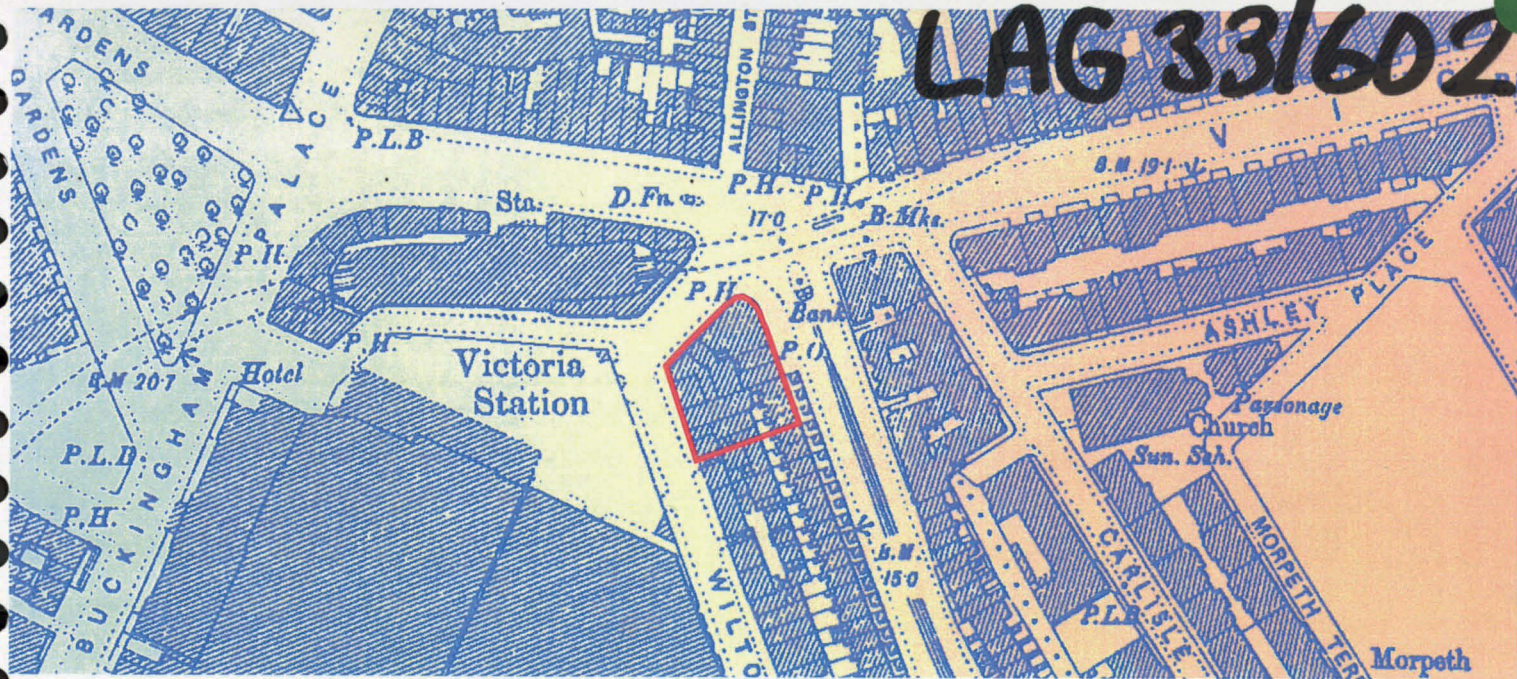


LAG 33/602



ABFORD HOUSE  
 333 Vauxhall Bridge Road  
 London  
 SW1

City of Westminster

A geoarchaeological evaluation report

November 2006

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Archaeology Service

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ABFORD HOUSE  
333 Vauxhall Bridge Road  
London  
SW1

City of Westminster

A geoarchaeological evaluation report

Site Code: VAU06  
National Grid Reference: 529012 179090

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## Summary (Non-Technical)

*This report presents the results of a geoarchaeological evaluation carried out by the Museum of London Archaeology Service on the site of Abford House, 333 Vauxhall Bridge Road, London SW1. The report was commissioned from the Museum of London Archaeology Service (MoLAS) by Mace Ltd on behalf of the Abford House Unit Trust.*

*The proposed development scheme comprises the demolition of the present building and its replacement with a new single block with basement and sub-basement levels, lift pits and piled foundations. Although the proposed basement slab will be at the same level as the lower ground floor of the existing building (c 0.4m OD); the proposed sub-basement, which will occupy the southern two-thirds of the site, will require excavation to about -6m OD. It was thought that the basements of the existing building would have truncated any deposits of Saxon and Medieval date, leaving only the alluvial deposits with the potential for archaeological and palaeo-environmental reconstruction. As a result a geoarchaeological evaluation was proposed, to take place at the same time as the geotechnical site investigation, consisting of a series of geoarchaeological boreholes (windowless sample holes) and the monitoring of other intrusive geotechnical work.*

*The results of the geoarchaeological evaluation have helped to refine the initial assessment of the archaeological potential at the site. They have shown that the entire site has been heavily truncated down into, or just above the Pleistocene floodplain sands and gravels. Traces of a sandy clay subsoil were recorded in the southern half of the site, which could possibly represent an early Holocene land surface, but could equally be counted as a lens within the Pleistocene sands.*

*In the light of revised understanding of the archaeological potential at the site the report concludes the impact of the proposed redevelopment is minimal. This is due to the heavy truncation which has already occurred. There is some limited potential for possible Palaeolithic remains within the Pleistocene sands and gravels. However, such potential is minimal as the sands and gravels represent high energy fluvial activity related to glacial melt water and such deposits are unlikely to preserve in-situ remains.*

*No further geoarchaeological work is considered to be necessary at the site. However, the results of the evaluation have been added to the MoLAS geoarchaeological database for the Westminster area and (given the degree of truncation) this suggests that the site lay on or at the margin of an island of higher ground from the Mesolithic onwards. The results, though limited, have therefore contributed to our understanding of the past topography of Westminster.*

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# 1 Introduction

## 1.1 Site Background

The evaluation took place at Abford House, 333 Vauxhall Bridge Road, London SW1, hereafter called 'the site'. The site lies opposite the main entrance to Victoria Railway Station, between Wilton Road, which forms the western and northern boundary of the site and Vauxhall Bridge Road, which forms its eastern boundary (see Fig 1). The Ordnance Survey National Grid reference for the area of investigation is 529012.179090.

The site is roughly rectangular in plan and measures approximately between 30m and 40m N-S and 30m E-W. The existing level of the lower ground floor is approximately 0.4m OD. The site code is VAU006.

The proposed development scheme comprises the demolition of the present building and its replacement with a new single block with basement and sub basement levels, lift pits and piled foundations. Although the proposed basement slab will be at the same level as the lower ground floor of the existing building (c 0.4m OD), the proposed sub-basement, which will occupy the southern two-thirds of the site, will require excavation to a further 4m depth, to about -6m OD.

A previous desk-based *Archaeological impact assessment* (Tyler 2003) and subsequently a *Method statement for geoarchaeological evaluation* (Corcoran 2006) have previously been prepared. These documents should be referred to for information on the archaeological and historical background of the site, and the initial interpretation of its archaeological potential.

