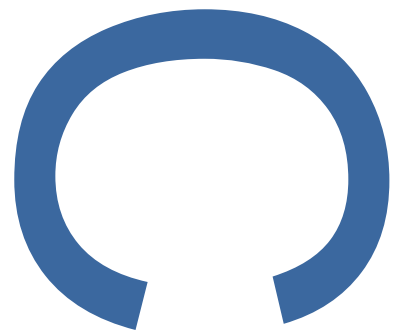


**ROYAL OPERA HOUSE
(OPEN UP PROJECT),
CITY OF WESTMINSTER
WC2E 7AU**

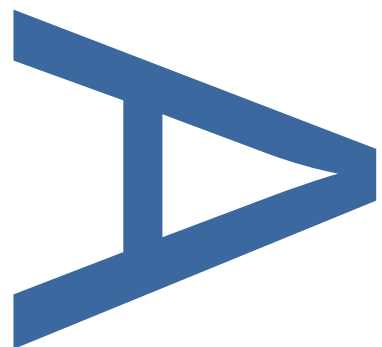


**AN ARCHAEOLOGICAL
WATCHING
BRIEF/MITIGATION**

**CLIENT:
ROYAL OPERA HOUSE**



**LOCAL PLANNING AUTHORITY:
CITY OF WESTMINSTER**



NOVEMBER 2016

PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

THE ROYAL OPERA HOUSE (OPENING UP),
CITY OF WESTMINSTER

MITIGATION WATCHING BRIEF

Quality Control

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An Archaeological Watching Brief/Mitigation on the Royal Opera House (Open Up Project), City of Westminster, WC2E 7AU

Site Code: ROH 14

Central National Grid Reference: TQ 3040 8099

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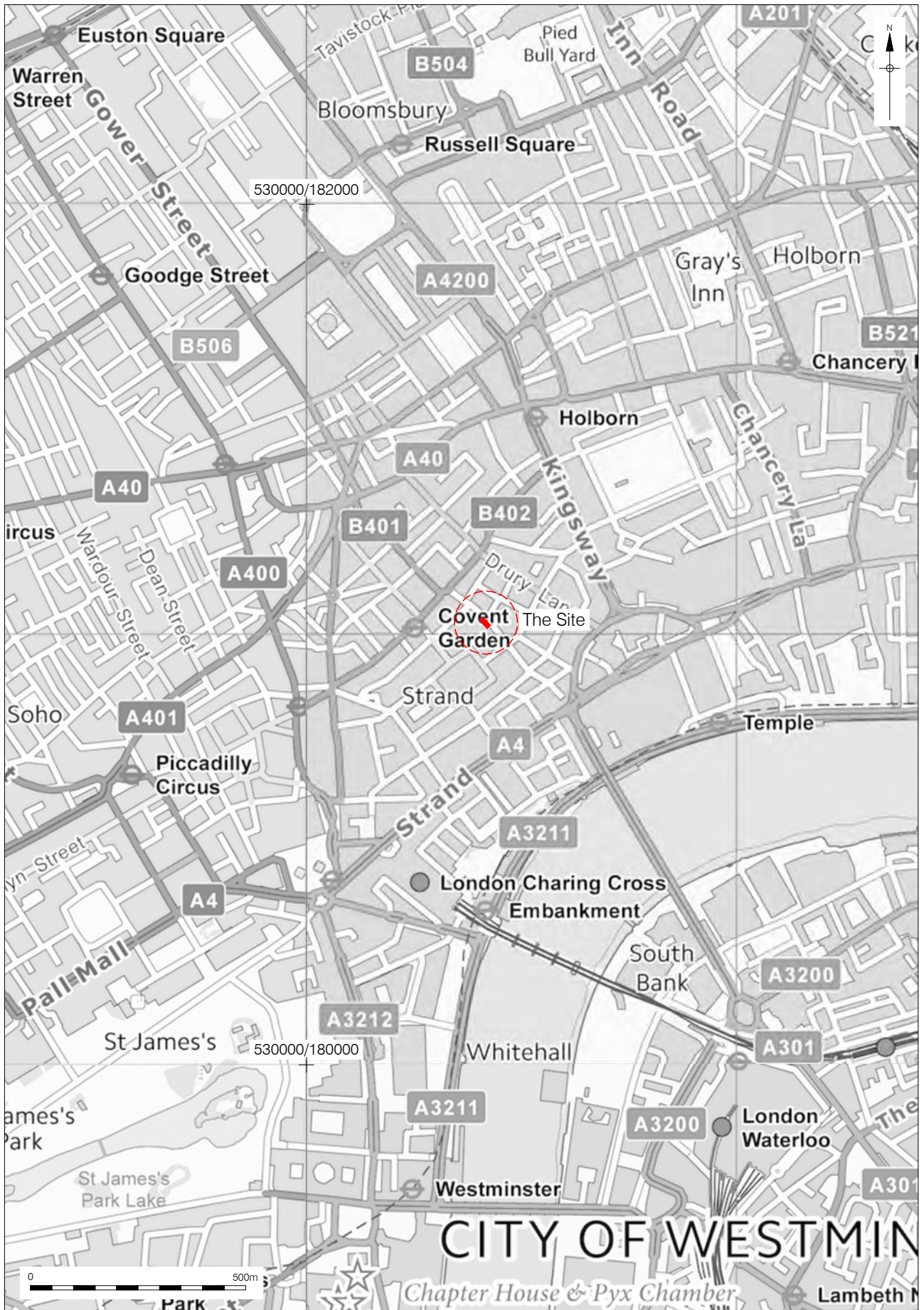
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1 Non-Technical Summary

