

Three buildings on site (Rye House, Bucknill House and Edgson House) have or are expected to have a single level of basement. Details of the basement are unknown at present.

7.2.2 Proposed basements

It is proposed that Building B01, B06, B07, B09 and B09 will have a single level basement, predominantly for plant, see Figure 23.



Figure 23: Proposed Basement layout

The basement level is +0.25mOD, therefore the excavation is expected to be about -0.75mOD, i.e. 5m below ground level. However, for building B01 partly over Crossrail 2 safeguarding zone, this restricting basement excavation and deeper piling (to -0.38mOD).

New basement walls will retain soil and buildings outside of the basement footprint. The building will be designed for hydrostatic pressures and surcharge from the retained soil and structure, as well as any axial loads from future buildings formed on the line of the walls.

7.2.3 Retaining walls

The proximity of adjacent structures and boundaries will prevent the basement being formed by open cut excavation. Hence the basement excavation will be retained, by secant piles approximately 1200mm in diameter, constructed from ground level. This form of retaining wall has the benefit of providing founding capacity for superstructure columns.

Waterproofing to the basement will be either via a 150mm drained cavity with 140mm internal blockwork, or via a 300mm thick reinforced concrete wall.

It is anticipated that the overall zone for the retaining wall plus waterproofing will be approximately 1500mm wide. When including shallow guide walls in made ground a total disturbance zone of 2.5m wide is anticipated.

7.2.4 Ground source heat exchange wells

Ebury redevelopment scheme visions using ground water for heat exchange, servicing the new buildings with heating, part off-setting the carbon construction and operation footprint. The proposal would include for a set of deep wells on site, likely within basements and in open areas, each possibly of 1.5m diameter, with internal pumping mechanisms, and with connecting water pipe and electrical infrastructure.

8 Archaeological Potential

8.1 Archaeological background and known assets

A Greater London Historic Environment Record (GLHER) search has been undertaken for identifying and analysing cultural heritage assets and locations within a 500m radius search area around the site.

No archaeological assets are identified within the site. Within a reasonable setting there are no: World Heritage Sites; Scheduled Monuments; designated Parks and Gardens; and, designated Battlefield. Designated Chelsea Hospital Gardens lies slightly to the west. These heritage topics are not further addressed in this DBA.

There is a paucity of archaeological sites and object finds in the setting of the site and these are considered in further detail below. The very limited archaeological database reflects on the stability of the urban landscape and limited redevelopment opportunities, where professional archaeological field work would have occurred. The most recent fieldwork relates to the examination and recording of the many elements forming the pre-first phase rural/agricultural landscape, with a particular interest in the natural creation of the early-late prehistoric floodplain and with increasing human interactions.

Figure 23 shows the distribution of cultural heritage assets and Table 6 provides a summary of those relevant to this DBA.

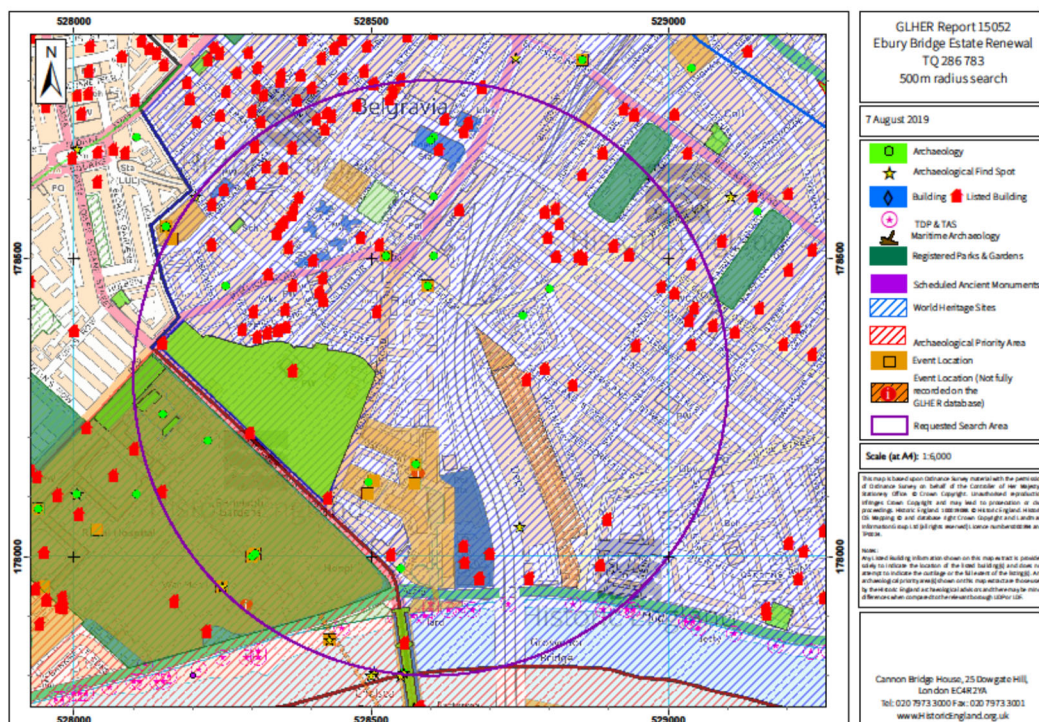


Figure 24: Greater London Historic Environment Record (GLHER)

There are large numbers of Listed buildings in the general area mostly to the north west (Belgravia) and to the north east (Pimlico). These are associated with Westminster Conservation Areas. A row listed 18th century flat fronted terraced cottages lies on the west side of Ebury Bridge Road, opposite the site. Slightly to the north is the former British Airways Air Terminal. To the south, is a cluster of listed buildings, part of Chelsea Sewage Works, found off the east side of the former Grosvenor Canal lock and basin. These listed buildings are not further addressed in this DBA, excepting the terraced cottages given their relationship to the early urban development of the site and immediate setting.

8.1.1 GLHER database summary

The summary is given in Table 7.

Table 7: Summary of Documented Heritage Assets at and Around the Ebury Site

HER Ref	MLO Ref	NGR	Age	Description
083654	MLO678	93 Ebury bridge road TQ 2849 7812	Mesolithic to Iron age	Alluvial deposits, eroded channels, flints and pottery
	MLO95635 MLO095535 MLO95780	139 Ebury Street TQ 2837878604	Early 18 th century	Row of terraced Grade II houses
	MLO97444	147 Ebury Bridge Road TQ 2837078585	Early 18 th century	House and railings listed grade II
	MLO094368 MLO095781 MLO096470	16 Ebury Street TQ 28366 78578	18 th early cent	Grade II house railings and with plaque
	MLO095171	Buckingham Palace Rd TQ 28648 78582	1939	British Airways Air Terminal – Art Deco
081205	MLO0288	Buckingham Palace Rd TQ 2860 7860	Early Medieval - Medieval	Doomsday manor of EIA/Ebury 24 households, 8 ploughs and pasture. Divided and part given to Westminster abbey
081208	MLO0289	Buckingham Palace Road TQ 2885 7920	Early medieval to post med. Seen on map of 1614	Road running through Ebury manor towards Ebury farm
ELO08063	MLO 098880	Chelsea Bridge Road (Chelsea Barracks)	Prehistoric	Geo environmental Evaluation finding estuarine, flood plain and peat formations
	MLO094402 MLO099521 MLO095250 MLO096997	Chelsea Bridge Road TQ 2867 7796 “”	1875 1875+	Chelsea Sewage Pumping Station Listed Grade II Reservoir and Auxillary pumping station
081206	MLO0184	Ebury Bridge TQ 2875 7840	Early med to post med. Appears on map of 1614	Ebury (EIA) Manor house, later was moated used by Bishop of Westminster. Later was a farm then tea house (the Neate houses on Rocque’s 1746 map)

HER Ref	MLO Ref	NGR	Age	Description
082323	MLO0251	Ebury Bridge (Ebury Bridge house) TQ 2859 7845	No dating	Building feature in section
	MLO075547	Grosvenor Dock Gatliff road	20 th /21 st Century	Foundation and fully truncation alluvial formation No archaeological features identified
ELO10502/3 ELO10504 ELO1165		Ebury bridge road DBA for Gatliff road depot TQ 28565 78069 TQ 2875 7815		Study of canal and wharf with assessment of prehistoric to medieval landscape. Building Survey Site Evaluation
ELO18156		133 Ebury Street TQ 2853 7878		DBA for ground floor flat focus on energy statement
ELO3213 ELO08029		93 Ebury Bridge Road TQ 2849 7812	Prehistoric	Complex alluvial formation with erosional channel features. Flints and pottery. Overlain with post medieval soil dumps. All following a DBA predicting floodplain formations, followed by long periods of agriculture and dumping, followed by 18 th century and onwards urban development

8.2 Palaeolithic periods (400,000-10,000BC)

Period Character: From around 400,000 years ago, the London region was occupied by several different species of humans, who shared the landscape with a wide range of animals. Britain had a temperate climate at this point and these hominids followed the herds of straight-tusked elephants, horse and aurochs, which grazed on the river margins. Physical remains of these hominids are rare, although stone tools from this period are abundant. Modern humans first appeared in the Thames valley approximately 40,000 BC. The climate at this time can be characterized as alternating between cooler and warmer temperatures, between periods of glaciation and interglaciation. Perhaps finding the colder weather inhospitable, humans appear to have only been present within Britain on and off during this period. Most finds from these times are from west London. Good assemblages of mineralised animal bones and ecological materials have been found in the Trafalgar Square area of Westminster.

Sites and locally known assets: None on site.

Likely assets: Stray artefacts, typically flint tools. Ecological materials preserved in situ within terrace gravel formations.

Archaeological Potential: Low.

Heritage Value (if assets are found): Medium to High.

8.3 Mesolithic (10,000-4500BC)

Period Character: From around 13,000 BC humans were present more or less permanently within Britain. They made small, temporary camps near to rivers, lakes and springs, predominantly hunting red deer, roe deer, elk and wild pigs. Evidence of settlements are known from the Thames upstream, for example around Chiswick and Brentford.

Sites and locally known assets: None on site.

Likely assets: Ecological materials and stray artefacts preserved in natural alluvial soil formations.

Archaeological Potential: Low.

Heritage Value: Medium to High.

8.4 Neolithic (4500 - 2500BC)

Period Character: From the Neolithic period onwards, a greater shift towards agriculture and more permanent settlement can be seen to have taken place within the Thames Valley and by the Iron Age, settled farmsteads can be seen. The Neolithic period is associated with large communal undertakings, many with a religious and social function. New technological innovations such as the production of pottery and metalworking, as well as the influx of new waves of people characterize these later parts of prehistory. However, Westminster appears to have been the location of only transitory activity, with few features and no large fixed settlements known as of yet. The finds which have been recovered include flint tools, animal bones, pottery and weapons. The period illustrates the start of humans transforming the landscape and this evidenced in environmental remains.

Sites and locally known assets: None on site.

Likely assets: Ecological materials and stray artefacts preserved on and in natural alluvial soil formations.

Archaeological Potential: Low.

Heritage Value: Medium.

8.5 Bronze Age and Iron Age (2500BC - AD43)

Period Character: The landscape of Westminster in the prehistoric period was very different to what is seen today. The Thames was much wider and shallower than at present and its tidal nature meant that the adjacent floodplains were continually inundated. The Tyburn and Westbourne rivers flowed through this floodplain, creating great marshes and fens, with areas of higher ground, known as eyots, within this marshy landscape. These eyots would have created areas attractive to human groups, in that they provided an abundance of fresh water and a good agricultural potential of the land. Wooden trackways across the wetlands have been recovered and Bronze Age plough marks, with associated drainage or

boundary ditches have been found on top of several of the sand islands within Westminster.

Sites and locally known assets: None on site.

Likely assets: Agricultural features and related artefacts and elements of landscape management.

Archaeological Potential: Low.

Heritage Value: Moderate.