It was anticipated that the basement of the existing building would have truncated deposits of Saxon and medieval date down to prehistoric alluvium. The prehistoric alluvium could have the potential evidence for prehistoric activity and past landscape reconstruction. For these reasons the proposed archaeological evaluation to comprise the drilling and subsequent examination of five geoarchaeological boreholes, was to be undertaken at the same time as geotechnical work programmed to be carried out on the site.

The geoarchaeological evaluation took place in October 2006. The aim was to monitor any intrusive works undertaken as part of the geotechnical site investigation as well as the geoarchaeological boreholes.

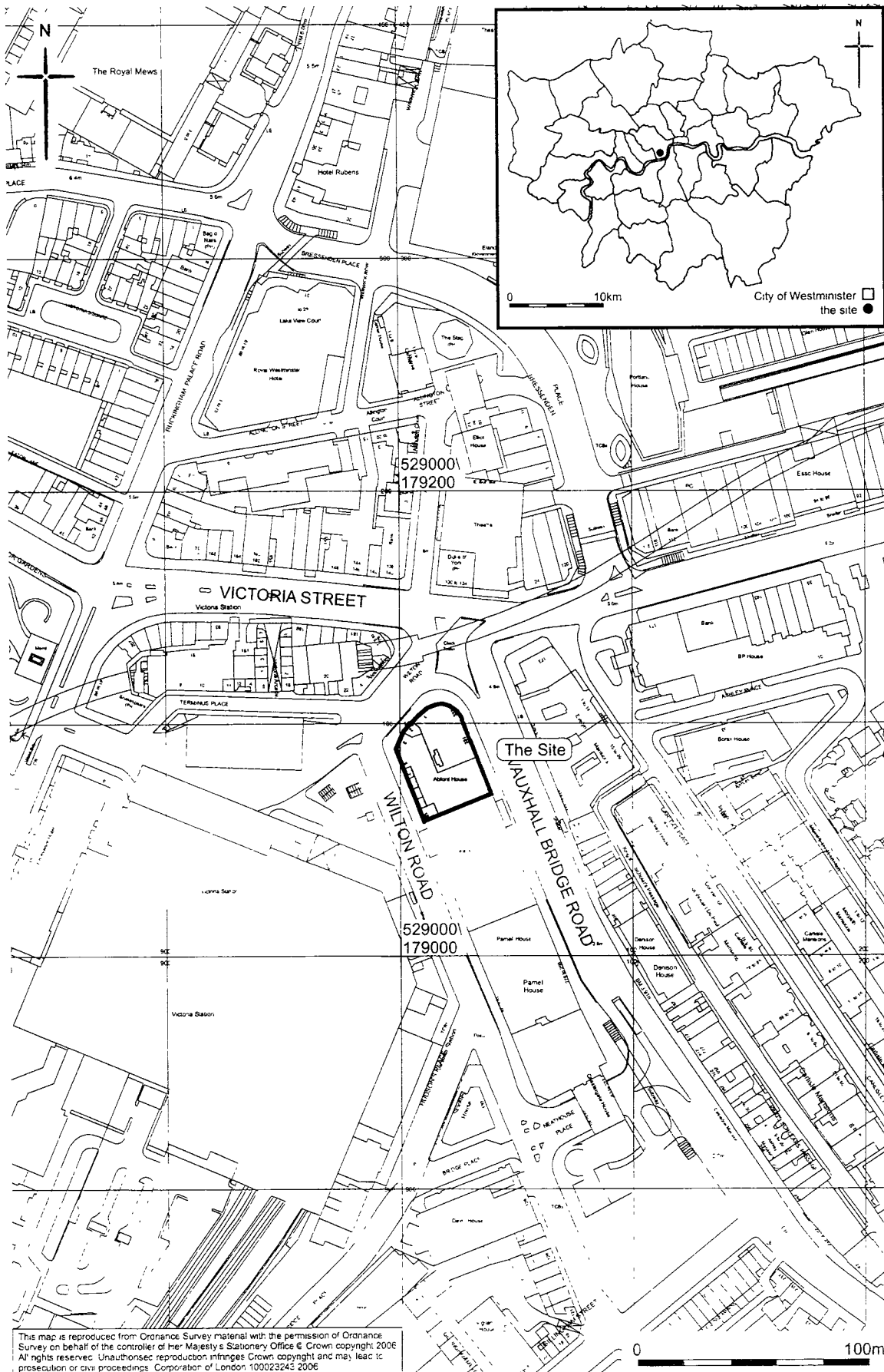


Fig 1 Site location



## 1.2 Planning and legislative framework

The legislative and planning framework in which the archaeological exercise took place was summarised in the *Archaeological Impact Assessment* (Tyler 2003).

## 1.3 Planning background

The site lies in the north-eastern part of the City of Westminster Archaeological Priority area covering the Saxon/medieval settlement of Ebury. A previous desk-based assessment (Tyler 2003) was prepared to accompany the planning application for the proposed redevelopment. This suggested that deposits of Saxon and medieval date are likely to have been truncated by excavation associated with construction of the lower ground floor of the existing building. However, alluvial deposits with potential for prehistoric activity and past landscape reconstruction, may survive below about 0.5m OD. The proposed excavations for the sub-basement are likely to remove all archaeological and palaeo-environmental deposits surviving in the southern two thirds of the site. In addition, there may also be impacts from drains and other services, as well as impact from pre-piling obstruction removal and any temporary works.

The archaeological works were required in order to satisfy the archaeological planning condition, attached to the planning application for the redevelopment of the site (Planning Application No: PT/04/01116/FULL), which stated that:

*No development shall take place until the applicant, their agent or successors in title has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation, which has been submitted by the applicant and approved by the Local Planning Authority.*

The Archaeological Advisor to the City of Westminster has recommended (in her letter to the Development Planning Services, dated 21st May 2004) that, as a first stage in the programme of archaeological work, an archaeological evaluation be undertaken, which might initially comprise archaeological monitoring of geotechnical investigations. This should allow an assessment of the proposed development impact on any surviving deposits of archaeological interest and will be used to formulate an appropriate mitigation strategy, as necessary.

Following subsequent discussion with the English Heritage Archaeological Science Advisor, and the project team an evaluation comprising five geoarchaeological boreholes, to be undertaken at the same time as geotechnical work was carried out at the site.

## 1.4 Origin and scope of the report

This report was commissioned by Mace Ltd on behalf of The Abford House Unit Trust and produced by the Museum of London Archaeology Service (MoLAS). It has been prepared within the terms of the relevant Standard specified by the Institute of Field Archaeologists (IFA 1999).

This document reports on the results of the geoarchaeological evaluation of the site. It is intended to provide sufficient information to determine archaeological survival and the likely impact of the proposed scheme on any surviving deposits of archaeological interest. The results of the geoarchaeological evaluation will be used to formulate an appropriate archaeological mitigation strategy, as necessary, in order to satisfy the archaeological condition applied to planning consent.