- 1.1 This report details the results and working methods of an archaeological Watching Brief and limited excavation undertaken by Pre-Construct Archaeology Ltd during works conducted for the Open Up project for the Royal Opera House, City of Westminster, London, WC2E 7AU.
- 1.2 The initial Watching Brief on the pile probing was undertaken by Amelia Fairman between the 11th and 20th of April 2016. The main fieldwork was carried out between 11th of July and 19th of September 2014 by the author. It comprised the monitoring of groundworks being undertaken on the Bow Street frontage on a strip of land measuring circa 5m wide by 24m long along Bow Street, the recording of a small but significant group of archaeological features that were exposed during these works and the excavation of a single large pit dated to the Middle Saxon period.
- 1.3 The site is located within an area which has very high archaeological potential being situated in the heart of the Middle Saxon town of *Lundenwic*. However, the vast majority of the area examined had been impacted by the construction of the 19th century frontage of the Opera House or the more recent reconstruction of that area in the 1980s. In some areas a very narrow strip of undisturbed earlier deposits survived to the east of the construction trench excavated for the 19th century brick foundation of the Opera House. No archaeological deposits survived in the northern part of the trench where which had been impacted by sewers of varying ages, the 19th century frontage also stepped out to the east in close proximity to the northern periphery of the trench. The extant strip of earlier stratigraphy measured a maximum of c.0.75m wide.
- 1.4 The archaeological features present comprised elements of a brick built basement with stone slab floor which probably dates to the 16th or 17th centuries and a cesspit dated to the Middle Saxon period.
- 1.5 The archaeological features and deposits had been excavated in to a natural brickearth horizon which capped natural sands and gravels.

2 Introduction

- 2.1 The trench monitored lies on the east side of the Opera House on the Bow Street frontage, adjacent to the Floral Hall. The trench measured c24m north-south by 5m east-west covers a footprint of approximately 120m²
- 2.2 The central National Grid Reference for the study site is TQ 3040 8099.
- 2.3 The work was commissioned by the Royal Opera House. No Scheduled Ancient Monuments are adjacent to or are contained within the bounds of the site.
- 2.4 The site was given the unique Museum of London site code ROH 14.
- 2.5 The project was undertaken in accordance with an approved Written Scheme of Investigation (Moore, P 2015).
- 2.6 Following the completion of the project the site archive will be deposited in its entirety with the London Archaeological Archive and Research Centre (LAARC) identified by the unique code ROH 14.
- 2.7 Peter Moore was project manager for Pre-Construct Archaeology Limited; the Watching Brief was undertaken by the author.



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Figure 1
 Site Location
 1:12,500 at A4

3 Planning Background

3.1 National Guidance

3.1.1 The Departments of Communities and Local Government (DCLG) issued a series of planning guidelines, the National Planning Policy Framework, in March 2012. This document superseded the previous guidance contained in Planning Policy Statement 5. The policies regarding archaeology set out in the NPPF are contained in **Section 12 Conserving and enhancing the historic environment**. These state:

126. Local planning authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment¹, including heritage assets most at risk through neglect, decay or other threats. In doing so, they should recognise that heritage assets are an irreplaceable resource and conserve them in a manner appropriate to their significance. In developing this strategy, local planning authorities should take into account:

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- the desirability of new development making a positive contribution to local character and distinctiveness; and
- opportunities to draw on the contribution made by the historic environment to the character of a place.

127. When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.

128. 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.

129. 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 assessment into account when considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

¹ The principles and policies set out in this section apply to the heritage-related consent regimes for which local planning authorities are responsible under the Planning (Listed Buildings and Conservation Areas) Act 1990, as well as to plan-making and decision-taking.

130. Where there is evidence of deliberate neglect of or damage to a heritage asset the deteriorated state of the heritage asset should not be taken into account in any decision.

131. In determining planning applications, local planning authorities should take account of:

- the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- the desirability of new development making a positive contribution to local character and distinctiveness.

132. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. Substantial harm to or loss of a grade II listed building, park or garden should be exceptional. 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, should be wholly exceptional.

133. Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- the nature of the heritage asset prevents all reasonable uses of the site; and
- no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and
- the harm or loss is outweighed by the benefit of bringing the site back into use.

134. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

135. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

136. Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

137. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.

138. Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 133 or less than substantial harm under paragraph 134, as

appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

139. Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

140. Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.

141. Local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. They should also 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 accessible². However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

- 3.1.2 The provisions set out in the new guidelines superseded the policy framework set out in previous government guidance namely Planning Policy Statement 5 (PPS 5) 'Planning for the Historic Environment'. Planning Policy Statement 5 had itself replaced Planning Policy Guidance Note 16, PPG 16, which was issued in November 1990 by the Department of the Environment.
- 3.1.3 Although PPG 16 has been superseded the Unitary Development Plans of most local authorities, or Local Development Frameworks where these have been adopted, still contain sections dealing with archaeology that are based on the provisions set out in PPG 16. The key points in PPG16 can be summarised as follows:
- 3.1.4 Archaeological remains should be seen as a finite and non-renewable resource, and in many cases highly fragile and vulnerable to damage and destruction. Appropriate management is therefore essential to ensure that they survive in good condition. In particular, care must be taken to ensure that archaeological remains are not needlessly and thoughtlessly destroyed. They can contain irreplaceable information about our past and the potential for an increase in future knowledge. They are part of our sense of national identity and are valuable both for their own sake and for their role in education, leisure and tourism.
- 3.1.5 Where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by a proposed development there should be a presumption in their physical preservation.
- 3.1.6 If physical preservation *in situ* is not feasible, an archaeological excavation for the purposes of 'preservation by record' may be an acceptable alternative. From an archaeological point of view,

² Copies of evidence should be deposited with the relevant Historic Environment Record, and any archives with a local museum or other public depository

this should be as a second best option. Agreements should also provide for subsequent publication of the results of any excavation programme.

3.1.7 The key to informed and reasonable planning decisions is for consideration to be given early, before formal planning applications are made, to the question of whether archaeological remains are known to exist on a site where development is planned and the implications for the development proposal.

3.1.8 Planning authorities, when they propose to allow development which is damaging to archaeological remains, must ensure that the developer has satisfactorily provided for excavation and recording, either through voluntary agreement with archaeologists or, in the absence of agreement, by imposing an appropriate condition on the planning permission.

3.2 Regional Guidance: The London Plan

3.2.1 The over-arching strategies and policies for the whole of the Greater London area are contained within the Greater London Authority's London Plan (July 2011) which includes the following statement relating to archaeology:

Policy 7.8

Heritage assets and archaeology

Strategic

A. London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.

B. Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology.