8.6 Roman (AD43 – 450)

Period Character: Two Roman roads are known to have passed through the Westminster area. The first and nearest was a road connecting Londinium to Silchester, which followed the lines of the Thames, but at a distance sufficient to avoid the floodplain. It ran more or less along the line of the present-day Oxford Street and Theobalds Road. The line of Watling Street, which followed the approximate course of the present-day Edgware Road was another of the major roads, this one connecting Londinium to St Albans. Londinium was at the centre of a large hinterland, united by a radiating network of smaller status roads, such as those which crossed through Westminster. Small towns and hamlets along these roads served as local markets and farms and villas developed throughout the countryside. It is likely that the study site was located within this agricultural hinterland during the Roman period. A Roman field system has been identified in the Hyde Park region, although no Roman settlements are known from the Westminster area.

Sites and locally known assets: None on site.

Likely assets: Agricultural features and related artefacts and elements of landscape management.

Archaeological Potential: Low.

Heritage Value: Low to Medium.

8.7 Saxon and Medieval (450 – 1485AD)

Period Character: The middle Saxon settlement of Lundenwic was centred along the Strand, approximately 600m to the southeast of the study site. The hinterland surrounding this large settlement would have been populated by several smaller agrarian settlements, evidence for which has been found at sites including those seen at Hammersmith, Harmondsworth, Clapham and Battersea. While the evidence from this period is notoriously limited, the environmental evidence that does exist suggests that while the smaller settlements surrounding Lundenwic were meeting their own agricultural needs, they may also have been supplying agricultural produce to both Lundenwic, as well as the very rich site of Westminster Abbey, which came into existence during this period (Rackham 1994).

Sites and locally known assets: None on site, Ebury Manor abutting to the north.

Likely assets: Agricultural features and related artefacts and elements of landscape management.

Archaeological Potential: Low to Medium.

Heritage Value: Moderate.

8.8 Post-medieval (AD1485 – 1700)

Period Character: Low lying flood plain within wealthy estates with a range of informal agricultural and recreational uses. Generally, the location of a pasture character and this locally quarried for organic and sandy soils, also used for getting rid of urban wastes. Increasing urban development to the west of Westminster, with notable properties to the west and north.

Sites and locally known assets: None on site, Listed buildings west side of Ebury Bridge Road.

Likely assets: Agricultural features and related artefacts and elements of landscape management.

Archaeological Potential: Medium.

Heritage Value: Low.

8.9 Industrial (AD 1700-1930)

Period Character: Elements of shallow waterways and ground formations associated with Chelsea Water Works, including informal and then formal canal structural elements and generally with location extensively used for osier growing and water treatment/fresh water distribution. Followed on site by wharfs, warehouses, hard standing and with substantial canal on the east side of the site and main line railway tracks abutting the canal to the east. Progressively surrounded by urban mixed development.

Sites and locally known assets: Remnants of Chelsea Water Works, Grosvenor Canal and wharf buildings, and local council housing.

Likely assets: Local areas of building and structural remains, and features associated with water management and local trades. Complex made-ground formations.

Archaeological Potential: Medium.

Heritage Value: Low to Medium.

8.10 Modern (1930-2019)

Period Character: Urban housing estate of the early 1930s with railway landscape to east, set within a dense urban residential and commercial landscape of Pimlico and Chelsea.

Sites and locally known assets: Structural, infrastructure and landscape features related to extant development.

Likely assets: Foundations and elements of infrastructure related to extant buildings on site. Complex made-ground.

Archaeological Potential: High.

Heritage Value: Low to None.

9 Going Forward and Supporting Archaeological and Heritage Mitigation Recommendations

9.1 Consultancy and early investigation process

To support procuring the Ebury Estate redevelopment scheme a phased programme of archaeology is recommended, for implementing now and following planning consent.

Overall, the strategy is to follow methods and successes of the programme of archaeology undertaken in recent times in this part of Westminster, generally consistent with undertakings throughout Greater London, with all archaeological undertakings conforming to CIFA standards. It is assumed that WCC will provide an archaeological planning brief to support onward archaeological mitigation design

- Develop a strategy providing continuity during the phased redevelopment of Ebury Estate of the Archaeological Consultant and appointed Archaeological Contractor.
- Ensuring full integration of the City's Planning Archaeologist, and with phased public engagement, as asset discovery is seen as interesting for the community.
- Early consultation with the archaeological advisor to Westminster City Council – the service provided by the Greater London Archaeology Advisory Service of Historic England.
- Using of the DBA for considering cumulative effects and opportunities, also ensuring residual adverse effects are acceptable to WCC.
- Undertaking of archaeological watching briefs on engineering site investigations, with a rigorous set of research questions. It may be a requirement that there be one or more dedicated Archaeological Evaluations of the site comprising pits and trenches in open area, with a focus on where there would be new deep 'area' ground works, and to answer specific research questions aiding with mitigation design.
- Production of an archaeological mitigation strategy, as part of the planning submission, which would address the need for: archaeological evaluation and mitigation undertakings (see Section 9.2 below); post site analysis and appropriate publication of findings; and opportunities for archaeology and heritage to support project design for giving added-value to redevelopment objectives and to support community engagement (see Section 9.3 below).
- Development of a honed and practical programme of archaeology designed for integration with the redevelopment agenda, working methods and timetable. This design will be used by the appointed Archaeological Contractor to produce and have approved a Written Scheme of Investigation (WSI). It will also be used by the Principal Engineering Contractor and any specialist sub-

contractors to support their designs and the integration of the archaeological site undertakings.

9.2 Likely mitigation key research themes

It is likely that archaeological evaluation pits and trenches will be sufficient for geoarchaeological assessment of the site, looking at in situ natural superficial soil and floodplain channel formations. Most of the research would be on core and disturbed samples analysed in a laboratory. Such soils may likely be found throughout the site especially where there are no basements and former canal structures.

Locally through the site may be areas where elements of the pre-first phase agricultural landscape may survive, containing features of prehistoric to post-medieval age. Such features are not predictable but would most likely be where there have been no 'water' / 'reservoir' / 'osier-filter bed' structural elements of the Chelsea Water Works/Grosvenor Canal. Such remains would best be investigated using the results of evaluation and progressed as small area excavations.

Throughout the site, especially in open areas outside the footprints of the present buildings, are most likely to be industrial aged foundations and basal elements of warehouses, wharfs and canal structures. Such remains would be encountered in area excavations exploring the older- deeper landscape. (see above) and when (just before) new ground works occur including removing of obstructions, ground lowering, new foundation construction, new landscaping.

9.3 Community engagement

In support of WCCs 2019-2026 City Plan (see Section 4.3) the Ebury Estate redevelopment scheme delivery processes requires and encourages engagement with the residents, one way through hosting a series of public events. A theme being explored in the programme of activities addresses the history of the site and the slightly wider locality. The following topics have a relevancy and interest for such practical activities and can be for adults and also especially for children, given the national thrust for creating play activities:

- 18th century osier beds, this involving basket making, as demonstrated at local county shows in summer.
- Medieval rural farming of Pimlico, this once occurring off two very local original farms – this could involve milking cows and making butter – one of the London Urban Farms perhaps could help?
- Chelsea Water Works – the aim would be to: explore the local history of dirty and clean water of the Thames; water supply and sewage disposal based on the great industries of the Ebury / Grosvenor Dock location; and getting Thames Water and the Environmental Agency to explain all they have done / are doing in providing fresh water and also explaining the new 'super sewer' under the Thames to the south. Support for local history inputs would be from Westminster Archives Centre, possibly London Metropolitan Archives and the

Institution of Civil Engineers. The theme could look back to the formation of the River Thames and floodplain from glacial times onwards based on geo-archaeological research. Arup would bring the water theme up to date with inputs addressing the scheme's objective of ground water heat exchange – for heating and reducing the carbon footprint of the Ebury development.

- London to south and south west of England railways – the facilities found just over the fence to the east – National Rail could be approached to explain how the lines in and out of Victoria Station work and have developed over the last 150 years – there is no shortage of old photos, films and plans to support this theme.
- First inhabitants of the Ebury Estate (also using the original estate plans held at the London Metropolitan Archives – This topic would also use Kelley's trade directories and local family history sources. This topic could also look at Ebury in WWII.
- The archaeology of the site. This timed to coincide with any site evaluation and then mitigation activities. This commonly occurs on archaeological sites and can consist of guided tours and explanation of encountered structural remains and discovered artefacts.

These activities amount to a strategy celebrating intangible cultural heritage of Westminster, with a balance to the otherwise normal focus on just tangible heritage through archaeological structural remains and recovered artefacts. The UNESCO charter on this (The Convention for the Safeguarding of the Intangible Cultural Heritage, 2003) draws attention to story-telling through such engagement, generally supporting of place-making, forging community resilience, improving well-being, and giving added value to development.

Westminster City Archives Centre would be pleased to be involved and know more about the initiative. This would fit into the Centre's remit and it has a person that works with children / schools and local history groups. The Centre's main resources, apart from the highly knowledgeable staff, are paper based, including: maps, plans, manuscripts, books, photos / films, news cuttings and research findings.

10 Recommendations for immediate further archaeological work

10.1 Investigation

At a minimum, there should be an archaeological attendance on all geotechnical site investigation undertakings including for:

- Obstruction and foundation investigations;
- Engineering ground investigation – related to any geophysical prospecting, and for geotechnical and geo-environmental inspection and sampling of soils (thus this also being geoarchaeological).

It is likely that an archaeological watching brief, with a predefined research agenda, provided as part of Arup on-going consultancy, will be needed during the site investigation works. Typically, a watching brief requires that an experienced professional archaeologist be on site during the site investigation site works, so that the archaeologist should view, assess and report on the arisings from any pit excavations and boreholes undertaken at the site. The watching brief would conform to CIFA standards. The findings would be used to support any needs for archaeological mitigation and for community engagement. The method statement for the archaeological watching brief is given in Appendix A.

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Appendix A

Archaeological Watching Brief - Method Statement

A1 Archaeological Watching Brief objectives and standards

An archaeological Watching Brief (WB) is required during the prescribed Geotechnical Site Investigation (Ref 1).

The Watching Brief aims to confirm and add to the findings of the Archaeological Desk Based Assessment (DBA) by Arup (Ref 2) and be used to support planning application requirements. The Watching Brief findings will likely aid the setting of Planning Conditions and then in the design of mitigation undertakings.

Interesting findings from the Watching Brief aim to support community engagements.

The archaeological Watching Brief will support risk assessment for the onward Ebury Estate development design and procurement programme, thus supporting the management of development impacts upon potential archaeological resources.

The Geotechnical Site Investigation Contractor shall employ the Archaeological Contractor to enact the archaeological Watching Brief.

The Geotechnical Site Investigation comprises boreholes, trial pits and trial trenches, which may penetrate archaeological remains of cultural heritage value to the City of Westminster, Greater London and Historic England.

The archaeological Watching Brief shall:

- 1) Conform to standards required by the Chartered Institute for Archaeologists. In particular, the undertakings will be to the ‘Standard and guidance for an archaeological watching brief’, December 2014.
- 2) Follow general guidance of the Greater London Archaeological Advisory Service (GLAAS) of Historic England.
- 3) Conform to policies of the City of Westminster and Greater London.

The Archaeological Contractor for the Watching Brief shall be a Registered Archaeological Organisation of the Chartered Institute of Field Archaeologists.

A2 Pre-Site works requirements

The Archaeological Contractor shall provide and have approved by the Arup Archaeological Consultant:

- 1) A Written Scheme of Investigation (WSI), for onward submission by the Arup Archaeological Consultant to GLAAS and Westminster City Council.
- 2) A Health and Safety Plan and Code of Conduct statement
- 3) An archaeological ‘site code’.
- 4) A programme integrating the archaeological agenda with that of the Geotechnical Site Investigation Contractor.