The results of the fieldwork and the borehole evaluation are integrated in this report:

Field evaluation, and the *evaluation report* which comments on the results of that exercise, are defined in the most recent English Heritage Guidelines (English Heritage 1998) as intended to provide information about the archaeological resource in order to contribute to the:

- formulation of a strategy for the preservation or management of those remains; and/or
- formulation of an appropriate response or mitigation strategy to planning applications or other proposals which may adversely affect such archaeological remains, or enhance them; and/or
- formulation of a proposal for further archaeological investigations within a programme of research

### **1.5 Geoarchaeological Background**

A comprehensive background to the geology, archaeology and history of the site was presented in the previous desk based assessment (Tyler op cit, 13-21) and is not repeated here. Instead, as it is considered (Tyler op cit) that alluvial deposits of prehistoric date may survive on the site, this section outlines what is currently known about the prehistoric landscape of the site and its surroundings and the implications for past human activity and the survival of archaeological palaeo-environmental evidence.

The River Thames meanders as it crosses the Westminster area, flowing from west to east between the Chelsea and Vauxhall Bridges but continuing in a northerly direction past the Houses of Parliament. The area between Battersea Power Station, Buckingham Palace and the Houses of Parliament appears relatively flat today. However, thick alluvial deposits mask the topography of the ancient valley floor in Pimlico and Westminster, so that Belgravia, which actually lies on a low river terrace above the prehistoric valley floor, appears no higher than the land adjacent to the river itself and the only significant rise in the modern ground surface occurs where it slopes sharply up onto the much older and higher river terraces of Knightsbridge, Hyde Park and the West End. Between Chelsea Bridge and Westminster Bridge the modern course of the Thames lies close to the eastern/southern valley side and a wide expanse of valley floor ('floodplain') stretches between the river and the western/northern valley side, which roughly follows Buckingham Palace Road. Thus, although difficult to picture in the modern urban landscape, the site lies at the extreme north-western edge of the valley floor (Fig 2).

In prehistoric and historic times tributary streams drained the river terraces and flowed into the Thames. Most significant of these in the Westminster area was the

Tyburn, which appears to have branched into a number of distributaries as it reached the floodplain of the Thames. The branches of the Tyburn were separated, as they flowed across the floodplain, by low islands of sand and gravel that may have formed as sediment accumulated at the confluence of the Tyburn and the Thames or represent outcrops of earlier river terraces not fully eroded away by later rivers. Several of these islands were quite extensive and were exploited by prehistoric and historic people for occupation and agriculture (for example Thorney Island, on which Westminster Abbey was built). The surface of these islands typically lies over 1m OD. Thus if the site lay on an island of higher ground in the prehistoric period, with potential for occupation and other dry land activity, such evidence is likely to have been truncated by the lower ground floor of the existing building, which is thought to lie at around 0.5m OD.

It appears, however, that the site is more likely to have lain within the valley of one of the distributaries of the Tyburn (see Fig 2). In historic times this branch of the Tyburn was known as the River Tachbrook (or Kings School Sluice), but is not certain if this was originally a natural or man-made watercourse. Barton (1992) suggests that it was constructed at sometime prior to the 17th century as a sewer or drainage ditch that may have connected the Merflete, a tidal inlet just upstream of Vauxhall Bridge (that had existed since Saxon times) with the Old Ditch, which drained Bulinga Fen, a marshy low-lying area that existed in medieval times in the area between Vauxhall Bridge Road and Ebury Bridge Road today. The storm sewer (culverted) through which the Tyburn now flows follows the course of the former River Tachbrook. In the vicinity of the site, sediments associated with the River Tachbrook have been recorded at Bressenden Place (END94; Nielsen 1994) and such deposits may also exist on the present site. Such deposits, especially if they can be dated, might provide information about the origin of the River Tachbrook.

Peat deposits of various dates, from Mesolithic to Iron Age have been found in other low-lying areas, associated with abandoned channels and the distributaries of the Tyburn, such as those thought to exist on the present site. In addition, Mesolithic peat deposits have been recorded on several sites to the south-west of Abford House lying in a similar location close to the valley side (Fig 2). A thin Mesolithic peat bed lay variably between -1 and -2m OD and overlay waterlain deposits of probable late glacial date at BPR97, at the junction of Ebury Bridge and Buckingham Palace Roads (Lakin 1998) and was also found at Hugh Street (HUH96; Spurr 1996), where it may have been associated with a shallow lake or pool. This suggests that Early Holocene (Mesolithic) deposits could survive in the relatively sheltered location of the margin of the valley floor, where they have been protected to some extent from later river scour. If so survival of similar deposits could exist on the present site.

- Sites**
- 1 Abford House
  - 2 Chelsea Bridge Wharf (QST01)
  - 3 Storeys Gate (JLE)
  - 4 Westminster Underground, Palace Chambers South and St Stephens East (JLE sites)
  - 5 Parliament Square (JLE)
  - 6 Great Peter Street (SAL94)
  - 7 Richmond Terrace
  - 8 21-29 Victoria Street
  - 9 Eland House (END94)
  - 10 Late Palaeolithic flint artefact
  - 11 Ard Marks
  - 12 Elverton Street (ELV95)
  - 13 Tate Gallery (MBK97)
  - 14 Wilton Road (WLD00)
  - 15 Vauxhall Bridge Road (VXL00)
  - 16 Hugh Street (HUH96)
  - 17 Buckingham Palace Road (BPR97)