Planning decisions

C. Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.

D. Development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.

E. New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.

LDF preparation

F. Boroughs should, in LDF policies, seek to maintain and enhance the contribution of built, landscaped and buried heritage to London's environmental quality, cultural identity and economy as part of managing London's ability to accommodate change and regeneration.

G. Boroughs, in consultation with English Heritage, Natural England and other relevant statutory organisations, should include appropriate policies in their LDFs for identifying, protecting, enhancing and improving access to the historic environment and heritage assets and their settings where appropriate, and to archaeological assets, memorials and historic and natural landscape character within their area.

3.3 Local Guidance: Archaeology in the City of Westminster

3.3.1 The relevant Development Plan framework is provided by the City of Westminster Core Strategy, adopted January 2011, which contains the following relevant policies:

POLICY CS24 HERITAGE

Recognising Westminster's wider historic environment, its extensive heritage assets will be conserved, including its listed buildings, conservation areas, Westminster's World Heritage Site, its historic parks including five Royal Parks, squares, gardens and other open spaces, their settings, and its archaeological heritage. Historic and other important buildings should be upgraded sensitively, to improve their environmental performance and make them easily accessible.

Reasoned Justification

The intrinsic value of Westminster's high quality and significant historic environment is one of its greatest assets. To compete effectively with other major, world-class cities the built environment must be respected and refurbished sensitively as appropriate. Any change should not detract from the existing qualities of the environment, which makes the city such an attractive and valued location for residents, businesses and visitors.

Detailed policies for each type of heritage asset will be set out in the City Management Plan. Area-based characteristics and detailed measures required to protect and enhance heritage assets have been set out in Conservation Area Audit Supplementary Planning Documents and the Westminster World Heritage Site Management Plan.

- 3.3.2 The subject site also lies within an Area of Special Archaeological Priority as defined by the City of Westminster Unitary Development Plan and is therefore subject to the following additional policy:

DES 11: SCHEDULED ANCIENT MONUMENTS, AREAS AND SITES OF ARCHAEOLOGICAL PRIORITY AND POTENTIAL

Aim

10.147 To identify archaeological remains of national and local importance, conserve them in their settings, and provide public access to them. Where new development is proposed on sites of archaeological potential, to ensure adequate archaeological impact assessment, followed by appropriate provision for preservation or investigation, recording, and publication.

POLICY DES 11: SCHEDULED ANCIENT MONUMENTS, AREAS AND SITES OF ARCHAEOLOGICAL PRIORITY AND POTENTIAL

(A) Scheduled Ancient Monuments

Permission for proposals affecting the following Scheduled Ancient Monuments, or their settings, will be granted providing that their archaeological value and interest is preserved:

- 1) the Chapter House and Pyx Chamber in the Cloisters, Westminster Abbey
- 2) the Jewel Tower.

(B) Areas and Sites of Special Archaeological Priority and Potential

Permission will be granted for developments where, in order of priority:

- 1) all archaeological remains of national importance are preserved in situ
- 2) remains of local archaeological value are properly , evaluated and, where practicable, preserved in situ
- 3) if the preservation of archaeological remains in situ is inappropriate, provision is made for full investigation, recording and an appropriate level of publication by a reputable investigating body.

- 3.3.3 In terms of designated heritage assets, as defined above, no Scheduled Ancient monuments, Historic Wreck sites or Historic Battlefields lie within the study site.

4 Geology and Topography

4.1 Geology

- 4.1.1 The British Geological Survey shows that the underlying formation in the area consists of the London Clay Formation which was formed approximately 34 to 56 million years ago in the Palaeogene Period.
- 4.1.2 The London Clay is sealed by sands and gravels of the Taplow Gravel Formation which formed up to 2 million years ago in the Quaternary Period.
- 4.1.3 The British Geological Survey (Geology Viewer online) shows that the site lies upon the Langley Silt Member. Langley silt is commonly referred to as brickearth.

4.2 Topography

- 4.2.1 The current ground level slopes from c.22.70m OD from the north of the proposed area to 22m OD to the south.
- 4.2.2 The site is located approximately 450m north of the River Thames.
- 4.2.3 Ordnance Datum levels were established by measuring from the top of the recently cast capping beam which has a value of 22.10m OD.

5 Archaeological and Historical Background

5.1 Introduction

5.1.1 Much archaeological research has been undertaken on the archaeological resource of the area of Lundenwic and its hinterlands. This includes Desk-Based Assessments and major excavation reports including:

- 1999 “Royal Opera House, 45-47 Floral Street/51-54 Long Acre, City of Westminster, London WC2: An Archaeological Assessment”, AOC unpublished report.
- 2002 “Tatberht’s Lundenwic; Archaeological Excavations in Middle Saxon London”, Pre-Construct Archaeology Monograph 2.
- 2003 “Middle Saxon London: Excavations At The Royal Opera House 1989-99”, MoLAS Monograph 15. Much of the archaeological summary below comes from this report and the excavation was immediately adjacent (southwards) to the proposed basement extension. In that adjacent excavation the area nearest the basement extension showed that archaeological deposits, and indeed natural brickearth, had been heavily truncated by later activity, but that island of features and stratigraphy did survive.
- 2012 “Lundenwic: Excavations in Middle Saxon London, 1987-2000”, MoLA Monograph 63.

5.2 Prehistoric

5.2.1 Evidence in the GLHER and excavations indicates that lithics, animal remains, pottery and coins from the prehistoric period have been recovered from within the vicinity, but in very low quantities and often as residual finds in later contexts. There is therefore a low potential that similar material may be present upon this site.

5.3 Roman

5.3.1 The location of the site is removed from the main city of Londinium during the Roman period, and this is reflected in the limited entries in the GLHER from within the study area, and again the low quantities and residual nature of the finds means that there is a low potential for evidence of Roman date to be encountered upon the study site.

5.4 Saxon

5.4.1 The Covent Garden area became the focus of the Middle Saxon port of Lundenwic in the 7th century. The excavations at the adjacent ROH site have set up a Middle Saxon phasing structure which sets the starting point for considering the archaeology at this site. Period 3 (c. AD 600-75);

prior to the urbanisation of this area it was used as one of the two known Saxon cemeteries. There is evidence in the form of a number of graves and ring ditches at the ROH, and graves at Floral Street and James Street for the cemetery to be widespread and therefore potentially present at the subject site.