A3 Archaeological site works requirements

The Archaeological Contractor shall:

- 1) Fully take into account the contents of the engineering documents provided to the Engineering Contractor by Arup for the purpose of achieving the geotechnical site investigation.
- 2) Fully take into account the contents of the Archaeological Desk Based Assessment by Arup.
- 3) Coordinate the fieldwork programme with the Engineering Contractor and the Arup Archaeological Consultant, and shall keep GLAAS informed of the progress of site works and findings.
- 4) Be in technical attendance during the excavation of boreholes, trial pits and trial trenches where they penetrate into made-ground and alluvium likely to contain archaeological and ecological heritage assets of all ages.
- 5) Integrate archaeological fieldwork activities with the objectives of the engineering investigation and do so taking note of any potential contaminated soils, obstructions and the techniques of investigation.
- 6) When requested advise the Engineering Geotechnical Site Investigation Contractor on made-ground and structural features within it, related to the site's history, this potentially spanning Prehistoric to 20th century times, and advise on archaeological value of any observed heritage assets, with an assumption that only remains of no and low value may be penetrated without agreement of the Arup Archaeological Consultant and the Geotechnical Site Investigation Contractor.
- 7) Observe and document the investigations from ground level machine excavations, and from decent where hand digging is undertaken by the Engineering Contractor and the excavations are safely secured.
- 8) Recover and sample soils from the site investigation, when further off-site inspection analysis is required.

The Archaeological Contractor in his WSI shall further develop and have approved by the Arup Archaeological Consultant a site based research agenda. Key themes the archaeological desk based assessment presently promote include.

- 1) The geomorphological development of the natural floodplain from post glacial times onwards, based on natural soil formations and soil structure.
- 2) The early 'rural' agricultural development and character of his area of Pimlico / Westminster with evidencing interfaces between natural and man-made soil formations and artefact / ecofacts contents.
- 3) The development of the site and setting for water storage, harvesting and management and with evidence of early associated traditional occupations then with later industrial water provision processes.
- 4) The use of site and setting as a canal with associated wharfs and warehouses, later with semi associated railway facilities developed to the east and north.

- 5) Transformation of the site and context to an urban London landscape.
- 6) 20th century redevelopment with a focus on urban residential and community-based uses.
- 7) Assessment of archaeological resource preservation conditions and of archaeological potential, related to quality of archaeological deposits and degree of superimposed damaging impacts and effects.

A4 Post-Site works reporting requirements

After the completion of the site works the Archaeological Contractor shall:

- 1) Provide a factual and interpretive report on the site works in respect of made-ground formations, alluvial formations, structural remains, artefacts and ecofacts. The report shall contain, as minimum:
 - Introduction to the commission and site-based activities.
 - Text account of the observations and discoveries and findings satisfying the research objectives.
 - Plans showing the locations of the investigation boreholes, pits and trenches.
 - Drawings of the pits and trenches and of features/soils documented within the pits and trenches.
 - Photographs of the boreholes, pits and trenches and main archaeological discoveries, of all ages and heritage value. Photographs that may have promotional value to Ebury Estate development
 - Drawings, photographs and logs of significant discovered and retained artefacts and ecofacts.
- 2) The report shall be provided in draft three weeks following the completion of site works and the final report shall be issued one week after receiving comments from the Arup Archaeological Consultant.
- 3) Provide a completed OASIS form to lodge with GLAAS.
- 4) Lodge the site archive with the Museum of London following approval.

A5 Supporting services from the geotechnical site investigation contractor

The Engineering Contractor for the geotechnical site investigation shall support the archaeological objectives:

- 1) Prepare entry to the site and make the site ready and safe for archaeological attendance by the Archaeological Contractor and for approved visitors.
- 2) Provide, if found necessary, electricity and lighting for any archaeological equipment and for securing safe working conditions.
- 3) When necessary, provide for the Archaeological Contractor suitable office, messing and temporary secure storage facilities.

- 4) Undertake breakout of 20th century structures and soils agreed with the Archaeological Contractor. Break out archaeological structures of the 19th century following recording and evaluation to the satisfaction of the Arup Archaeological Consultant.
- 5) Provide all supportive works to excavations of any depth where site conditions require and when deeper than 1.2m, where access is required, and the faces are not battered to secure stability.
- 6) Breakout all unnatural 'modern' obstructions impeding archaeological observation when requested by the Archaeological Contractor.
- 7) Allow inspection of, and provide technical advice on, services via drawings and other information that the Archaeological Contractor may wish to examine prior to the design, programming and execution of his site works.
- 8) Keep loose spoil away from agreed archaeological working areas.
- 9) Provide geotechnical advice and information to the Archaeological Contractor to aid in his site archaeological works and interpretation programme.
- 10) Undertake all required reinstatement of the investigation locations.

A6 Monitoring of the Archaeological Watching Brief requirements

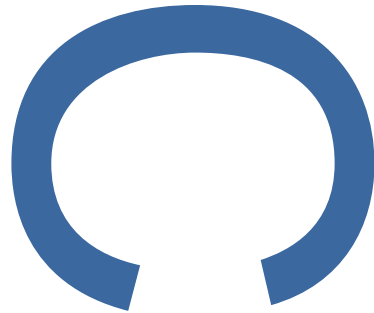
The archaeological site works will be monitored on and off site for Westminster City Council development team by the Arup Archaeological Consultant, and for Westminster City Council Planning Department, by the Greater London Archaeological Advisory Service (GLASS).

A7 References

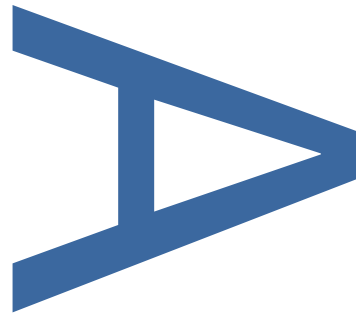
1. Arup. Geotechnical Site Investigation Specification, October 2019

C2 Ground Investigation (GI) Watching Brief

**EBURY BRIDGE ESTATE RENEWAL,
PIMLICO, CITY OF WESTMINSTER**



Archaeological Watching Brief



<i>Planning reference</i>	n/a		
<i>Local planning authority</i>	City of Westminster		
<i>PCA report no.</i>	R14143	<i>Site Code</i>	EBU20
<i>PCA project no</i>	K6576	<i>Date</i>	June 2020

PRE-CONSTRUCT ARCHAEOLOGY LIMITED

www.pre-construct.com

Project Information	
Site name	EBURY BRIDGE ESTATE RENEWAL, PIMLICO, CITY OF WESTMINSTER
Project type	Archaeological Watching Brief
Site address	EBURY BRIDGE ESTATE RENEWAL, PIMLICO, CITY OF WESTMINSTER
NGR	TQ 2858 7835
Local planning authority	City of Westminster
Planning reference	n/a
Commissioning client	Concept Engineering Consultants Limited
Project dates	June 2020
Archive site code	EBU20

PCA Information			
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1 ABSTRACT

- 1.1 This report details the results and working methods of an archaeological watching brief that took place at Ebury Bridge Estate, Pimlico, City of Westminster, SW1W 8RS (TQ 2868 7835).
- 1.2 The watching brief comprised of thirteen geotechnical test pits dug over the eastern portion of the site. The aim of the project was to record and assess any archaeological remains encountered during the geotechnical works.
- 1.3 Alluvial deposits were encountered in three of the test pits on the site, at levels ranging from 0.6m BGL in OT 102B to 1.60m in OT 103A.
- 1.4 Evidence of 19th century activity, in the form of the walls of the Grosvenor Canal and the remains of industrial buildings, was encountered in Test Pits: OP 101, OT 101B, OT 104B, OT 103A, OT 103B, OP 115 and OT 102B.
- 1.5 Evidence of the later 20th century redevelopment of the site, in the form of the canal infill was observed in Test Pits: OP 105, OT 101A, OT 102A, OP 104, OT 103B, OT 103A.

2 INTRODUCTION

- 2.1 This report details the results and working methods of an archaeological watching brief undertaken by Pre-Construct Archaeology Ltd on land at Ebury Bridge Estate, Pimlico, City of Westminster, SW1W 8RS (Figure 1) in advance of redevelopment of the site.
- 2.2 The site, a roughly trapezium-shaped land of approximately 18,800m square metres (approximately 250m by 95m), was centred at National Grid Reference TQ 2868 7835. The site was occupied by thirteen residential housing blocks with a communal playground, some of which were vacant so as to facilitate the redevelopment of the site. The existing buildings were Rye House, Bucknill House, Westbourne House, Victoria House, Bridge House, Pimlico House, Mercer House, Dalton House, Wellesley House, Wainwright House, Hillersdon House, Doneraile House and Edgson House. The site is bounded on its north side by Ebury Bridge, by Ebury Bridge Road to the west, by Grosvenor Waterside Development to the south and the railway lines in and out of Victoria Station to the east.
- 2.3 The site was previously subject to an archaeological desk-based assessment (ARUP 2020) which indicated that the site is located within GLAAS Tier 3 Archaeological Priority Area 'Pimlico'. This covers the area of confluence of the Thames and Tyburn rivers. The watching brief methodology was outlined in a site specific Written Scheme of Investigation (Moore 2020) which was prepared prior to the fieldwork and approved by the Archaeological Advisor for the City of Westminster.
- 2.4 The fieldwork consisted of the monitoring of thirteen geotechnical test pits (Figure 2) aimed to locate the structures associated with the Grosvenor Canal, including the full depth of the canal.
- 2.5 The watching brief was undertaken in accordance with the following documents:
- The "Archaeological Watching Brief-Method Statement" (ARUP 2020, Appendix 1);
 - The Written Scheme of Investigation (Moore 2020)
 - Historic England Greater London Archaeology Advisory Service 2017: *Guidelines for Archaeological Projects in Greater London*;
 - Chartered Institute for Archaeologists 2017: *Standards and guidance for an archaeological watching brief*
- 2.6 PCA is a Registered Archaeological Organization (number 23) with the Chartered Institute for Archaeologists and operates within the Institute's 'Code of Conduct'.
- 2.7 The watching brief was instructed by Concept Engineering Consultants Ltd on behalf of Westminster City Council. The archaeological consultant for the project was Richard Hughes of ARUP and the site was project managed by Peter Moore and supervised by Ireneo Grosso and Ellen Green, all of PCA, and monitored for the local planning authority by Diane Abrams, Archaeological Advisor for the City of Westminster.

3 GEOLOGY AND TOPOGRAPHY

3.1 Introduction

- 3.1.1 The geological and topographical background cited below is obtained from the site specific DBA (Hughes 2020).

3.2 Geology

- 3.2.1 The Geological Survey of Great Britain shows that the site to be underlain by Made-Ground underlain by the London Clay Formation, Lambeth Group, Thanet Sand Formation and Chalk. Remnants of Alluvium and Kempton Park Gravels may be present on site.
- 3.2.2 Superficial soil formations of the locality have been best archaeologically investigated on the Chelsea Barracks redevelopment site immediately to the west (MoLA 2009). A similar sequence is also likely to characterise the formations on Ebury site:

3.3 Topography

- 3.3.1 The ground level within the estate was generally flat between +4.1m to +4.5m OD. Ebury Bridge, at the northern boundary of the site, rises to the east. A retaining wall at the northern boundary of the site retaining the approach road to Ebury Bridge. The approximate retained height was between 1.5m and 4m.
- 3.3.2 The site lies in the delta formed by the River Westbourne and River Tyburn. The land was previously low-lying and marshy. The Westbourne River crossed the site at some point before it was diverted, similarly to the River Tyburn which was also diverted through the site to keep the land marshy for osier beds (Ebury Estate plan c. 1614, not illustrated). In addition, there are several braided channels on the site.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 4.1 As detailed in the specific DBA for the site (Hughes 2020), there is a paucity of archaeological sites and object finds in the setting of the site. This seems to be the result of the stability of the urban landscape which resulted in little redevelopment opportunity. This is reflected in the limited archaeological investigations carried out in the study area (500m radius from the site). Only sites associated with the industrial development of the study area between 1700 and modern period were found in the GLHER database.
- 4.2 Palaeolithic period (400,000-10,000BC)
 - 4.2.1 The GLHER database shows that there no locally known sites within the study area and the closest assemblages of mineralised and ecological material have been found in the Trafalgar Square area of Westminster.
- 4.3 Mesolithic (10,000-4500BC)
 - 4.3.1 The closest evidence for settlement for this period was recorded in the Thames upstream. Of note is the archaeological evidence from the area around Chiswick and Brentford. During the Mesolithic period humans were present more or less permanently within Britain. They made small, temporary camps near to rivers, lakes and springs, predominantly hunting red deer, roe deer, elk and wild pigs.
- 4.4 Neolithic (4500-2500BC)
 - 4.4.1 Archaeological evidence for this period has been recorded across the Thames Valley. This period is characterised with large communal undertakings, many with a religious and social function. New technological innovations such as the production of pottery and metalworking, as well as the influx of new waves of people characterize these later parts of prehistory. However, Westminster appears to have been the location of only transitory activity, with few features and no large fixed settlements known as of yet. The finds which have been recovered include flint tools, animal bones, pottery and weapons.
- 4.5 Bronze Age and Iron Age (2500BC – AD43)
 - 4.5.1 The closest evidence for this period came from within Westminster itself, where wooden trackways and plough marks have been found together with drainage and boundary ditches on top of several of the sand island present in this part of London. During this period the Thames was much wider and shallower than at present and its tidal nature meant that the adjacent floodplains were continually inundated. The Tyburn and Westbourne rivers flowed through this floodplain, creating great marshes and fens, with areas of higher ground, known as eyots, within this marshy landscape. These eyots would have created areas attractive to human groups, in that they provided an abundance of fresh water and a good agricultural potential of the land.
- 4.6 Roman