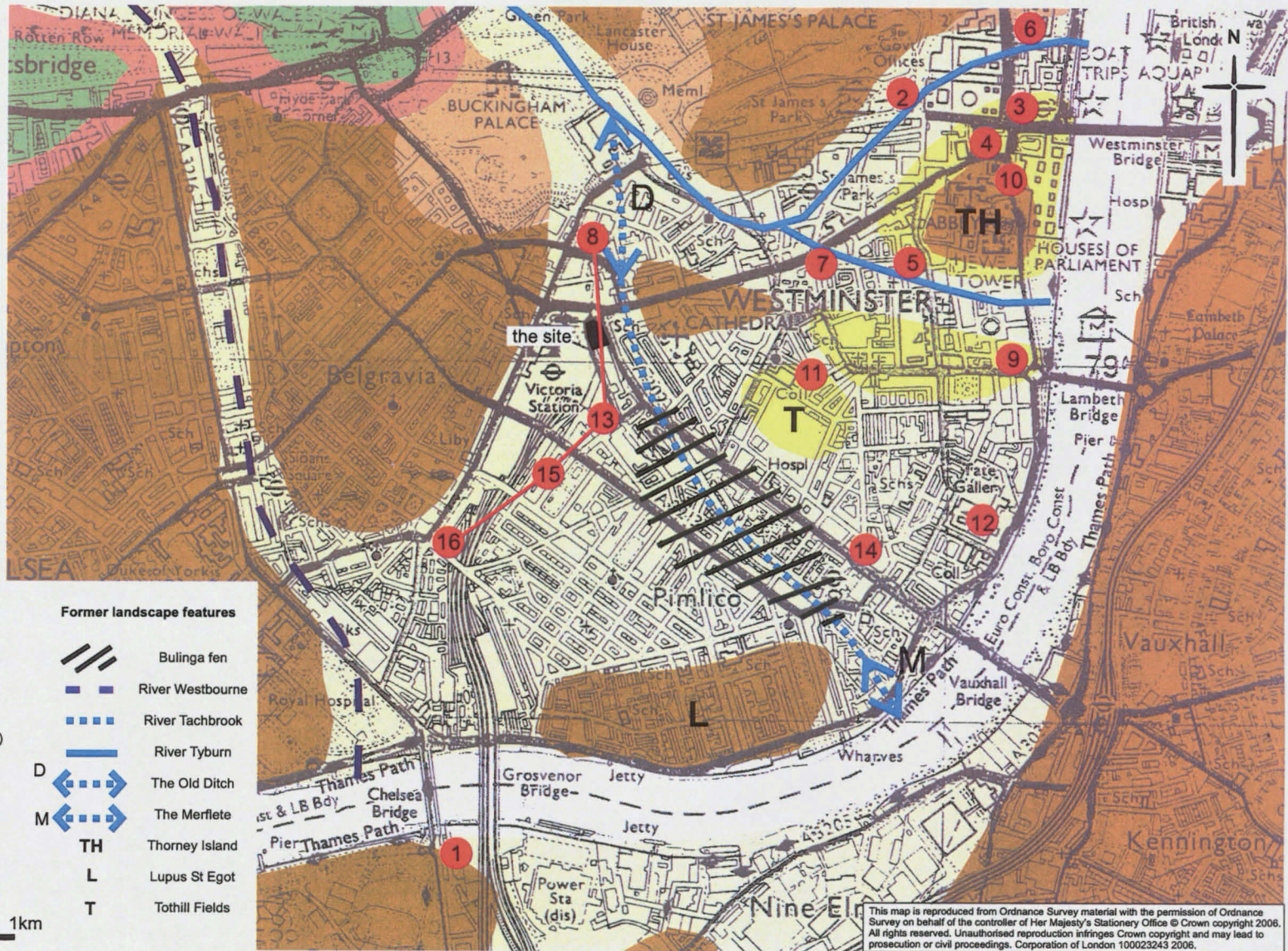
**Topography and surface geology**

- Floodplain alluvium underlain by high areas of sand and gravel
- Holocene alluvium
- Brickearth (Langley Silt Complex)
- Kempton Park Gravels
- Gravels of earlier river terraces
- Bedrock (London Clay)

**Former landscape features**

- Bulging fen
- River Westbourne
- River Tachbrook
- River Tyburn
- The Old Ditch
- The Merflete
- Thorney Island
- Lupus St Egot
- Tothill Fields

0 1km



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Fig 2 Surface geology and buried landscape characteristics

In contrast to the evidence of low-lying waterlain and wetland deposits, from several sites surrounding Abford House, boreholes drilled immediately south of the site at WLD00 (Corcoran 2000), at the corner of Wilton Road and Gillingham Street, revealed a relatively high sequence of Pleistocene deposits (sandy clays and clayey sands overlying floodplain gravel) with evidence of Holocene soil formation. It was suggested that the prehistoric land surface may have formed an island rising to around 1.5m OD in the vicinity of Victoria Station, from where it dipped to the east into the valley of the Tachbrook and possibly westwards into a floodplain-edge depression or abandoned channel, perhaps that in which the Mesolithic peat deposits have been found. Similar deposits to those interpreted as Pleistocene at WLD00 were recently recorded at Bressenden Place (VSB06) immediately north-west of the site, although here they were more difficult to interpret, as a result of much disturbance, which was to some extent caused by Victoria Line underground tunnels (Spurr 2006). Thus whether higher, drier ground in prehistoric times, or lower-lying wetland existed on the site is not yet clear.

Much of the evidence from the western margins of the valley floor is likely to have also been removed by the construction of the canal and basin of the Chelsea Waterworks Company in the 18th century (Victoria Station was later built over the backfilled Waterworks Company features). Outside these areas of truncation there could be potential for the remains of platforms, trackways and other prehistoric structures built to link the islands with the river terrace. Such structures would also have provided access to the watercourses and bases for various activities that are likely to have taken place in the mosaic of different environments that existed at the margins of the floodplain in the vicinity of the site.

Recent work has suggested that the sands of Thorney Island accumulated in the Mesolithic and Early Neolithic period. At this time the Thames appears to have crossed the Westminster area (continuing through Lambeth and north Southwark) as a wide, relatively slow-flowing, fresh (non-tidal) and clear river (Sidell *et al* 2000). Subsequently, Early Bronze Age silts and Later Bronze Age marsh deposits accumulated in the Thorney island area, which are thought to represent an initial surge of tidal water (amongst other things) followed by a retreat of the tidal head downstream (Sidell *et al* op cit). The location of the site, at the western edge of the floodplain and at the point where the Tyburn enters the floodplain of the Thames provides an opportunity to obtain contrasting and complimentary information about the past river characteristics to that from the Thorney Island area. In particular it might provide information about the period spanning the Late Bronze Age and medieval period, which appears to be missing in many profiles examined closer to the Thames, probably as a result of later erosion.

Although a considerable amount of information about the past landscape of Westminster is available for the Westminster Abbey and Houses of Parliament area, considerably less is known about Pimlico, where the configuration of the buried landscape is as yet unknown, as no comprehensive sub-surface mapping has yet been undertaken. However, a mosaic of islands, with potential for evidence of prehistoric dryland occupation activity and lower-lying marsh, streams and pools, with potential for evidence of prehistoric wetland exploitation and preserving remains suitable for past landscape reconstruction is likely to exist in this area. A better understanding of

the characteristics and distribution of the islands and wetland at different times in the past would help both in predicting where archaeological evidence may be found and in placing the known archaeological evidence into its contemporary landscape setting.

## **1.6 Aims and objectives**

### **1.6.1 General considerations**

The purpose of the geoarchaeological evaluation is to:

*determine, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practices. These will satisfy the stated aims of the project, and 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 IFA.*

### **1.6.2 Archaeological significance of palaeo-environmental evidence**

The site lies at the western margins of the floodplain of the Thames. River valleys and especially abandoned channels, pools and marshy areas within them act as 'sinks' in the landscape, collecting environmental remains such as pollen, insects, snails, seeds and soil material, washed, blown and transported by other means from nearby areas. These remains can provide information about the river itself and the environment of the surrounding area and may contain indirect evidence for past human activity.

The wet conditions of the valley floor can lead to good organic preservation and the accumulation of sediment on a floodplain can provide good stratigraphic resolution. In contrast, organic material tends to be poorly preserved on the drier valley sides and river terraces, where most of the tangible archaeology exists. Thus natural features and deposit sequences on the valley floor can preserve evidence that no longer exists elsewhere in the landscape and are an archaeological (or archaeo-environmental) resource in their own right, even when no other archaeological evidence, such as finds and man-made features, exists on a site (English Heritage 2002; 2004).

### **1.6.3 Site specific aims and objectives**

The aim of the geoarchaeological evaluation will be to monitor any intrusive works undertaken as part of the geotechnical site investigation and obtain samples suitable for off-site examination from up to five pre-selected coring locations, aligned in two intersecting transects.

The objective of the evaluation is to obtain information about the survival, thickness and characteristics of alluvial deposits of archaeological interest on the site and assess their potential for preserving archaeological remains and palaeo-environmental evidence.