5.4.2 The contemporary settlement spread into the area of the ROH with little regard to the cemetery there and as little as 50 years after some of the internments. A road was established on a NW-SE alignment to the southwest of the site and with 5 buildings on its eastern side, but 4 on an E-W and 1 on a N-S alignment. There was no activity surviving adjacent to the subject site.

5.4.3 The expansion and growth of the settlement is illustrated by Period 4 (c. AD 675-730). Phase 1 of this period began with new, bigger buildings extending closer to the subject site but again on the same alignments. The spaces between the buildings had a greater spread of wells and rubbish pits. By Phase 2 of this period those new buildings closest to the road were parallel or perpendicular to it, while those furthest from it, and closest to the subject site, were retained and on the previous E-W alignments. A concentration of tanning pits in the north corner of the site suggests tanning activity may extend into the subject site.

5.4.4 Period 5 (c. AD 730-770) had three phases of activity. In Phase 1 all the buildings to the east of the road were new and in a denser concentration than before. By Phase 2 many of those buildings had been replaced towards the road, but not towards the subject site, and it is not until Phase 3 that this area is again constructed on.

5.4.5 Period 6 (c. AD 770-850) represents a period of decline for Lundenwic and the vicinity. Only a few buildings and a few pits remain on the site at the beginning of the period and by Phase 2 only a single building remains. The clue to this decline lies with the defensive ditch which follows the alignment of Floral Hall's southern wall. Pottery dates the ditch to after AD 750, and the orientation northwards of the defensive stakes in it show it was defending the area to the south. The subject site is therefore literally beyond the pale of the settlement boundary, but this does not mean that contemporary activities may not have taken place there.

5.5 Medieval and Post-Medieval

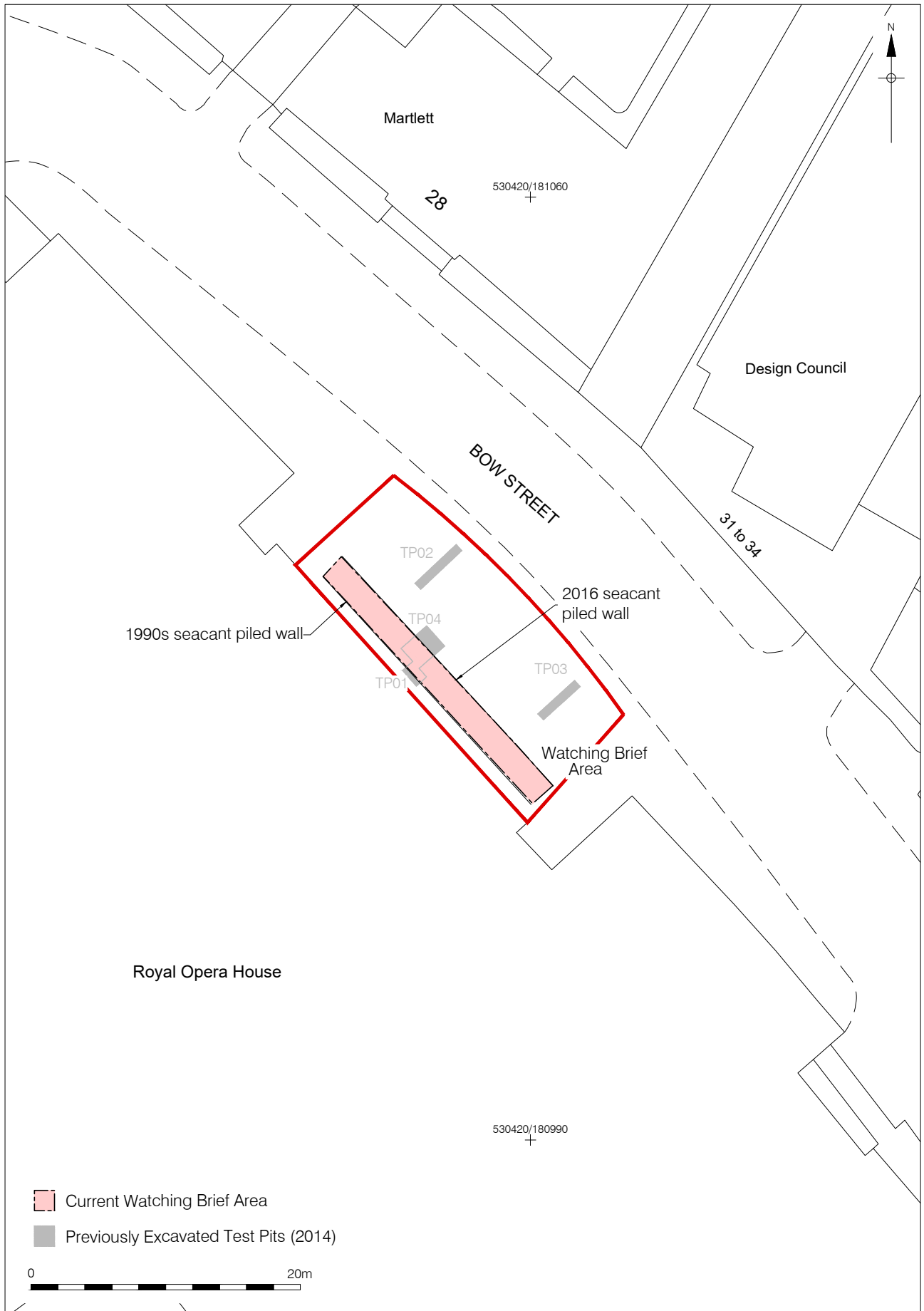
5.5.1 The area reverted to fields and low level farming in the medieval period. It was not until the 16th century that the area, and the 17th century that the vicinity, were developed. Away from the Indigo Jones Arcade around the piazza of Covent Garden on the southwest side of the ROH there was smaller scale development with crowded blocks of houses, theatres and other entertainments. The presence of cellars in these buildings to a great degree determines the level to which earlier archaeological remains may survive. The construction of a sequence of ever bigger opera house buildings on the site also has significant implications for any archaeological survival. The

foundations of the portico of the 1807 built opera house may extend into the northern end of the subject site.