4.6.1 During this period two Roman roads are known to have passed through the Westminster area. The first and nearest was a road connecting Londinium to Silchester, which followed the lines of the Thames, but at a distance sufficient to avoid the floodplain. It ran more or less along the line of the present-day Oxford Street and Theobald Road. The line of Watling Street, which followed the approximate course of the present-day Edgware Road was another of the major roads, this one connecting Londinium to St Albans. Londinium was at the centre of a large hinterland, united by a radial network of smaller status roads, such as those which crossed through Westminster. Small towns and hamlets along these roads served as local markets and farms and villas developed throughout the countryside. It is very likely that the study site was located within this agricultural hinterland during the Roman period. A Roman field system has been identified in Hyde Park region, although no Roman settlements are known from the Westminster area.

4.7 Saxon & Medieval

4.7.1 During the middle Saxon period the Saxon settlement of Lundenwic was centred along the Strand, approximately 600m to the south-east of the study site. The hinterland surrounding this large settlement would have been populated by several smaller agrarian settlements, evidence for which has been found at sites including those seen at Hammersmith, Harmondsworth, Clapham and Battersea. While the evidence for this period is notoriously limited, the environmental evidence that does exist suggest that while the smaller settlements surrounding Lundenwic were meeting their own agricultural needs, they may also have been supplying agricultural produce to both Lundenwic, as well as the very rich site of Westminster Abbey, which came into existence during this period.

4.8 Post Medieval

4.8.1 During the early 17th century the site was still undeveloped and still in use for horticultural activities. The Ebury Estate's map of 1614 (not illustrated) show the north area of the site as 'Hollow Meadow' whilst the Ebury Manor's map of 1663 (not illustrated) shows the site crossed by a small river on the west side with the site divided in plot of land in use as horticultural land.

4.8.2 The Desmaretz's map of 1717 (not illustrated) show the site still located within marshy land and used as meadow. However, the establishment of the Chelsea Water Works Company in 1723 started the industrial redevelopment of the site which would last until the modern period. The development consisted of the construction of cuts and canals with the water retained from the Thames at high tide by sluice gates.

4.8.3 In 1736 the Hyde Park reservoir was extended. The reservoir now supplied Kensington Palace, the new development over Oliver's Mount and the north part of Westminster (Ibid). The tide mill continued to be used until at least 1775 (Ibid).

4.8.4 In 1755 a new cut was constructed from the Thames to Buckingham House and the cuts and canal eventually were extended over an area of 89 acres of what is today Pimlico.

- 4.8.5 Due to the increasing demand for water from an ever-increasing population of London, from 1803 water began to be taken directly from the Thames. The company became the first to use a special filtration technique in order to purify the water. The filters consisted of a series of layers of loose bricks, gravel and sand with the total cost of the scheme totalling to £12,000.
- 4.8.6 By 1835 the company supplied two million gallons of water to 13,000 houses, and later three new reservoirs to supply Chelsea works were constructed at Putney Heath and in 1902 the Metropolitan Water Board took over the function of the company. During the early years of the 20th century the canal base was excavated to a deeper depth and lined with concrete walls and base.
- 4.9 Modern
- 4.9.1 The Grosvenor Canal was partially infilled from 1928 to 1930 in order to redevelop the site to become the existing Ebury Bridge Estate. The redevelopment was undertaken in three main phases: Phase 1 was carried out between 1928-31 and consisted of Rye House, Buckmill House, Westbourne House, Victoria House, Bridge House, Pimlico House, Mercer House, Dalton House and Wellesley House; Phase 2 was carried out between 1934-38 with the construction of Hillersdon House and Doneraile House and finally Phase 3 witnessed the construction of Edgson House between 1953-55.
- 4.9.2 Of note is the position of the road within the estate which seems to follow the western wall of Grosvenor Canal suggesting that this structure is still present on site.
- 4.9.3 The site underwent heavy bombardment during WWII with Rye, Buckmill, Victoria, and Dalton Houses suffering general blast damage whilst Westbourne, Pimlico and Mercer Houses suffered more severe bomb damage but were deemed repairable (Hughes 2020).

5 ARCHAEOLOGICAL METHODOLOGY

- 5.1 A detailed methodology for the archaeological watching brief was set out in the Written Scheme of Investigation (Moore 2020). The methodology for the watching brief consisted of the archaeological monitoring of thirteen archaeological observation pits and test pits (OP/OT) located spatially across the site to establish the survival of any potentially underlying archaeological deposits, features or structures associated with the Grosvenor Canal (Figure 2). The dimensions of the test pits are tabulated below (the depth referred to is below ground level).

Test Pit	Orientation	Dimension (m)	Depth (m BGL)
OP 101	SW-NE	4.0 x 1.5	0.6
OP 105	NW-SE	1.75 x 0.8	1.5
OT 101A	E-W	1.8 x 0.9	2.4
OT 102A	E-W	1.28 x 1.1	2.1
OT 104A	E-W	2.4 x 1.2	0.62
OP 116	E-W	1.82 x 0.7	0.85
OT 101B	E-W	4.16 x 0.88	2.66
OT 104B	E-W	3.40 x 0.8	1.88
OP 104	SW-NE	2.40 x 1.20	2.60
OT 103A	E-W	15.20 x 2.30	3.20
OT 103B	E-W	2.30 x 2.00	2.70
OP 115	E-W	3.70 x 0.40	1.20
OT 102B	E-W	3.20 x 1.82	3.00

- 5.2 The pits and test pits were all hand excavated by Concept Ltd and monitored by the author of this report. Following the CAT scanning for live services, the breaking of the existing tarmac and concrete within the proposed locations was carried out using a hand breaker or 5 tons 360° tracked excavator. After the removal of the modern overburden, the excavation continued until archaeological deposits, features or structures were encountered or the proposed maximum depth was reached.
- 5.3 All recording systems adopted during the investigations were fully compatible with those most widely used elsewhere in London; that is those developed out of the Department of Urban Archaeology Site Manual, now published by Museum of London Archaeology (MoLAS 1994). Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto pro-forma recording sheets. All plans and sections of archaeological deposits were recorded on polyester based drawing film, the plans being at scale of 1:20 and the sections at 1:10. The OD heights of all principle strata were calculated and indicated on the appropriate plans and sections. A full photographic record was taken in the digital format.
- 5.4 The complete site archive include site records and photographs will be deposited at the Museum of London Archaeological Archive (MLAA) under the unique site code EBU20.

6 ARCHAEOLOGICAL SEQUENCE BY TEST PIT

6.1 Test Pit OP 101 (Plates 1 and 2; Figures 3 and 4)

- 6.1.1 This Test Pit, located in the northernmost part of the site, revealed masonry [1] at approximately 0.55m BGL. Masonry [1] was orientated south-west to north-east and measured 0.92m long and 0.85m wide. It consisted of two granite finely worked stones extending beyond the west and east limit of excavation. The south-west side of the masonry had a corner representing the internal line of the canal. At the north-east side Masonry [1] was abutted by brick floor [3] found at 0.55m BGL. The brick floor measured 2.60m north-south by 2.40 wide by 0.60m thick and was constructed with reused red frogged bricks dating to the 19th century. The brick floor was truncated by modern activity towards the west and abutted the existing site boundary wall to the north. Brick floor [3] was interpreted as part of a pavement between Ebury Bridge and the northwest side of the canal as this approached the now blocked arch located in the north-east corner of the site.

6.2 Test Pit OP 105 (Plates 3 and 4; Figures 3 and 4)

- 6.2.1 This Test Pit was located in the north-east corner of the site. The earliest archaeological evidence consisted of a sequence of deposits recorded as [12], [11], [10] and [9] with an overall thickness of 0.96m found 0.44m BGL. These deposits, interpreted as part of the infill of the canal, were truncated to the north by the concrete foundation [8] for the masonry blockage under the brick arch of Ebury Bridge. In the east the infill of the canal was truncated by concrete foundation [7] for the existing eastern boundary of Ebury Bridge Estate which was recorded as [6]. This north-south orientated wall masked the projected line of the eastern side of the arch and as a result was interpreted as a later wall constructed against the south facing side of Ebury Bridge. No evidence of the west side of the canal was recorded as it is postulated that this wall is located just outside the eastern site boundary.

6.3 Test Pit OT 101A (Plate 5; Figures 3 and 4)

- 6.3.1 This Test Pit, positioned between the eastern extent of Bridge and Pimlico Houses, was excavated to a maximum depth of 2.70m BGL. The sequence of deposits recovered as [18], [17], [16], [15], [14] and [13] were interpreted as part of the infill of the canal and, towards the top of the sequence, as levelling associated with the existing development of the site.

6.4 Test Pit OT 102A (Plate 6; Figures 3 and 4)

- 6.4.1 Positioned alongside the southeast corner of Mercer House, this Test Pit found a sequence of deposits recorded as [21], [20] and [19] with an overall thickness of 1.63m. The top of the sequence was found at 0.57m BGL and it was interpreted as part of the infill of the canal.

6.5 Test Pit OT 104A (Plate 7; Figures 3 and 4)

- 6.5.1 This Test Pit was located alongside the eastern estate boundary wall. It was excavated to a maximum depth of 0.62m BGL where a substantial concrete foundation associated with existing

eastern Ebury Bridge Estate boundary wall was identified. No evidence for masonry associated with the canal or its later infill was observed in this Test Pit.

6.6 Test Pit OP 116 (Plate 8; Figures 3 and 4)

6.6.1 This Test Pit, located alongside the southeast corner of Doneraile House, recorded a modern foundation for the existing building consisting of a pile cap and concrete beam supporting the south wall of Doneraile House. No evidence for any masonry structure associated with the canal or its 20th century infill or for deposits predating the construction of the canal were observed.

6.7 Test Pit OT 101B (Plate 9; Figures 3 and 4)

6.7.1 Positioned on an east-west orientation across the road intersecting the site, this Test Pit unearthed Masonry [22] approximately 0.30m BGL. This north-south orientated masonry extended beyond the north and south limit of excavation of the Test Pit with a maximum length of 0.8m and a width of 1.8m. The eastern side of Masonry [22] dropped to a maximum depth of 2.65 BGL resulting in an overall height of the masonry of 2.35m. This masonry, consisting of red frogged bricks bounded with mid greyish sandy mortar, was interpreted as being part of the western side of the canal and was associated with a base recorded at 2.65m BGL as Masonry [28]. Masonry [28] was not properly observed as it was under water, this masonry was interpreted as being part of the base of the canal.

6.8 Test Pit OT 104B (Plate 10; Figures 3 and 4)

6.8.1 This Test Pit was positioned across the west line of the north-south road located in the south half of the site. The earliest deposit recorded consisted of mid to dark greenish blue sandy clay [27] found at 1.2m BGL. This deposit was sealed by mid grey greenish sandy clay [26] found approximately 0.6m BGL. Contexts [27] and [26] were interpreted as alluvium and were truncated to the east by construction cut [23] at 0.6m BGL. Cut [23] contained concrete foundation [25] and construction cut backfill [24]. Concrete [25] was only observed alongside the west facing section of the Test Pit and its base recorded at approximately 1.7m BGL. Concrete [25] was interpreted as being part of the concrete foundation for the north-south orientated western side of the canal. The postulated position of the inside face of the canal would have been under the middle of the existing road. The line of the canal wall is suggested by the cracking alongside the existing road, resulting from the subsiding eastern side of the road due to the poorly compacted infill of the canal (see Plate 11).