The research objectives identified in the *Method statement for geoarchaeological evaluation* (Corcoran 2006: Section 1.4) are summarised below:

- Do alluvial, or other deposits of archaeological interest survive on the site and what are their characteristics in terms of depth/elevation, thickness, sediment type and likely date?
- What is the potential of the deposits on the site to contain *in situ* archaeological remains?
- What is the potential of the deposits surviving on the site and the samples taken from them to preserve indirect evidence of past human activity?
- What is the potential of the deposits surviving on the site and the samples taken from them to preserve evidence for the past environment, landscape and river regime?
- What is the potential for dating the deposits surviving on the site?
- To what extent might the deposits surviving on the site contribute to a better understanding of prehistoric activity or the prehistoric landscape of Westminster in the vicinity of the site?

## 2 Methodology

### 2.1 On site

#### 2.1.1 *Geoarchaeological boreholes*

Five geoarchaeological boreholes (GP001 to GP005) were initially proposed for this site (Corcoran 2006), they were to be located away from modern foundations and arranged in two intersecting transects. Initially five test pits were to be dug 1m x 1m x 2m and if alluvium was reached a plastic tube would be inserted and the test pit backfilled around it leaving the tube open. This was so that windowless sampling could then be undertaken in each location, by drilling through the hole retained by the plastic tubing and any resulting samples would be taken away for off site analysis.

However, upon the excavation of the test pits it was apparent that the site has been heavily truncated by the construction of the current basement, and Pleistocene gravels were reached during excavation of the test pits to a depth of 2m. As a result the exposed sections were described on site and windowless core samples, though drilled, were not taken off site for examination.

Windowless core samples were taken in 3 of the 5 proposed locations, GP001, GP004 and GP005. In each case it was attempted to sample as far into the Pleistocene sands and gravels as possible and the holes were terminated at 1.3m, 3.4m and 3.6m (bgl) respectively.

GP003 was abandoned at a depth of 0.58m (below ground level), due to the presence of a concrete slab which was reinforced with steel girders. Removal of the concrete slab was not attempted as its location within the sequence would have truncated any potential sediments.

GP002 was also abandoned at a depth of 0.9m (below ground level), due to the presence of a second thick concrete slab. Removal of concrete past this depth was not attempted as any potential sediments would have been truncated. The relocation of this hole was attempted but a suitable location could not be found away from foundations, raised wooden flooring and further basements.

The 5 geoarchaeological pits were located by the contractors and were subsequently plotted on to the OS grid. The contractor's surveyors also provided a level, relative to Ordnance Datum, for each profile recorded.



## **2.1.2 Geotechnical monitoring**

### *Boreholes*

Two boreholes were drilled and were monitored by a MoLAS geoarchaeologist. They were located at opposing corners of the site. They were drilled using a small cable percussion danda rig. They were monitored to the depth of the underlying London Clay.

The boreholes were located by the contractors and were subsequently plotted on to the OS grid. The contractors surveyors also provided a level, relative to Ordnance Datum, for each profile recorded.

### *Trial Pits*

Seven geotechnical trial pits (TP004 and GP004 share the same location), were excavated to establish the depth of foundations, these were monitored by a MoLAS geoarchaeologist.

These trial pits were located by the contractors and were subsequently plotted on to the OS grid. The contractors surveyors also provided a level, relative to Ordnance Datum, for each profile recorded.

For each trial pit monitored the sequence was recorded and no samples were taken for off site examination due to the truncation of the sequence by the foundations of the existing building.

## **2.2 Off site**

The borehole logs, levels and locations together with those of any other suitable sequences observed during the geotechnical monitoring have been input into a digital database (RockWorks) and the sequences of deposits compared with data from the surrounding area. Similar units occurring in adjacent auger holes have been linked and assigned to a range of 'facies', site-wide deposits, representing different sedimentary environments, which have been used as an aid to interpreting and presenting the data and discussing the results

The site records will be archived under the site code VAU006 in the LAARC.

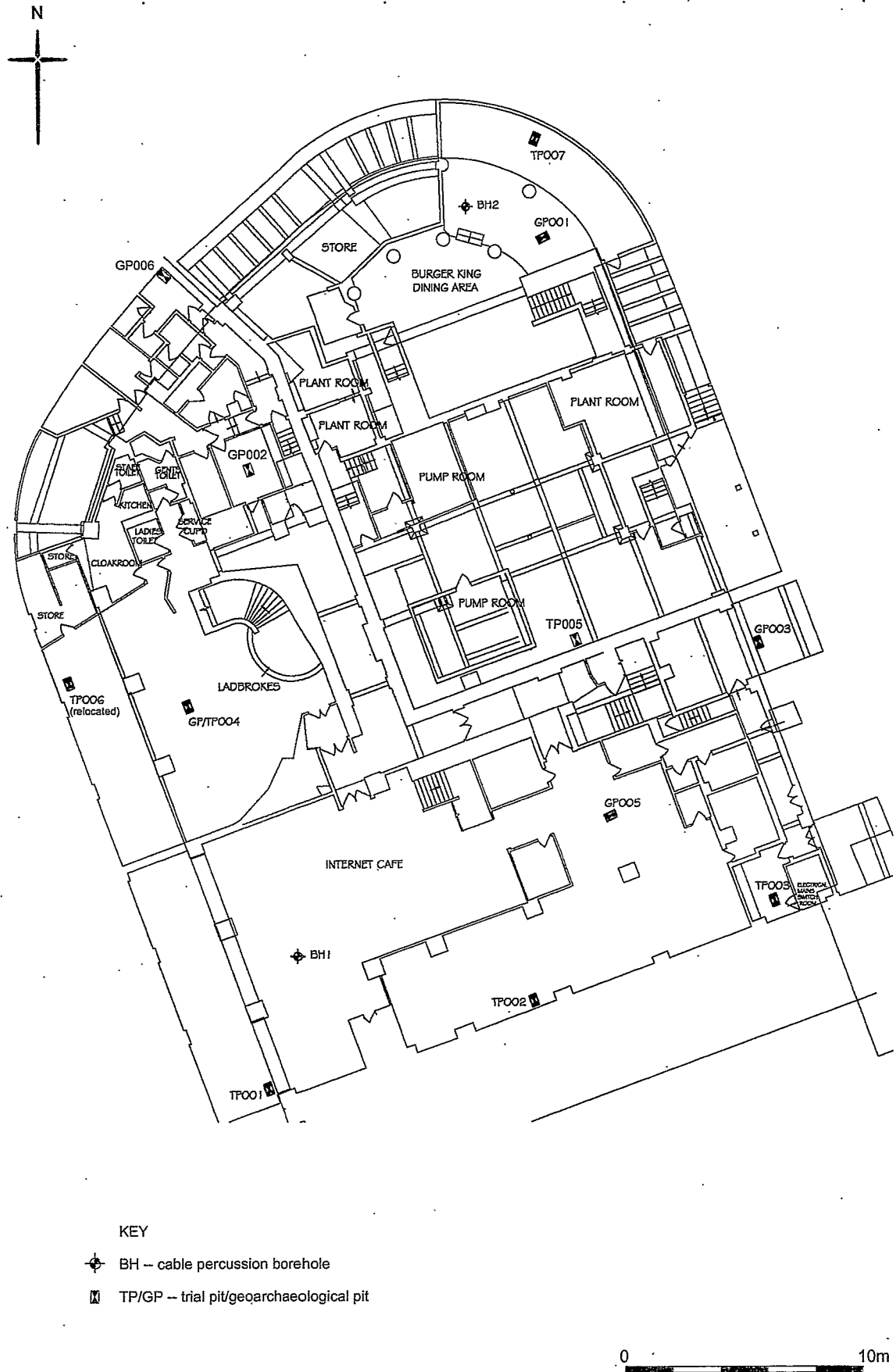


Fig 3 Location of geoarchaeological and geotechnical interventions

### 3 Results of the evaluation

#### 3.1 Stratigraphic sequence

This section summarises the stratigraphic sequence of the geoarchaeological boreholes, boreholes and trial pits. The locations of these interventions are given on Fig 3