6 Archaeological Methodology

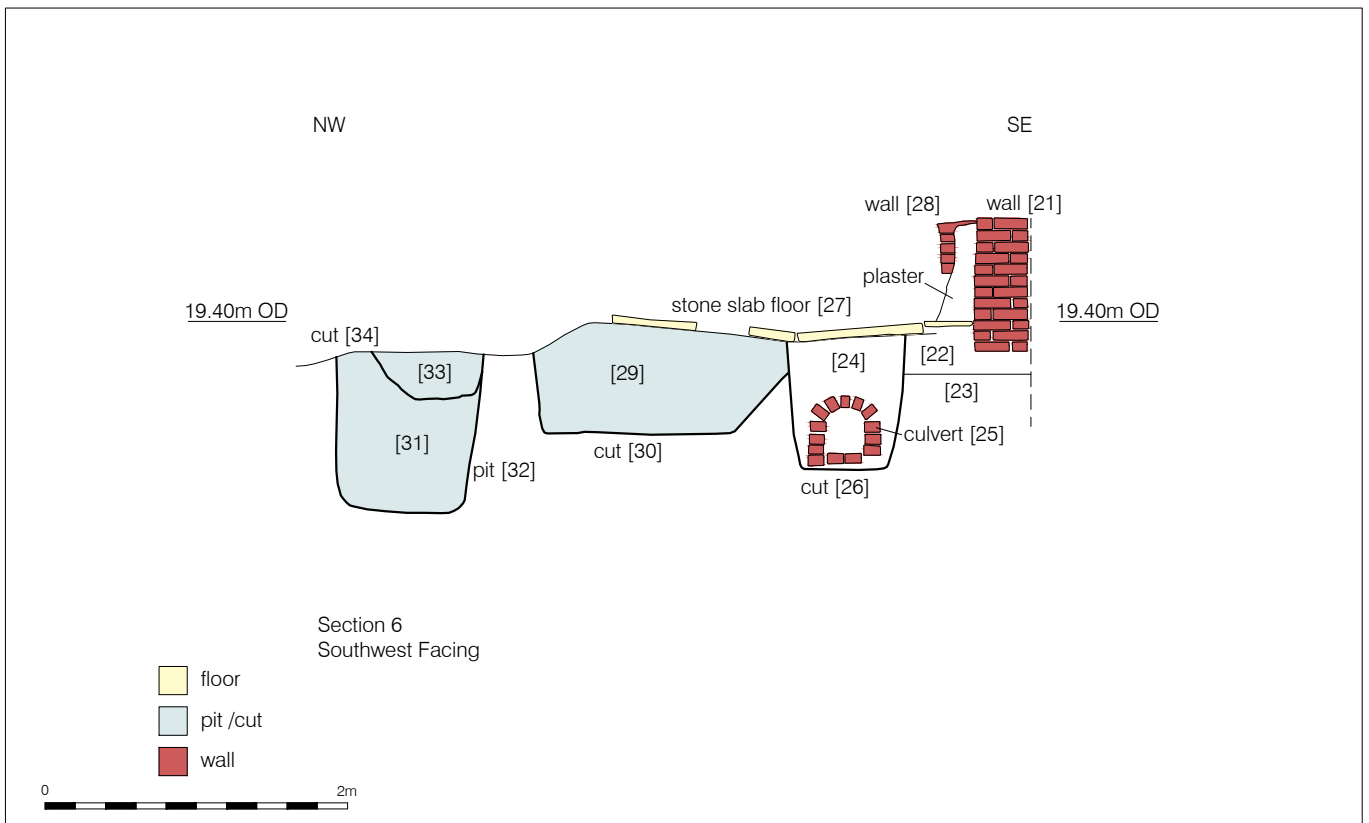
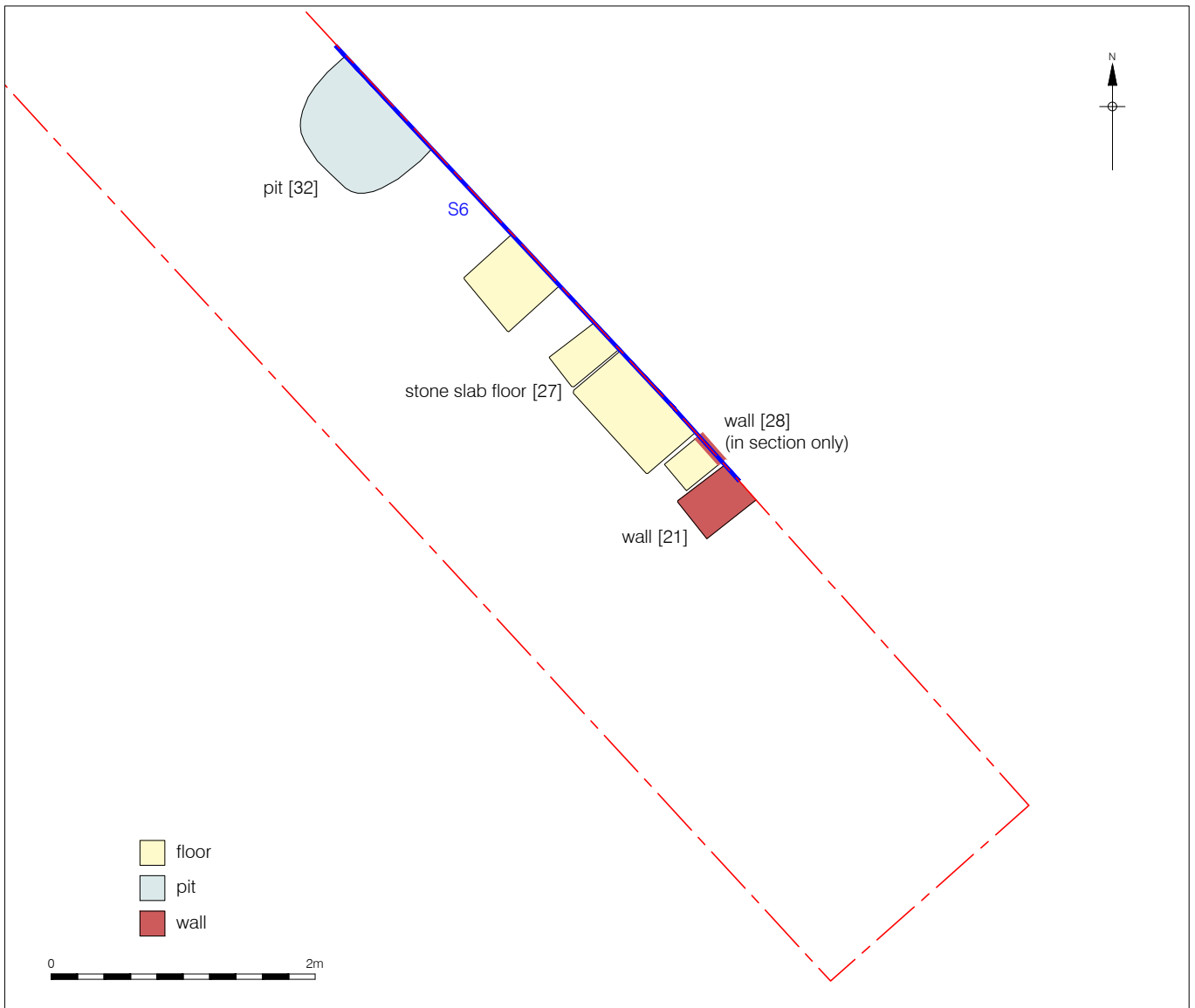
- 6.1 As far as was practicable the watching brief and limited excavation work was carried out in accordance with the Written Scheme of Investigation submitted to and approved by Westminster City Council before works commenced (Moore, P 2015). The intermittent watching brief was undertaken between April and September 2016.
- 6.2 The excavated areas were reduced to the appropriate level using a 360° mechanical excavator working under archaeological supervision.
- 6.3 Once significant archaeological deposits of features began to appear machine clearance was stopped and subsequent investigation was carried out by hand.
- 6.4 The fieldwork and reporting was carried out according to the relevant methodologies, as follows:
- Archaeological Guidance Paper 3: Standards and Practices in Archaeological Fieldwork In London (GLAAS 1998)
 - Archaeological Guidance Paper 4: Archaeological Reports (GLAAS 1998)
 - Management of Archaeological Projects (English Heritage, 1990)
 - The Institute for Archaeologists Code of Conduct (1999)
 - The Institute for Archaeologists Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology (1999)
 - The Institute for Archaeologists Standard and Guidance for Archaeological Watching Brief (1994, Revised 2001)
 - The Treasure Act (1996)
 - The Burial Act (1857)
- 6.5 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.
- 6.6 Levels were calculated from a Temporary Bench Mark established with the aid of the principal contractor's surveyor. The value of the Bench Mark was 22.10m OD.
- 6.7 A photographic record of the investigations was made using digital format only.