6.9 Test Pit OP 104 (Plate 11; Figures 3 and 4)

6.9.1 This Test Pit was positioned in the north-eastern portion of the site. Dug to a depth of 2.6m BGL, the Test Pit revealed a 2.3m thick sequence of demolition rubble deposits [30], [31], [32] similar to those seen in Test Pit OP105. These deposits were encountered at 0.3m BGL and were interpreted as the infill of the canal.

6.10 Test Pit OT 103B (Plate 12; Figures 3 and 4)

6.10.1 Located in the central portion of the site, along the north-south road located in the southern half of the Ebury Bridge Estate, this Test Pit was dug to a depth of 2.7m BGL. The earliest archaeological material encountered was the wall of the Grosvenor Canal [35]. The wall was 0.88m wide and was capped with a 0.30m thick granite cap stone [34]. The highest point of the wall was located immediately under the concrete of the road at 0.30m BGL. The wall was constructed of red brick and stepped out at a depth of 2.65m BGL, however the base of the wall was not reached. Banked up against the eastern side of the wall at a depth of 2.65m BGL was a layer of dark blueish grey sandy clay [33] which contained several fragments of rope as well as shells and fragments of wood. This layer likely represents the silting at the base of the canal during its use. Overlaying this clay deposit was a 2.35m thick sequence of demolition rubble deposits [37], [36] which was interpreted as the infill of the canal.

6.11 Test Pit OT 103A (Plate 13; Figures 3 and 4)

6.11.1 The earliest material encountered in this Test Pit, which was located along the eastern boundary of the site, was a layer of alluvial clay [49], located at 1.60m BGL in its highest instance and 2.6m BGL at its lowest.

6.11.2 In the easternmost portion of the Test Pit the remains of what appeared to be an industrial outbuilding were observed. The building was constructed of a series of red brick walls [39], [43] lined with a thin strips of concrete [44], [40], [50], [46] and concrete support pillars [41], [45], as well as a concrete floor [38].

6.11.3 Cut into the alluvial horizon, with the top edge of the cut respecting the remains of the building foundations, was a large deep pit [64], the western extent of which was not observed within the Test Pit. The pit, which was located at 0.30m BGL at its highest point, was 2.30m deep and with loose sand [48] as its primary fill, and a layer of clay with frequent demolition rubble as a secondary fill [52]. Given the depth of this pit, and its location in line with Dalton House, it is probable that it represented where the eastern wall of the Grosvenor Canal was removed in order to build the modern estate. The entire Test Pit was overlain with a layer of demolition rubble located at 0.10m BGL [51], [42], [47] which was approximately 0.65m thick.

6.12 Test Pit OP 115 (Plate 14; Figures 3 and 4)

6.12.1 Positioned in the south-eastern corner of the site, this Test Pit was dug to a depth of 1.20m BGL at its deepest point. The Test Pit was excavated in two parts, with a 0.4m gap between them. In the western portion of the Test Pit, only one archaeological deposit was encountered. Located at a height of 0.30m BGL, a layer of demolition rubble [59] was present over the majority of this portion of the Test Pit, though it had been truncated by modern services in the west. The Test Pit in this area was only excavated to a depth of 0.50m BGL and the bottom of the demolition rubble was not reached.

6.12.2 In the eastern portion of the Test Pit, a layer of sand with occasional fragments of CBM [58] was located at 0.70m BGL. Running through the centre of the Test Pit was brick wall [55] located at 0.2m BGL. The wall was 0.55m thick, 0.50m high and made of deeply frogged red

bricks dating to the 19th century. The eastern side of the wall was painted white. To the west, a concrete slab was poured against the wall [56], and to the east a concrete floor [57] was located at 0.70m BGL. These features likely represent an industrial outbuilding located along the edge of the canal. Banked up against the concrete slab to the west and overlying the concrete floor to the east was a 0.4m thick horizon of demolition rubble [53], [54] similar to that seen in the western portion of the Test Pit [59]. This is likely from the demolition of the outbuilding which occurred when the canal went out of use in the 20th century. The entire Test Pit was covered with a layer of topsoil, which was 0.3m thick at its thickest point.

6.13 Test Pit OT 102B (Plate 15; Figures 3 and 4)

- 6.13.1 This Test Pit was located on the road running north-south through the site and was dug to a depth of 3.00m BGL. The earliest encountered deposit was a horizon of alluvial clay [61], [62], [63] which was located at 0.55m BGL. Layer [61] represented the natural geology of the area. Cut into the alluvium to the east was the western wall of the Grosvenor Canal [60]. The wall was located at 0.30m BGL and was not exposed across its entire width. It was constructed of red brick, which was visible to a depth of 2.7m. The wall did not have a granite cap stone unlike where it was observed in other Test Pits. The wall was overlain by crush, concrete and tarmac associated with the building the road for the estate.

7 ARCHAEOLOGICAL PHASE DISCUSSION

7.1 Introduction

- 7.1.1 The archaeological watching brief found archaeological evidence for alluvial deposits (Phase 1) pre-dating the development of the site, 19th century structures associated with the construction of the Grosvenor Canal (Phase 2) and the later redevelopment of the site in the 20th century (Phases 3a and 3b).

7.2 Phase 1: Alluvial Deposits

- 7.3 The earliest archaeological deposits (Phase 1) were found in Test Pit OT 104B located in the south part of the site, Test Pit OT 103A in the eastern portion of the site and OT 102B in the central portion of the site. These deposits did not produce any dating evidence and were interpreted as alluvium. The deposits ranged in level from 0.6m BGL to 1.60m BGL.

7.4 Phase 2: Late Post-Medieval (Grosvenor Canal)

- 7.4.1 Archaeological evidence for the development of the site during the late post-medieval period (Phase 2) was recorded across the site. In OP 101 evidence for the north side of the canal wall (context [1]) was found to run nearly parallel to the existing Ebury Bridge. The existing brick arch located towards the north-east corner of the site shows where the line of the canal used to run under the bridge (see Plate 3). The eastern side of the now blocked arch was abutted by the later eastern boundary wall of Ebury Bridge Estate and as a result the eastern side of the canal is postulated to be located beyond the existing site boundary (see Plate 4). Of note is the presence of brick floor [3] which was interpreted as part of the towpath between the south facing wall of Ebury Bridge and the canal wall itself to the south.
- 7.4.2 Evidence for the west side of the canal was also found in Test Pit OT 101B. Here a substantial brick wall recorded as Masonry [22] was interpreted as part of the west line of the canal. In this Test Pit the full depth of the canal was reached at approximately 2.65m BGL. The base of the canal was not properly observed, however, a substantial masonry, possibly concrete slab, under the 0.30m of water at the base of the Test Pit is postulated as the machine found a substantial obstruction at this level. The projection of the western side of the canal follow the line of the existing road which intersect the north part of the site.
- 7.4.3 In the southern part of the site, more evidence for masonry associated with the canal was found in Test Pit OT 104B. Here the Phase 1 alluvial deposits were truncated by a substantial concrete foundation. This foundation, only observed in the west facing section of this east-west orientated Test Pit, was interpreted as being associated with the western line of the canal in the south part of the site. The position of a western side of the canal was also suggested by the subsiding north-south orientated existing road possibly constructed above the canal wall and its modern poorly compacted infill (see Plate 11).
- 7.4.4 Large masonry structures interpreted as the western wall of the Grosvenor Canal were also encountered in Test Pits OT 103B and OT 102B. The walls were both constructed of red brick

bonded with a sandy grey mortar. The wall in OT 103B was seen to step out at 2.65m BGL, possibly indicating the base was present, however no solid base was located.

- 7.4.5 Evidence of industrial buildings, likely associated with the canal, was observed in OP 115 and OT 103A. In Test Pit OP 115, a 19th century brick wall, still bearing a coat of white paint ran north-south through the Test Pit and had an associated concrete floor at 0.70m BGL. While not much of this structure was visible due to the Test Pit dimensions, the wall was neither thick enough nor high enough to represent the canal wall and as such most likely represents the wall of a building on the edge of the waterway.
- 7.4.6 A structure made of brick and concrete was observed within OT 103A. This structure had fairly substantial foundations and appeared to extend beyond the limit of excavation to both the north and south.
- 7.5 Phase 3a: Modern (Infilling of Grosvenor Canal)
- 7.6 Evidence for the infilling of the Grosvenor Canal was recorded across the site. Deposits consisting of redeposited clay mostly mixed with building material was observed in Test Pits OP101, OP 105, OT 101A, OT 102A, 101B, OP 104, OT 103A and OT 103B. Documentary evidence (Hughes 2020) shows that in 1902 the Metropolitan Water Board took over Grosvenor Canal from Chelsea Water Works Company. The canal was then infilled during the second half of the 1920s in preparation for the redevelopment of the site with the construction of some of the existing buildings.
- 7.7 Phase 3b: Modern Foundations
 - 7.7.1 Modern foundations associated with the existing buildings were observed in the north-east corner of the site (Test Pit OP 105) with the construction of the concrete foundation for the brick blockage of the existing arch under Ebury Bridge followed by the construction of the east boundary wall for Ebury Bridge Estate.
 - 7.7.2 In the southern part of the site a substantial foundation associated with the eastern site boundary of the Ebury Bridge Estate was observed in Test Pit OT 104A. Finally Test Pit OP 116 recorded the foundation of the south wall of the existing Doneraile House.
 - 7.7.3 A large pit backfilled with sand and clay was present in OT 103A, in line with the substantial concrete foundations of Dalton House. The base of both the foundation and the pit was located at 2.60m BGL, which implies that the pit may have been created by the removal of the eastern canal wall in-order to construct Dalton House.

8 ACKNOWLEDGEMENTS

- 8.1 Pre-Construct Archaeology would like to thank Ana Davila of Concept Engineering Consultants for her help throughout and Craig Slement for the surveying. Richard Hughes provided the archaeological consultancy for the site.
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- 8.3 The authors would also like to thank Peter Moore for his project managing and editing and Ray Murphy for the illustrations..

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PLATES



Plate 1: (OP 101) boundary wall [5], brick floor [3] and masonry [1], looking east.



Plate 2: (OP 101) close up brick floor [3], masonry [1] and infill of canal [4], looking east



Plate 3: general view of northeast corner of site showing brick arch of Ebury Bridge on the left



Plate 4: (PO 105) concrete foundation [8] and later concrete foundation [7] for eastern boundary wall [6] built against eastern side of brick arch under Ebury Bridge. Looking east.



Plate 5: (OT 101A) general view of Test Pit looking west



Plate 6: (OT 102A) general view of Test Pit looking south with 0.25m scale



Plate 7: (OT 104A) general view of Test Pit looking east



Plate 8: (OP 116) general view of Test Pit looking north



Plate 9: (OT 101B) general view of Test Pit showing masonry [22], looking west



Plate 10: (OT 104B) close up west facing section showing concrete [25]



Plate 11: view of subsided north-south road under west side of canal in the south part of site. Undergoing excavation of Test Pit OT 104B visible in the background. Looking south.