##### 3.1.1 Facies (site-wide deposits)

In order to reconstruct the changing environment of the site, the sediments recorded in each intervention have been ascribed to a series of 'facies'. This groups the sediments with similar stratigraphic position and characteristics (in terms of sediment type, the processes that led to their deposition and those that may have led to their post-depositional transformation) into site-wide deposits, recognised across the site as a whole. The characteristics of the different facies are listed in Table 1.

Facies	Lithological characteristics	Initial Interpretation
A	Concrete Light gray brown sandy clay	Modern make-up and levelling
B	Fine grained sandy clay, light orange grey, occasional rooting, Fe staining along roots.	Possible late Pleistocene and / or early Holocene weathered land surface. (Not always present due to heavy truncation by basement).
C	Horizontally bedded sands, yellow and orange brown, with possible occasional fine lenses of gray sandy clay.	Fluctuating fluvial activity. (Late Pleistocene / Early Holocene)
D	Gravel band, with orange brown coarse sand.	Possible flash flood event (Late Pleistocene / Early Holocene)
E	Coarse orange brown sand with occasional small sub angular gravel inclusions.	Fluvial activity. (Late Pleistocene / Early Holocene)
F	Gravel	Floodplain gravel (Pleistocene)
G	Stiff clay	London Clay, bedrock

Table 1: The site stratigraphy

##### 3.1.2 Geoarchaeological boreholes

Each Windowless sample and geoarchaeological pit is described, with the results shown in Table 2.

<i>For each intervention the level of the surface of each facies in m OD is given.</i>					
Facies	GP001	GP002	GP003	GP004	GP005
A	0.46 to -0.24	0.81 to -0.09	0.38 to -0.2	0.27 to -0.46	0.31 to -0.19
B	Truncated	Abandoned	Abandoned	-0.46 to -0.55 (possible)	-0.19 to -0.28 (possible)
C	-0.24 to -0.79			-0.55 to -0.96	-0.28 to -0.83
D	-0.79 to -1.04			-0.96 to -1.13	-0.83 to -1.09
E	-1.04 to -1.69			-1.13 to -3.13	-1.09 to -3.29

Table 2: The stratigraphic sequence in each Geoarchaeological borehole.

Borehole GP004 provided the most representative sample of the stratigraphy on site and as a result the profile is described in detail in Table 3.

#### Geoarchaeological borehole 1 (GP001)

GP001 was situated in the North East corner of the site, within the basement area of the Burger King dinning area, in close proximity to BH002 and TP007. The window sample was carried out to a depth of 1.3m (bgl), the trial pit was then dug to a depth of 2.15m (bgl), from a ground level of 0.46m OD. The core samples were described on site, and no samples were taken.

The upper 100mm of the sequence below the concrete slab was soft waterlogged light grey brown sandy clay, probably associated with the construction of the basement. Below this the sequence consisted of bedded sands (facies C) from -0.24m OD to -0.79m OD. These were typical of those seen elsewhere on site. They were horizontally banded light yellow and darker orange brown sands with occasional clayier bands within. This was overlying a 0.25m thick band of gravel (facies D) which was coarse and fine sub angular gravel with coarse sand. Below -1.04m OD were coarse sands, orange brown with occasional small sub angular gravel inclusions. The trial pit was terminated at a depth of -1.69m OD.

#### Geoarchaeological borehole 2(GP002)

GP002 was abandoned at a depth of 0.9m (below ground level), due to the presence of a second thick concrete slab. Removal of concrete past this depth was not attempted as any potential sediments would have been truncated. The relocation of this hole was attempted but a suitable location could not be found away from foundations, raised wooden flooring and further basements.

#### Geoarchaeological borehole 3 (GP003)

GP003 was abandoned at a depth of 0.58m (below ground level), due to the presence of a concrete slab which was reinforced with steel girders. Removal of the concrete slab was not attempted as its location within the sequence would have truncated any potential sediments.

#### Geoarchaeological borehole 4 (GP004)

GP004/TP004 was situated in the basement of the middle western section of site. The windowless sample was carried out to a depth of 3.4m (bgl), a test pit was then carried out to a depth of 2.4m (bgl) from a ground level of 0.27m OD. The core samples were described on site and no samples were taken. The results are described in the Table below.

Unit	M (bgl)	M OD	Description	Facies
		0.27m OD	Ground level	A
	0 - 0.4		Concrete slab	
		-0.13m OD	Core sample begins	
1	0.4 - 0.73 m		Loose waterlogged elastic light grey brown sandy clay. Probable mixing from placement of cement floor.	B/C
		-0.46m OD	Sharp boundary	
2	0.73- 0.82 m		Light grey very fine sandy clay, very occasional root, and slight iron staining throughout.	B/C
		-0.55 m OD	Sharp clear boundary	

3	0.82 - 0.84m		Light yellow brown fine sand	C
		-0.57m OD	Sharp boundary	
4	0.84 - 0.86m		Light grey fine sandy clay with Iron staining along base of unit	
		-0.59 m OD	Sharp boundary	
5	0.86 - 0.88m		Dark yellow brown fine sand	
		-0.61 m OD	Sharp boundary	
6	0.88 - 0.94m		Gray brown clayey sandy fine gravel lense, occasional larger gravel inclusion $\leq 4$ cm.	
		-0.67 m OD	Sharp boundary	
7	0.94 - 1.23m		Yellow orange fine and coarse sand with occasional small gravel inclusions.	D
		-0.96 m OD	Gradual	
8	1.23 - 1.4 m		Coarse sand and sub-angular gravel $\leq 3$ cm.	E
		-1.13 m OD	Sharp boundary	
9	1.4 - 3.4 m		Coarse orange brown sand, with occasional black flecking. Occasional small sub angular gravel inclusion.	
		- 3.13 m OD	Terminated	

Table 3: Profile GP004

#### Geoarchaeological borehole 5 (GP005)

GP005 was situated in the basement of the south east area of the site in close proximity to TP002. The test pit was initially dug to a depth of 2m (bgl) this was then back filled around a length of plastic tubing. The windowless sample was then carried out through this to a depth of 3.6m (bgl) from a ground level of 0.31m OD. The windowless samples were examined on site and no samples were taken.

Below the concrete slab at a depth of -0.19 to -0.28m OD was a thin lense of possible fine grained sandy clay possibly facies B or it could also be a lense within the underlying bedded sands, due to the heavy truncation of the site it was not clear. Between -0.28 and -0.83m OD was facies C, fine and coarse bedded yellow and orange brown sands with occasional thin bands of gray sandy clay. Beneath this was a 0.3m band of sub angular gravels  $\leq 20$ mm with slight dark orange iron staining within the gravel. Below -1.09m OD was orange brown coarse sand with occasional sub angular gravel inclusions. The Windowless sample was terminated at a depth of -3.29m OD.