- 6.8 Pre-Construct Archaeology Limited is a Registered Archaeological Organisation (Number 23) with the Chartered Institute of Field Archaeologists and operates within the Institute's 'Code of Practice'.
- 6.9 The complete site archive including site records, photographs and finds will be deposited at the London Archaeological Archive Research Centre, (LAARC) under the site code ROH 14.



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Figure 2
 Watching Brief Area
 1:400 at A4



7 Watching Brief Results

7.1 Impacts of modern truncations



Overall view of the trench facing north. The 1990's secant pile wall is evident to the left; the remains of the large early 19th century brick wall can be seen in centre of the photograph

7.1.1 The Watching Brief covered an area which measured c. 25m north-south by 5m east-west. Although this was not a large area the location of the trench within the heart of Middle Saxon *Lundenwic* presented the possibility of significant archaeological survival. However, the impacts of the successive rebuilding of the Bow Street frontage of the Opera House had all but obliterated any archaeological remains that may once have been present.

7.1.2 The secant pile wall installed in the 1990s had removed any archaeological stratigraphy that may have existed on the western side of the trench. To the east of this lay the large brick wall which had formed the 19th century frontage of the Opera House. The construction cut for this wall and the foundation below, which was laid on the natural sand and gravel, had destroyed any potential remains in the central part of the trench. Only a very narrow strip less than 1m wide located on the eastern periphery of the trench retained any archaeological potential. Even this area was only extant in the southern part of the trench as modern drainage features and the Opera House extended through the northern half of the area investigated.

7.2 Early post-medieval basement



Early post-medieval basement, facing east. Tape 0.50m

- 7.2.1 The remnants of a brick built basement with stone floor were evident in the southern part of the area of excavation. The principal elements of this structure were an east-west aligned brick wall [21], a fragment of north-south aligned brick wall [28] which formed a return to [21] and elements of a floor formed from substantial stone slabs [27]. Most of the stone floor slabs were polished on the upper face.
- 7.2.2 Wall [27] survived as twelve courses of masonry which combined measured 0.88m high, 0.35m wide (north-south) and 0.45m east-west, the wall had been truncated to the east by the construction trench for the 19th century Opera House wall. The highest level recorded on the top of the wall was 20.08m OD. The wall had been built using bricks made from a red sandy brick fabric which has been dated 1450-1700. As seen from the west the wall was formed from courses laid as one header and one stretcher, the position of the header and stretcher alternated from north to south with each course. The courses had been bonded using a pale brown lime mortar.
- 7.2.3 The remnant of another brick wall [28] survived to the north of wall [21] and formed a right angle with it. Wall [28] has been almost totally obliterated by the recent construction of the secant pile wall to the east and survived as little more than a skim of brick adhering to the concrete piles. Although no brick sample could be extracted it appeared that this wall had been constructed using the identical brick fabric to that employed in wall [21]. The internal surfaces of the walls had been plastered or rendered and whitewashed.
- 7.2.4 A floor, context [27], made from stone slabs was evident to the west of wall [28] and north of wall [21]. Some of the slabs appeared to have been removed during later construction work and the floor was not continuous, in all it survived over a distance of 2.31m north-south and 0.50m east-west. The largest individual slab measured 0.84m by 0.50m by 0.07m thick. The upper surfaces of all but one of the slabs had been polished. The highest level recorded on the floor was 19.40m OD.
- 7.2.5 The stone slab floor lay directly above the construction cut [26] for an arched brick culvert [25]. As seen in section the build for this culvert was somewhat irregular the north wall being formed of four courses below the springing for the arched top whilst the south side had only three courses. The culvert measured 0.48m north-south and was 0.47m high, its extent east-west was unknown as it had been truncated to the west by the 19th century Opera House wall and to the east by the modern secant pile wall. The top of the culvert was recorded at 18.90m OD.
- 7.2.6 Accurate dating for the construction of the culvert is difficult to establish as no pottery or clay tobacco pipe was recovered from the backfill [24] of the construction cut [26]. The culvert had been built using a hard purple fabric brick which is characteristic of 18th or early 19th century construction. The stone slab floor [27] may not therefore have been the original floor of the