Plate 12: Test Pit 104 looking northeast



Plate 13: Test Pit OT 103, looking north-west, showing the western wall of the canal



Plate 14: Foundations in Test Pit OT 103A, looking north



Plate 15: Test Pit OP 115 looking west



Plate 16: OT 102B looking east



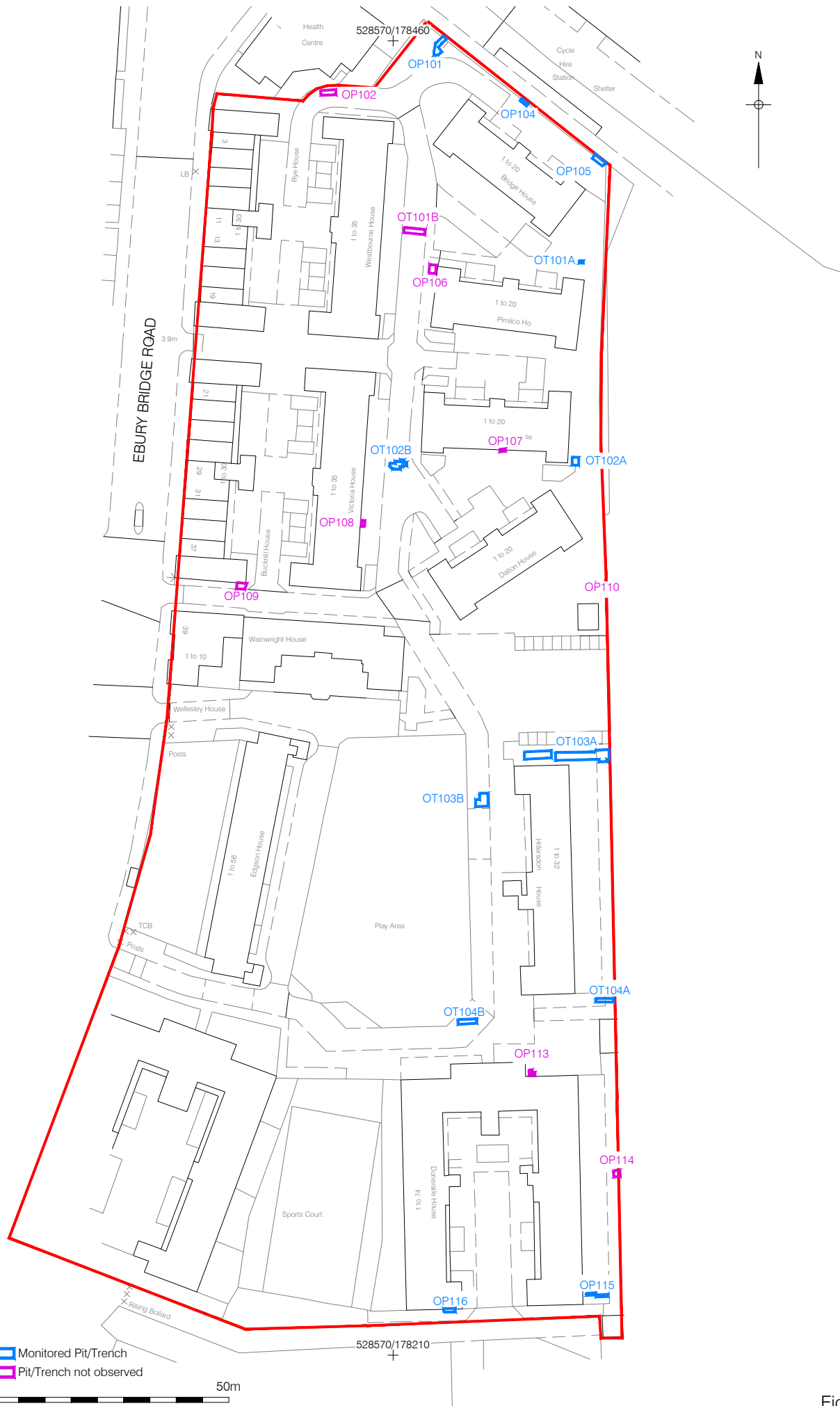


Figure 2
Detailed Site Location
1:1,000 at A4

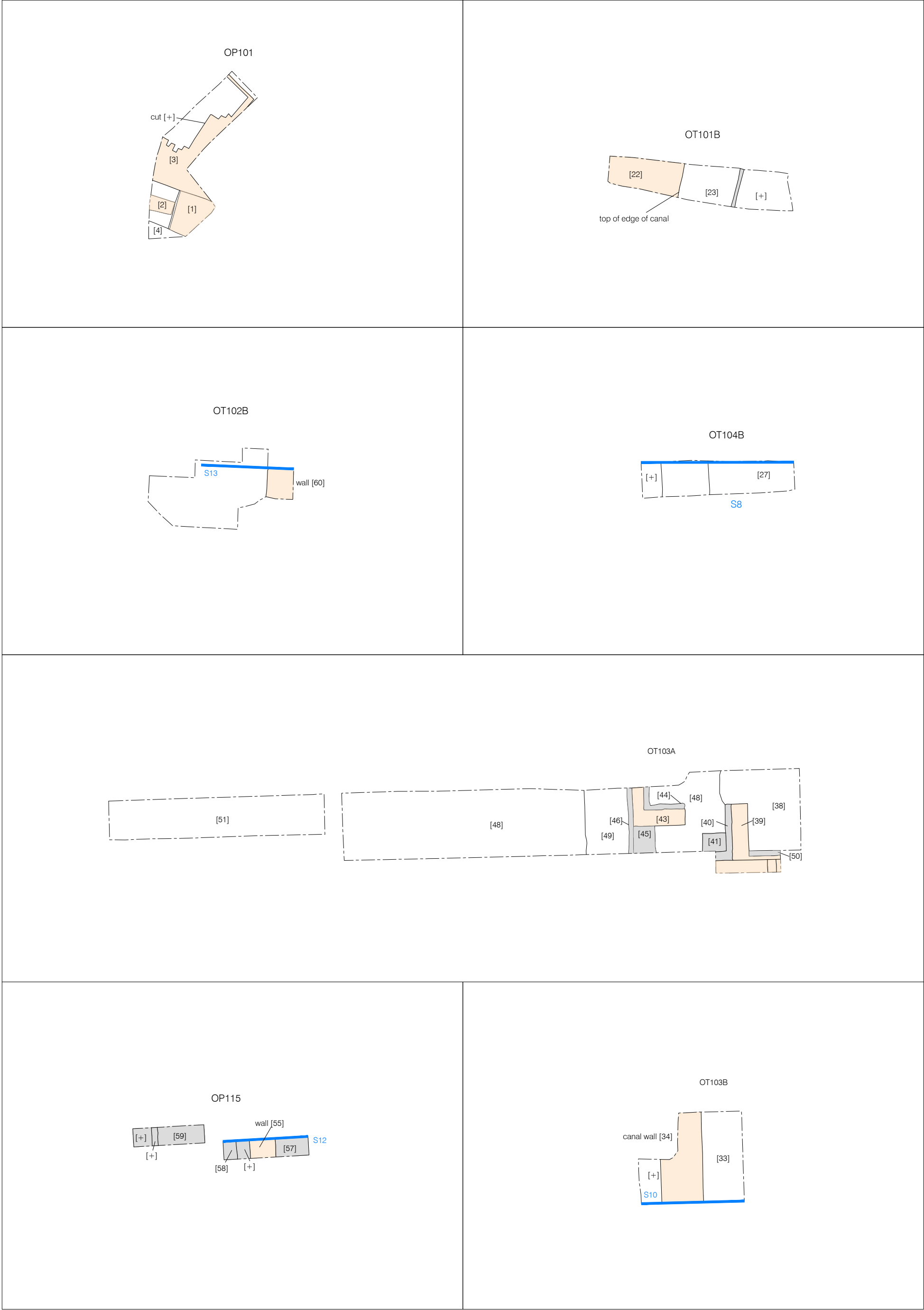


Figure 3
Observational Trench/Pit Plans
1:80 at A3

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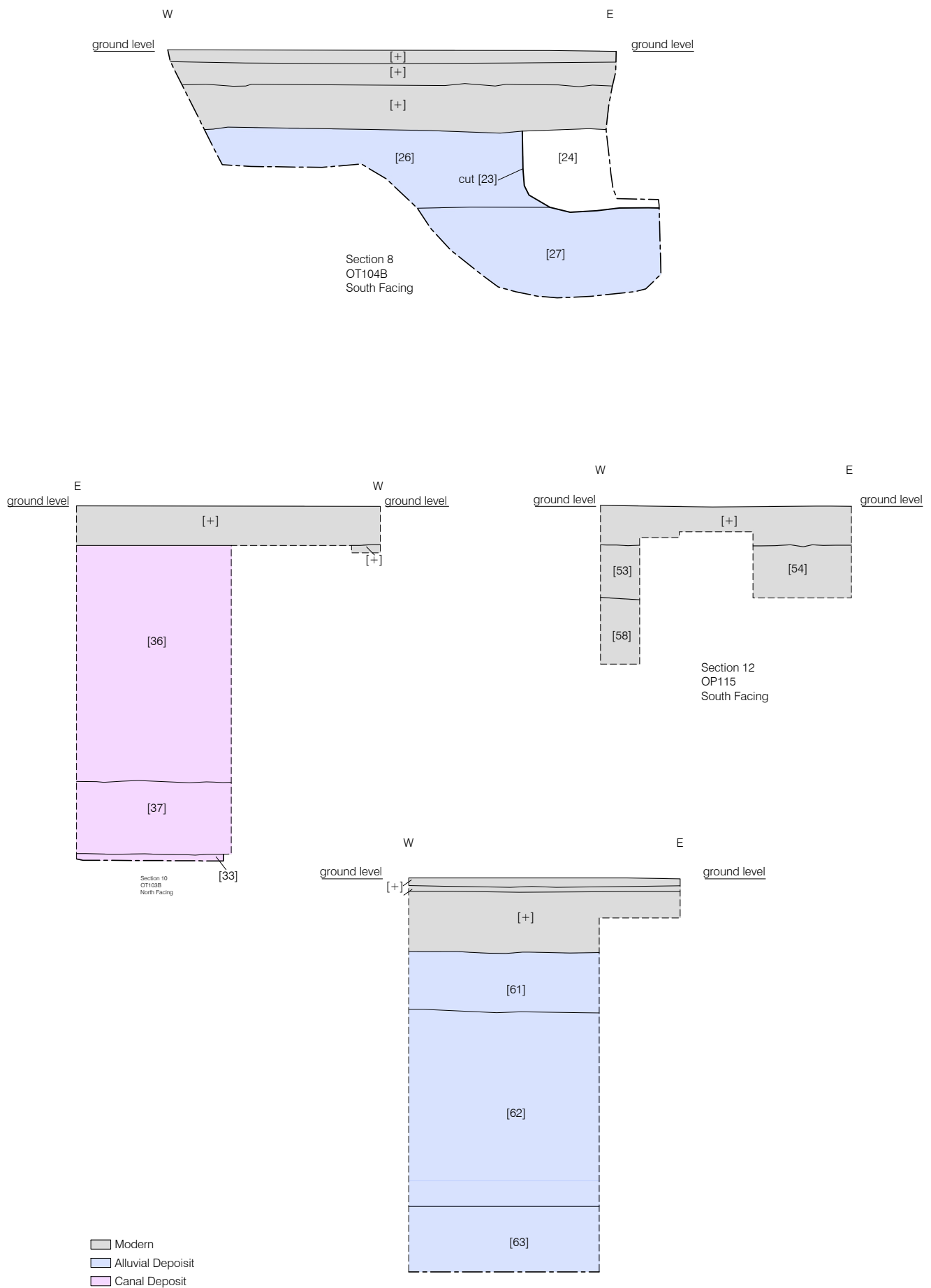


Figure 4
Sections
1:40 at A4



Figure 5
Monitored Observational Trenches and Pits overlain on Stanfords Map of London, 1872
1:800 at A3

APPENDIX 1: CONTEXT INDEX

Context	Type	Test Pit	Comment	Section	Highest Level (m BGL)	Phase
1	Masonry	OP 101	Granite stone of Grosvenor Canal	5	0.55	2
2	Masonry	OP 101	Oblong stone above masonry [1]	5	0.35	2
3	Masonry	OP 101	Brick floor contemporary with [1]	5	0.55	2
4	Fill	OP 101	Infill of Grosvenor Canal	5	0.54	3a
5	Masonry	OP 101	Southeast facing side of Ebury Bridge	5	0.55	2
6	Masonry	OP 105	Eastern boundary wall		0.30	3b
7	Masonry	OP 105	Concrete foundation		0.96	3b
8	Masonry	OP 105	Concrete foundation		0.30	3b
9	Fill/Layer	OP 105	Infill of Grosvenor Canal	1	0.44	3a
10	Fill/Layer	OP 105	Infill of Grosvenor Canal	1	0.79	3a
11	Fill/Layer	OP 105	Infill of Grosvenor Canal	1	0.93	3a
12	Fill/Layer	OP 105	Infill of Grosvenor Canal	1	1.16	3a