#### 3.1.3 Geotechnical boreholes

Two boreholes were carried out and were monitored to the base of gravel. Each borehole was drilled from ground level as the drilling rig could not gain access to the basement areas. The results of each bore hole are summarised below.

##### Borehole 1 (BH001)

Borehole 1 was situated in the south west section of site and is in close proximity to TP002. The ground level in the basement is 0.38m OD. The sequence is broadly the same as that seen in the previously described geoarchaeological pits, although due to the method of extraction the sequence within the gravels was less clear. From -0.12 m OD to -0.82m OD was yellow orange brown sand with occasional gravel inclusions, this is thought to be facies C although the bedding cannot be seen. Underlying this

unit up to a depth of -4.42m OD is coarse orange brown sand with occasional sub angular gravel. Between -4.42 and -7.02 m OD was coarse sand and gravel facies F. At -7.02m OD was stiff grey clay, London Clay.

#### **Borehole 2 (BH002)**

Borehole 2 was situated in the north west corner of the site in close proximity to GP001 and TP007. The ground level in the basement was 0.28m OD. The sequence is broadly the same as that seen in the geoarchaeological pits previously described, although the extraction of the sequence will have led to mixing meaning that the transitions were obscured and the bedding was disrupted in the upper unit. From -0.32 to -1.62m OD was fine yellow brown sand with occasional gravel. Underlying this unit up to a depth of -4.42m OD is a coarse orange brown sand with occasional gravel, increasing with depth. -4.42 to -5.8m OD is coarser gravel and sand, with the underlying London Clay starting at -5.8m OD.

#### **3.1.4 Geotechnical Trial Pits**

##### **TP001, 002,003**

These three trial pits were all situated along the southern extent of the site, and were located for geotechnical purposes to assess the depth of foundations. As a result the sequences were truncated. The sequence below the 0.5m thick concrete slab were the same as the sequences seen in the geoarchaeological pits, and consisted of fine and coarse yellow and orange brown bedded sands with occasional gravel inclusions to a depth of 2m.

##### **Trial pit 4 (TP004/GP004)**

Shares a location with GP004, see TP004 for detailed description.

##### **Trial pit 5 (TP005)**

TP005 was abandoned due to a concrete slab

##### **TP006, 007**

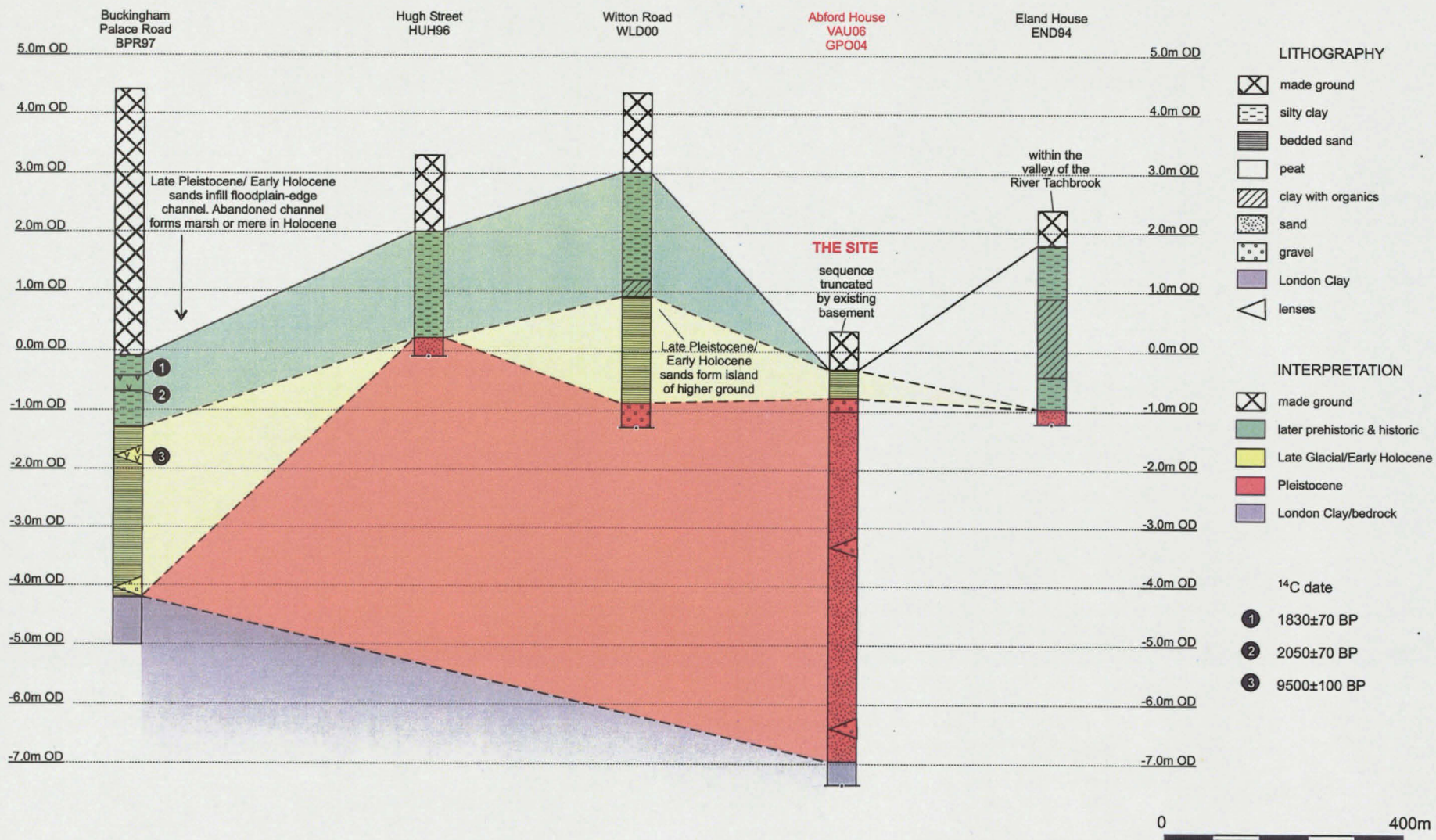
Both trial pits were to be located along the northern extent of the site, however due to thickness of concrete TP006 was relocated to the eastern wall in close proximity of GP004. Both trial pits showed the same sequence of those previously described with bedded yellow and orange brown sands with occasional gravel. TP006 was terminated at 2.4m and TP007 was terminated at 2m (below ground level).

### **3.2 Discussion of the results**

The sequence at Abford House has been heavily truncated down to late glacial /early Holocene bedded sands, which overlie earlier Pleistocene sands and gravels. Overlying facies F, which represents London Clay (Tertiary bedrock), and forms the base line of deposits of archaeological interest are the Pleistocene coarse sand and gravels (facies E). Overlying these is a thin band of gravel (facies D) which appears to be consistent across much of the site. This possibly represents a single flash flood event, as it would have been deposited in a high energy environment. The upper most part of the sequence comprised of bedded sands and clays (facies C) which are representative of a fluctuating fluvial environment resulting from the climate amelioration at the end of the last ice age and are likely to be of Late Upper Palaeolithic/ Early Mesolithic date.