basement room formed by walls [21] and [28]. It is possible that the culvert was tunnelled below the floor of the building but far more probable that the floor was laid after the brick culvert had been installed.

7.2.7 A large cut feature [30] was evident below the stone slab floor to the north of the brick culvert [25]. The feature may have been a pit or possibly a robber cut for the removal of an earlier structural feature. The latter may be more probable as the fill [29] was very loose and contained elevated quantities of building materials in the form of broken brick and roof tile. No pottery was recovered from the fill of this feature and it is essentially undated though clearly it belongs in the post-medieval period and had to have been excavated before the stone floor [27] was constructed.

7.2.8 The pit or robber cut measured 1.70m north-south by 0.75m deep, the extent east-west was unknown as the feature was only recorded in section. The highest level recorded on the cut was 19.40m OD.

7.3 Middle Saxon Pit



Middle Saxon pit [32] facing east. Tape 0.50m

- 7.3.1 A substantial pit [32] was found to the north of the post-medieval basement described above. The pit measured 0.96m north-south by 0.70m east-west and was 1.05m deep, the highest level taken on the top of the cut was 19.20m OD.
- 7.3.2 A small portion of the top of the pit on the southern side was filled with crushed red brick [33] similar if not identical to that used in the construction of the basement recorded further to the south. This material was undoubtedly intrusive and deposit [33] was recorded as a fill of a separate cut feature [34]. In reality it is probable that the crushed brick was material used to consolidate a soft area or void caused by the rotting down of organic matter within the earlier pit fill [31].
- 7.3.3 A substantial assemblage of animal bone was recovered from pit fill [31]. The vast majority of the animal bones comprised the major domesticates cattle, pig and sheep/goat with a predominance of cattle. Some horse and chicken bones were also evident, as were red deer antlers which had been sawn and undoubtedly used in craft production, possibly comb making which was common within the settlement. The size and composition of this group can be regarded as typical of Middle Saxon *Lundenwic* assemblages, particularly those which date prior to c. AD 750 (Rielly, K Appendix 3). A substantially higher proportion of sheep bone are evident in assemblages dated from the mid-later 8th century onward; this change possibly reflects the increased importance of wool production in the later period.
- 7.3.4 Pit fill [31] also contained a single sherd of chaff tempered pottery which had the very broad date c. AD 400–750 though the composition of the animal bone assemblage is typical of *Lundenwic* sites dated to c. AD 600–750. This places the pit firmly in the Middle Saxon period and specifically to the heyday of *Lundenwic* prior to the establishment of a smaller defended settlement.
- 7.3.5 It was noted in the animal bone report that green tinged concretions adhered to a large proportion of the bones. This suggested that the pit had probably been used, at least in part, as a cesspit. Apart from the pottery and animal bone described above the only other finds from the pit fill consisted of small pieces of fired clay some of which were fragments of daub used on buildings as they retained the marks from the wattle work which the daub had been applied to.

7.4 Natural Deposits

- 7.4.1 The features and deposits described above had all been cut in to a natural sandy brickearth deposit [23] which was evident throughout the area of Section 6 (Figure 3). The highest level recorded on this deposit was 19.05m OD.

7.4.2 Though not evident in the section the base of the Middle Saxon pit [32] stopped on the interface of the natural brickearth and the sands and gravels below. In this area of the trench the sands and gravels lay at a level of 18.14m OD.

8 Conclusions

- 8.1 The results of the watching brief and excavation were very limited due to the impacts of 19th and 20th century construction works. They did however provide some significant information regarding the status of the site in the early post-medieval and Middle Saxon periods.
- 8.2 The truncated fragment of the early post-medieval basement probably represents part of a residential structure which fronted on to Bow Street during the 16th or 17th centuries. If this interpretation is correct the street frontage in this period would have been located slightly to the east of the line adopted when the Bow Street frontage of the Opera House was constructed in the early 19th century.
- 8.3 Although the Middle Saxon remains survived only as a single pit their presence confirmed that the area investigated undoubtedly fell within the urban core of Lundenwic. The animal bones recovered from the pit fill [31] are consistent with comparable assemblages found within the Middle Saxon town.