Context	Type	Test Pit	Comment	Section	Highest Level (m BGL)	Phase
13	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	0.23	3a
14	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	0.30	3a
15	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	0.44	3a
16	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	0.80	3a
17	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	1.30	3a
18	Fill/Layer	OT 101A	Infill of Grosvenor Canal	2	1.70	3a
19	Fill/Layer	OT 102A	Infill of Grosvenor Canal	3	0.47	3a
20	Fill/Layer	OT 102A	Infill of Grosvenor Canal	3	1.80	3a
21	Fill/Layer	OT 102A	Infill of Grosvenor Canal	3	1.98	3a
22	Masonry	OT 101B	West side of Grosvenor Canal	4	0.30	2
23	Cut	OT 104B	Construction cut for concrete [25]	8	0.60	2
24	Fill	OT 104B	Construction cut backfill	8	0.60	2
25	Masonry	OT 104B	Concrete foundation of Grosvenor Canal	8	0.50	2

Context	Type	Test Pit	Comment	Section	Highest Level (m BGL)	Phase
26	Layer	OT 104B	Alluvial deposit	8	0.58	1
27	Layer	OT 104B	Alluvial deposit	8	1.20	1
28	Masonry	OT 101B	Base of Grosvenor canal	4	2.65	2
29	Fill	OT 101B	Infill of Grosvenor Canal	4	0.40	3a
30	Fill	OT 104	Infill of Grosvenor Canal	9	0.30	3a
31	Fill	OT 104	Infill of Grosvenor Canal	9	1.70	3a
32	Fill	OT 104	Infill of Grosvenor Canal	9	2.10	3a
33	Fill	OT 103B	Silting at base of Grosvenor Canal	10	2.65	2
34	Masonry	OT 103B	Granite Cap stone on the western wall of the Grosvenor Canal	10	0.30	2
35	Masonry	OT 103B	Western wall of the Grosvenor Canal	10	0.60	2
36	Fill	OT 103B	Infill of Grosvenor Canal	10	0.30	3a
37	Fill	OT 103B	Infill of Grosvenor Canal	10	2.10	3a
38	Masonry	OT 103A	Concrete floor		0.72	2

Context	Type	Test Pit	Comment	Section	Highest Level (m BGL)	Phase
39	Masonry	OT 103A	Brick wall		0.22	2
40	Masonry	OT 103A	Concrete support		0.22	2
41	Masonry	OT 103A	Concrete support pillar		0.20	2
42	Fill	OT 103A	Infill of building, demolition rubble		0.20	3a
43	Masonry	OT 103A	Brick wall		0.22	2
44	Masonry	OT 103A	Concrete support		0.22	2
45	Masonry	OT 103A	Concrete foundation		0.20	2
46	Masonry	OT 103A	Concrete support		0.25	2
47	Layer	OT 103A	Demolition rubble	11	0.10	3b
48	Fill	OT 103A	Fill of pit [64]	11	0.30	3b
49	Layer	OT 103A	Alluvial deposit	11	1.60	1
50	Masonry	OT 103A	Concrete support		0.20	2
51	Layer	OT 103A	Demolition rubble	11	0.10	3b

Context	Type	Test Pit	Comment	Section	Highest Level (m BGL)	Phase
52	Fill	OT 103A	Secondary fill of pit [64]	11	0.65	3b
53	Layer	OP 115	Demolition Rubble	12	0.30	3b
54	Layer	OP 115	Demolition rubble	12	0.30	3b
55	Masonry	OP 115	Brick wall	12	0.20	2
56	Masonry	OP 115	Concrete foundation	12	0.25	2
57	Masonry	OP 115	Concrete floor	12	0.70	2
58	Layer	OP 115	Made ground	12	0.70	3b
60	Masonry	OT 102B	Western wall of Grosvenor Canal	13	0.30	2
61	Layer	OT 102B	Alluvial deposit	13	0.55	1
62	Layer	OT 102B	Alluvial deposit	13	1.00	1
63	Layer	OT 102B	Alluvial deposit	13	2.30	1
64	Cut	OT 103A	Cut of a large pit		0.30	3b

APPENDIX 3: OASIS FORM

OASIS ID: preconst1-395297

Project details

Project name	Ebury Bridge Estate, Pimlico, City, City of Westminster, SW1W 8RS
Short description of the project	This report details the results and working methods of an archaeological watching brief that took place at Ebury Bridge Estate, Pimlico, City of Westminster, SW1W 8RS (TQ 2868 7835). The watching brief comprised thirteen geotechnical test pits dug over the eastern portion of the site. The aim of the project was to record and assess any archaeological remains encountered during the geotechnical works. Alluvial deposits were encountered in three Test Pits across the site, at levels ranging from 0.6m BGL in OT 102B to 1.60m in OT 103A. Evidence of 19th century activity, in the form of the walls of the Grosvenor Canal and the remains of industrial buildings, was encountered in Test Pits: OP 101, OT 101B, OT 104B, OT 103A, OT 103B, OP 115 and OT 102B. Evidence of the later 20th century redevelopment of the site, in the form of the canal infill was observed in Test Pits: OP 105, OT 101A, OT 102A, OP 104, OT 103B, OT 103A.
Project dates	Start: 11-03-2020 End: 27-05-2020
Previous/future work	No / Not known
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Residential 1 - General Residential
Investigation type	"Watching Brief"
Prompt	Planning condition

Project location

Country	England
Site location	GREATER LONDON CITY OF WESTMINSTER CITY OF WESTMINSTER Ebury Bridge Estate
Postcode	SW1W 8RS
Study area	18800 Square metres
Site coordinates	TQ 2868 7835 51.48893823202 -0.146358941392 51 29 20 N 000 08 46 W Point
Height OD / Depth	Min: 1.6m Max: 3.5m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	ARUP
Project design originator	Peter Moore
Project director/manager	Peter Moore

Project supervisor Ireneo Grosso

Type of sponsor/funding body Client

Name of sponsor/funding body ARUP

Project archives

Physical Archive Exists? No

Digital Archive recipient LAA

Digital Archive ID EBU20

Digital Media available "Database", "Images raster / digital photography", "Spreadsheets"

Paper Archive recipient LAA

Paper Archive ID EBU20

Paper Media available "Context sheet", "Diary", "Drawing", "Matrices", "Photograph", "Plan", "Report", "Section"

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C3 Archaeological Mitigation Strategy

Westminster City Council

Ebury Bridge Renewal

Proposed Archaeological Mitigation Strategy

EBE-ARP-ZZ-XX-RP-CE-000002

Draft 4 | 16 June 2020

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 257461-00

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1 Introduction

This Archaeological Mitigation Strategy has been prepared by Ove Arup and Partners Ltd. ('Arup') on behalf of Westminster City Council's regeneration team (the 'Applicant') in support of a Hybrid Outline Application for the renewal of the Ebury Bridge Estate, Ebury Bridge Road, London, SW1W 8PX ('the Site'). The Site falls within the administrative area of Westminster City Council ('WCC') and therefore the WCC Local Planning Authority ('WCC LPA') will determine the planning application.

Westminster City Council believes in building a City for All, where everybody can have a place they are proud to call home and as a result have embarked on a ambitious affordable housing programme. Key to this programme is the vision for the Ebury Bridge Renewal which is to set a new standard in estate regeneration. In partnership with Ebury Bridge residents, Westminster City Council is taking forward a scheme that seeks the comprehensive redevelopment of the existing estate. The scheme aims to create a vibrant, modern neighbourhood for both the existing community and new residents by:

- Delivering more affordable housing;
- Creating a sustainable mixed community;
- Delivering improved public spaces and community facilities;
- Partnering with residents and businesses in a meaningful and transparent way to put forward the best proposal for the Ebury Bridge Estate; and
- Setting the standard for estate renewal with high quality design throughout all tenure types.

Extensive consultation and engagement with a wide range of consultees, local stakeholders and residents to inform the proposals has been undertaken. Details on consultation and engagement are set out in the Statement of Community Involvement ('SCI').

1.1 The Proposal

The Hybrid Outline Planning Application proposes:

- A mixed use development in outline for residential floorspace and ancillary residential facilities (Class C3) non-residential floorspace comprising flexible retail (Classes A1 – A4), community (Class D1), leisure (Class D2) and workspace (Class B1) floorspace; provision of basement; new pedestrian and vehicular access; and associated amenity space, open space, plant, landscaping, car and cycle parking, refuse storage, servicing area, and other associated infrastructure works; and
- Detailed planning consent for Blocks 7 and 8 comprising residential floorspace and ancillary residential facilities (Class C3); provision of a basement; new pedestrian and vehicular access; and associated amenity space landscaping, car and cycle parking, refuse storage, servicing area, and other associated infrastructure works.

As part of this proposal the Outline Area development quantum would comprise up to 36,610 sqm residential floorspace (equating to an illustrative 532 residential units); and up to 3,018 sqm non-residential floorspace. It is being submitted for approval of access and scale with all other matters reserved. This approach has been adopted to establish the principle and character of the wider site's redevelopment – whilst allowing the necessary flexibility for blocks to be designed and constructed in the future with due consideration to changing context.

Within the Detailed Area 226 residential units are proposed across Blocks 7 and 8, which comprise two buildings up to 18 storeys and 17 storeys in height respectively; with a basement. As a detailed consent, construction of these two blocks can start on Site expediently, ensuring the decant and rehousing of existing residents can occur with minimal upheaval.

1.2 Purpose and Structure

Based on research and investigations of the Ebury Bridge Renewal site, this report proposes a programme of archaeological mitigation. Mitigation aims to offset destructive impacts that will be caused by physical construction works to the as-found ground conditions, the Made-Ground and Alluvium having a cultural heritage value. The proposed mitigation predicts an archaeological Planning Condition requiring an approved programme of archaeology.

2 Site location

Figure 1 shows the location of the Ebury Bridge site. It is located in Pimlico, within the City of Westminster, at grid reference 528566E 178356N. The site is bounded by Ebury Bridge to the north, the major railway lines to the east leading to Victoria Station, access roads to the south, and Ebury Bridge Road to the west.

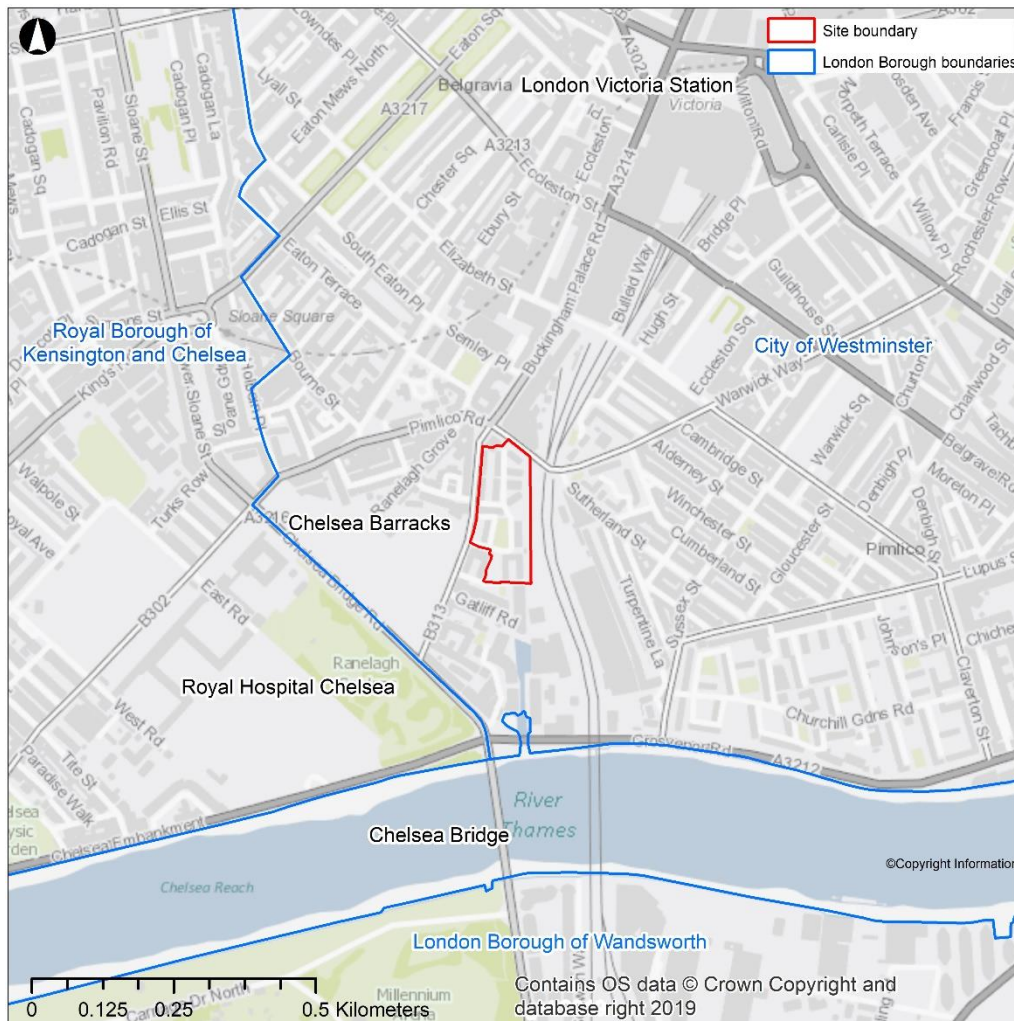


Figure 1: Site location

The site currently comprises an existing housing estate of 336 residential units. The existing residential properties are predominantly social housing owned by Westminster City Council. The current buildings range from 3-8 storeys in height. There are also currently 14 business situated on the estate (in Rye House and Bucknill House).