The site of Abford House is situated on the western extent of the floodplain, and a schematic cross section (Fig 4) has been produced which follows the floodplain edge and places the results in their broader context. The results show clearly that the site has been heavily truncated by the existing basement. It is also clear that the Pleistocene gravels occur at a depth of -1m OD, which is consistent with the sites of Wilton Road (WLD00) to the south west of site and Eland House (ELD94) to the north. So it is possible that this area was sitting on a higher drier island. The sequence at Buckingham Palace Road (BPR97) provides dates for the upper bedded sands to  $9500 \pm 100$  BP. Although they occur at a depth of -1.3m OD they are likely to be associated with the higher bedded sands seen at Abford House and Wilton Road.

It is clear that the truncation which has already occurred on this site has removed any possible sediments relating to the higher island thought to have occurred here which would have had the potential for prehistoric occupation. But the cross section appears to show that prior to truncation the site lay on the edge of an island of higher ground, as at Wilton Road the surface of the bedded sands occurs at 1m OD. So it is clear that the sequence at Abford House supports the evidence from other sites in the area in suggesting that the area around Victoria Station was an area of higher ground in the early Holocene.



R:\Project\west\1283\fig04

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Fig 4 Schematic cross section along western edge of floodplain in Westminster area



## 4 Archaeological potential

### 4.1 Realisation of original research aims

The degree to which the archaeological research aims raised in the *Method Statement for geoarchaeological evaluation* (Corcoran 2006) have been answered is summarised below:

- *Do alluvial or other deposits of archaeological interest survive on the site and what are their characteristics in terms of depth/elevation, thickness, sediment type and likely date?*

The deposits on site have been heavily truncated by the construction of the present basements. As a result all alluvium has been removed and the sequence truncated to a depth of roughly -0.5m OD. At this depth the sequence consists of bedded Pleistocene sands and gravels of Late Glacial date. These are representative of fluvial activity associated with climate amelioration at the end of the last cold stage (the ice age) around 15, 000 years ago. Although there is some potential for Late Upper Palaeolithic remains to survive in such deposits none were observed during the evaluation and the chances of finding such archaeology is very low.

- *What is the potential of the deposits on the site to contain in situ archaeological remains?*

Low to none. Owing to the heavy truncation from the current basement of the existing building, any potential for archaeological remains from the Mesolithic onwards has been removed. Some low potential for Late Upper Palaeolithic remains within the sands and gravels, but this is highly likely to be of low intensity, with the chances of finding it equally low.

- *What is the potential of the deposits surviving on the site and the samples taken from them to preserve indirect evidence of past human activity?*

Samples would usually be taken for pollen analysis for indirect evidence of human activity however pollen is unlikely to be preserved in the coarse sandy sediments and as a result no samples were taken.

- *What is the potential of the deposits surviving on the site and the samples taken from them to preserve evidence for the past environment, landscape and river regime?*

Environmental remains are unlikely to be preserved in the coarse sand and gravelly deposits seen on site. Thus no samples were taken.

- *What is the potential for dating the deposits surviving on the site?*

No organic remains were present for radiocarbon ( $^{14}\text{C}$ ) dating. There is some potential for optically stimulated luminescence (OSL) dating of the sands, but owing to the heavy truncation and the nature of the sequence no samples were taken.

- *To what extent might the deposits surviving on the site contribute to a better understanding of prehistoric activity or the prehistoric landscape of Westminster in the vicinity of the site?*

As the data has been added to the developing MoLAS Westminster geoarchaeological database, the information gained from the deposits seen on site will contribute to our understanding of the prehistoric topography of the local Westminster area.

#### **4.2 Summary of potential**

Owing to the deep truncation which already exists on site from the construction of the present basement there is little or no potential for the preservation of alluvial or archaeological deposits of Mesolithic and later date to survive on this site. There is very low potential for Late Upper Palaeolithic/ Early Mesolithic preservation, given the inferred age of the sand deposits on the site. Owing to the fluvial nature of the depositional environment of the Pleistocene sands and gravels seen on the site, however, recovery of Late Upper Palaeolithic remains is unlikely.

#### **4.3 Significance of the data**

The results of the evaluation contribute to our understanding of the past topography of the Westminster area and are thus of local significance.

## 5 Proposed development impact and recommendations

The proposed development scheme comprises the demolition of the present building and its replacement with a new single block with basement and sub-basement levels, lift pits and piled foundations. Although the proposed basement slab will be at the same level as the lower ground floor of the existing building (c 0.4m OD), the proposed sub-basement, which will occupy the southern two-thirds of the site, will require excavation to about -6m OD.

Any impact will be on the Pleistocene deposits, which have been seen and fully recorded from the sections of the trial pits and geoarchaeological boreholes. As a result it is considered that further work would not contribute any further significant information to our understanding of these deposits than that obtained from the evaluation.

## 6 Acknowledgements

MoLAS wishes to thank Sarah Hughes and Richard Swain of Mace Ltd for commissioning the report on behalf of the Abford House Unit Trust. The Concept engineers for their help on site. Thanks are also due to Jane Sidell (English Heritage) and Diane Walls (GLAAS), and Arups for their advice in setting up the project.

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## 8 NMR OASIS archaeological report form

### 8.1 OASIS ID: molas1-20482

#### Project details

Project name Abford House, 333 Vauxhall Bridge Road

Short description of the project Geoarchaeological evaluation of geotechnical monitoring project

Project dates Start: 05-10-2006 End: 25-10-2006

Previous/future work No / No

Any associated project reference codes VAU06 - Sitecode

Type of project Field evaluation

Site status Area of Archaeological Importance (AAI)

Current Land use Industry and Commerce 3 - Retailing

Methods & techniques 'Augering', 'Test Pits'

Development type Urban commercial (e.g. offices, shops, banks, etc.)

Prompt Direction from Local Planning Authority - PPG16

Position in the planning process After full determination (eg. As a condition)

#### Project location

Country England

Site location GREATER LONDON CITY OF WESTMINSTER CITY OF WESTMINSTER Abford House, 333 Vauxhall Bridge Road

Postcode SW1

Study area 90.00 Square metres

Site coordinates TQ 29012 79090 51.4955133729 -0.141308624208 51 29 43  
N 000 08 28 W Point

Height OD Min: 0.27m Max: 0.46m

**Project creators**

Name of Organisation MoLAS

Project brief originator Local Authority Archaeologist and/or Planning  
Authority/advisory body

Project design originator MoLAS

Project director/manager Gordon Malcolm

Project supervisor Jodi Davidson

Type of sponsor/funding Developer  
body

Name of Abford House Unit Trust  
sponsor/funding body

**Project archives**

Physical Archive Exists? No

Digital Archive recipient LAARC

Paper Archive recipient LAARC

**Project bibliography 1**

Publication type Grey literature (unpublished document/manuscript)

Title Abford House, 333 Vauxhall Bridge Road, A report on the  
geoarchaeological evaluation

Author(s)/Editor(s) Davidson, J

Date 2006

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