3 History and archaeological potential

In summary, at a shallow depth, the Made Ground and Alluvium will include:

- A buried natural and rural agricultural landscape;
- The residual elements of post medieval occupation;
- The 19th century Grosvenor Canal, originally part of the mid-18th century Chelsea Water Works;
- A rather marshy landscape of osier beds; and
- Later canal-side building trades comprising wharfs and simple warehouse sheds.

Superimposed on this are then elements of more substantial late 19th century development, with further redevelopment in the early-mid 20th century and including the substantial remodelled canal and wharfs, followed by Local Authority housing. Such modern development has significantly impacted on the older Made Ground formations and on older natural and then rural landscape, as outlined in the following paragraphs.

The wider Westminster area appears not to have been a favourable location for settlement during Prehistoric times, with just a little scattered evidence found within and on top of sub-surface alluvial formations related to the River Thames flood plain and slightly elevated ‘eyots’ (slightly upstanding gravel islands set in floodplain abraded channels).

Several scattered finds of Palaeolithic age have been recovered from within the archaeological Desk Based Assessment (DBA) study area, and possible votive offerings have been recovered from the Thames. Areas may survive of once shallow natural soils and these retaining environmental evidence of the slow creation of the landscape following the last glaciation. Such palaeo-environmental formations may contain ecological materials of heritage interest.

No definitive substantial Roman habitation sites are known from within this part of Westminster, although Roman finds have been found throughout the area.

The Domesday Book records a flourishing manor and estate called ‘EIA’ incorporating a broad area within Westminster and including the Ebury site. However, the site while located within the hinterland of Westminster was outside of any known Saxon settlement.

During the medieval period, a settlement grew up around the older manor complex. The progressive development of this would have included for agriculture, flood protection, ad-hoc gravel/sand quarrying, informal recreation and some landscape modification as part of urbanisation.

In Summary, the site has the following:

- a low potential for prehistoric man-made assets;
- a high potential for prehistoric palaeo-environmental soil formations and ecological content;

- a low potential for Roman remains;
- a low potential for Saxon remains;
- a low to moderate potential for medieval remains; a moderate potential for post-medieval material; and,
- a high potential for features of industrial and modern occupation.

4 Archaeological undertakings

The site lies within Tier 3 of Westminster City Council's policy related to archaeological value and potential of the site, for addressing in planning and mitigation requirements.

To support the planning process, noting there will be an archaeological planning condition, the following have been achieved:

- i) Desk Based Assessment (Ref: EBE-ARP-ZZ-XX-RP-CE-000001 Issue 2 04 February 2020)
- ii) Environmental Statement (ES) with a specialist Archaeological chapter (Ref: EBR-13).
- iii) Site works, an archaeological watching brief, effectively for this site being a broad-based archaeological evaluation stemming from an engineering site investigation (Ref: Pre-Construct Archaeology (PCA) 2020, Ebury Bridge Estate Renewal, Pimlico, City of Westminster. Archaeological Watching Brief Report. Ref: R14143. Site Code EBU20)

5 Mitigation requirements

Proposed mitigation undertakings conform to standard practices for a significant site development presently occurring in Westminster and Greater London. Mitigation also will be to standards of Greater London Archaeological Advisory Service (GLAAS) and Chartered Institute for Archaeologists (CIFA).

Generally on-going and then following Planning Consent the mitigation process envisages:

- i) Phased consultation with GLAAS.
- ii) Detailed mitigation design responding to development impacts and detailed engineering designs (Stage 4) and responding to the likely imposed Archaeological Planning Condition.
- iii) Integration of mitigation within the programme of site-based development activities.
- iv) Appointment of Archaeological Contractor.
- v) Production and approval of an Archaeological Contractor's Written Scheme of Investigation (WSI), addressing both the site works programme and post site works programme resulting in the publication of significant archaeological results and discoveries.
- vi) Production of an Archaeological Contractor's Health and Safety Plan.

6 GI Watching brief findings

The engineering ground investigation (GI), with the archaeological watching brief, took place in April to May 2020. Trench and bore hole locations were fixed with shared archaeological objectives, mostly related to identifying and valuing features of the post medieval to modern age assets. Arup monitored the site works up to Covid-19 lockdown. Table 1 summarises the archaeological findings, these are fully addressed by Pre-Construct Archaeology (PCA 2020) in its report.

Table 1: Archaeological findings

Location Reference	Key Findings	Excavation Depth (m below ground level)	Archaeological Value: Regional/Local/None
OT101A	Late 20 th century deposits	2.7	None
OT 101B	Brick side to canal	0.30m	Local to regional
	Possible canal base?	2.65m	Local to regional
OT102A	Mid to late 20 th century deposits	2.2m	None
OT 102B	Alluvium	0.55m	Local
	Brick remains of canal wall, no granite	0.30m	Local
OT 103A	Alluvium	1.6m	Local
	Local brick walls and concrete floor of industrial building	0.3m	Local
	Pit from localised removal of canal wall	0.3m	None
OT 103B	Granite top and brick wall canal wall, stepped out	0.30m 2.65m	Local to regional (plus display potential)
	Silted debris from use of canal	2.65m	Local
OT104A	Mid to late 20 th century deposits	0.62	None
OT 104B	2 layers of Alluvium	0.60m	Local
	Concrete foundation to canal wall	1.70m	Local to regional
OP 101	Granite canal wall and adjacent brick floor interpreted as canal walkway	0.55m	Local to regional (plus display potential)
OP104	Mid to late 20 th century deposits	2.6m	None
OP105	Mid to late 20 th century deposits	1.4m	None
OP 115	Brick and concrete industrial building	0.2m	Local
OP116	Pile cap foundation of standing building	shallow	None

Generally, these site discoveries and interpretation of their heritage values confirm the archaeological character of the site as addressed in the desk-based assessment. Over the eastern half of the site, ground conditions are dominated by deep modern canal infill and concrete/brick elements of the canal structure. In the western half of the site, structures and deep made ground were encountered related to the 18th to 20th century commercial and residential uses. Features of earlier rural activities

were not encountered but the shallow features and absence of basements are suggestive that there will be good survival of deeper man-made and natural soil formations. Bore holes, not referenced in the table above, also confirm the character of the made-ground and underlying alluvium.

Given the results, no further archaeological evaluation of the site is considered necessary. There is sufficient data about site conditions and the archaeological potential to effectively prescribe an archaeological mitigation programme of undertakings.

7 Archaeological mitigation undertakings

The following mitigation processes will be further developed in conjunction with the detailed scheme design, then integrated with the agenda of site-based works to be implemented by the Principal Contractor. The detailed mitigation will be approved for implementation by Westminster City Council supported by Greater London Archaeology Advisory Service, in conformity with the Planning Condition and the GLAAS archaeological planning brief.

A ‘set’ of various mitigation undertakings is considered suitable as a mitigation strategy for this site. A specification for the works, and programming of them, will be produced as part of the detailed scheme design, for supporting the appointment of the Archaeological Contractor and for the production and approval of the written scheme of investigation.

The following archaeological agenda is proposed:

1. No archaeological watching brief attendance during the demolition of the Ebury Estate buildings down to ground level. Implementation of a part time watching brief should basements and obstructions be broken out prior to the start of new construction, should the breakout works interface with old Made-Ground and assets of potential archaeological value.
2. No archaeological site works where the present ground surface is to be fully retained, as there will be no impacts on potential buried archaeological and cultural heritage assets. The strategy effectively preserves archaeological resource *in situ* and so available in the future for further research into the tangible heritage of the site and setting.
3. No archaeological site excavation works where there is high level of confidence that modern disturbances have removed all potential archaeological assets – likely to be areas of existing building basements and which are to be backfilled or removed.
4. No archaeological works within new engineering works, in routes of present infrastructure that were originally inserted by trenching and backfilling, as there being no future archaeological potential.
5. A watching brief over the eastern half of the site – the area occupied by the substantial former Grosvenor Canal, mostly features of late 19th century - early 20th century age. The aim is to log, as revealed by the engineering contractor, the canal structure and phases of development and repairs if present. The early to mid-20th century dock infill is modern and is to be regarded as of no archaeological interest but will be logged if archaeological undertakings are occurring nearby.
6. A watching brief where there is to be local obstruction removal, for example to make way for new piling.
7. Small area archaeological excavation – two set aside areas in the western half of the site where there have been no former basements. The location of these two locations will be fixed during detailed scheme design and in conjunction with the Principal Contractor and Archaeological Contractor. Each area is to

be about 8m x 8m at ground level and likely 2 to 3 m deep, dug to the base of the post-medieval structural remains and Made Ground formations. In the base of the two excavations two 2m x 3 m trenches will then be dug, these in areas with less foundation obstructions, to investigate samples of the deeper archaeological soil formations. Overall, the objective is to investigate the full sequence of archaeological deposits, related to: the industrial age canal wharfs and warehouses; the medieval and post-medieval farming landscape; potential informal land uses of Prehistoric to Roman age; and, the development of the post-glacial natural development from River Thames geomorphological processes.

8. Sinking of a set of broadly spread small-diameter boreholes, for undisturbed sampling of alluvial formations down to the deeper River Terrace Deposits. The samples are to enable laboratory-based soil analysis for investigating the palaeo-environmental post-glacial natural history of the Thames Floodplain.
9. Strip and mapping of shallow heritage surfaces where to be encountered by proposed surface landscaping and associated ecological improvement works.
10. A watching brief where there are to be new narrow linear trenches for infrastructure routing around the proposed new estate buildings.

The archaeological mitigation programme of site works and post-site works will be monitored by the development team and by GLAAS for Westminster City Council Planning Department.

8 Archaeological mitigation linkages to other environmental requirements

The mitigation undertaking will be used, as necessary, to support and respond to environmental driven site works and for any requirements related to the implementation of an Environment Management Plan - where this has a historic environment management content and is in support of an environmental enhancement agenda and cultural place making.

9 Community value

The mitigation solution proposed in Section 7 of this document provides an opportunity for archaeology to contribute to cultural place-making and community engagement. The archaeological contractor is to support Westminster City Council in implementing the following:

- Display hoarding notices telling the story of the site and of on-going archaeological works and discoveries;
- Provide a one-off open day (probably a Saturday and Sunday) to show and describe the area archaeological excavations and discoveries;
- Support Westminster City Council's cultural and social engagement with its residents;
- Support the retention and promotion of archaeological assets in the new dedicated landscape, especially interesting would be display of canal structural elements.