9 Research Review

9.1 Fieldwork Objectives and Research Questions

9.1.1 The objectives of the Watching Brief contained in the Written Scheme of Investigation (Moore, P 2015) were:

- *To excavate any archaeological remains within the proposed development and record their nature, extent, date, character, quality and significance.*
- *To assess, and where appropriate analyse, the ecofactual and palaeo-environmental potential of archaeological deposits and features from within the site.*
- *To establish the nature, location and extent of later truncations.*
- *To help our understanding of the size, character and development of Lundenwic (Museum of London 2002).*
- *To establish if the settlement and tanning, or other industrial activities continued onto the subject site, marking an extension of settlement along this road.*
- *To establish whether in the later period there was sudden abandonment of any settlement and whether there were any other activities undertaken outside the defensive ditch.*
- *Can the defensive ditch be more closely dated?.*
- *If there is survival of horizontal stratigraphy on the site can the remains address the new questions regarding subtle changes in provisioning from the early to later periods?*
- *If there is survival of horizontal stratigraphy on the site can the remains address the new questions regarding different areas of the settlement acting as production and/or distribution centres in the early and/or later periods?*
- *What can such production information tell us about a shift from the accepted provisioning through food rents (via the incumbent owner or „lord“ of the emporium or mart) to a more medieval supply and demand system?*
- *What can the site tell us about the tanning industry and animal usage over time at the settlement?*
- *To improve our understanding of the development of the area through the Post-Medieval period, and the site from domestic occupation to entertainment venue.*

9.2 Answers to Research Questions

9.2.1 As stated previously in this document the scope for archaeological recording and observation was severely limited as a result of the impacts of 19th and 20th century construction projects.. However, taking into account these limitations:

- *Although the scope for archaeological survival was very limited significant remains in the form of an early post-medieval basement and a Middle Saxon pit were identified, excavated and recorded.*
- *The one Middle Saxon pit identified and excavated contained a significant animal bone assemblage which presented evidence of animal husbandry and the use of animal parts (red deer antler) for craft production.*
- *The nature and location of later truncations was broadly established and in fact comprised the vast majority of the area investigated.*
- *It can hardly be claimed that the one Middle Saxon feature excavated altered our understanding of the size, character and development of Lundenwic but the Watching Brief did provide evidence that this area undoubtedly lay within the urban core of the settlement.*
- *It would appear from the pit identified that the Middle Saxon settlement extended into the area excavated. Industrial/craft production was evident in the form of antler working.*
- *The results of the Watching Brief were too limited to shed any light on the abandonment of the settlement.*
- *The results of the Watching Brief could not elaborate on the dating of the defensive ditch.*
- *The single Middle Saxon pit was not closely dated and cannot elucidate on changes to provisioning evident in other parts of the settlement, though initial analysis suggests that the animal remains within the pit are typical of the earlier period where cattle predominate (Rielly, K Appendix 3).*
- *The early post-medieval basement evident within the trench undoubtedly represented a building which pre-dated the construction of the 19th century Opera House frontage. As such it belongs to a structure which pre-dates the 19th century layout of Bow Street.*

11 Acknowledgements

- 11.1 Pre-Construct Archaeology Limited would like to thank the Royal Opera House for commissioning the work. Thanks are also extended to all of the representatives of RISE who helped facilitate the archaeological works, particularly Richard Jones, Joe Hacke and Sam Rogers.
- 11.2 Thanks are extended to Tony Wilson of Equals Consulting for bringing PCA onto the project and especially to Heidi Weeks for her help and support throughout.
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- 11.4 Sophie Le-Bourva of Arup is also thanked for her support in the design documentation.
- 11.5 Thanks are also extended to the staff of T E Scudder/Careys who were responsible for the work on the ground for their kind cooperation and help.
- 11.6 The author would like to thank:
- Peter Moore for project managing the excavation and editing the report.
 - Kevin Rielly who reported on the animal bone.
 - Chris Jarrett who reported on the pottery.
 - Amparo Valcarcel for reporting on the ceramic building material.
 - Jennifer Simonson for the CAD illustrations.

12 Bibliography

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APPENDIX 1: Oasis Data Entry Form

OASIS ID: [preconst1-267252](#)

Project details

Project name	Royal Opera House Open Up Project
Short description of the project	A watching brief on an area measuring c. 24m by 5m revealed the remains of an early post-medieval brick built basement and a Middle Saxon cesspit.
Project dates	Start: 17-07-2016 End: 19-09-2016
Previous/future work	Yes / No
Any associated project reference codes	ROH 14 - Sitecode
Type of project	Recording project
Site status	Local Authority Designated Archaeological Area
Current Land use	Other 2 - In use as a building
Monument type	WALL Post Medieval
Monument type	FLOOR Post Medieval
Monument type	CULVERT Post Medieval
Monument type	PIT Post Medieval
Monument type	PIT Early Medieval
Significant Finds	BRICK Post Medieval

Significant Finds	POT Early Medieval
Investigation type	"Salvage Excavation", "Watching Brief"
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	GREATER LONDON CITY OF WESTMINSTER WESTMINSTER Royal Opera House Open Up Project
Postcode	WC2E 7AU
Study area	120 Square metres
Site coordinates	TQ 3040 8099 51.512270769097 -0.120620456605 51 30 44 N 000 07 14 W Point
Height OD / Depth	Min: 19.05m Max: 19.05m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Historic England
Project design originator	Peter Moore
Project director/manager	Peter Moore
Project supervisor	Douglas Killock

Type of sponsor/funding body	Developer
Name of sponsor/funding body	Royal Opera House

Project archives

Physical Archive recipient	LAARC
Physical Archive ID	ROH 14
Physical Contents	"Animal Bones","Ceramics"
Digital Archive recipient	LAARC
Digital Archive ID	ROH 14
Digital Media available	"Images raster / digital photography","Text"
Paper Archive recipient	LAARC
Paper Archive ID	ROH 14
Paper Media available	"Context sheet","Drawing","Plan","Report","Section","Unpublished Text"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	An Archaeological Watching Brief/Mitigation on the Royal Opera House (Open Up Project), City of Westminster, WC2E 7AU

Author(s)/Editor(s)	Killock, D
Date	2016
Issuer or publisher	PCA
Place of issue or publication	Brockley
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APPENDIX 2: Post-Roman Pottery Report

By Chris Jarrett

The watching brief produced a single sherd (91g) of pottery recovered from context [31]. The pottery is Saxon in date and consists of chaff-tempered ware (CHAF), dated A.D. c. 400–750, although its occurrence within the Lundenwic settlement is more likely to date the sherd to c. 600–750. The sherd is thick walled and has reduced surfaces and was probably derived from a jar or closed shape.

The pottery sherd, although of a Saxon date, is of little significance, as it occurs on its own and the pottery type is a frequent find and chronological indicator for the 6th-early 7th century period of the Lundenwic settlement. Chaff-tempered wares and other Middle Saxon pottery types have been previously recorded from previous archaeological work on the Royal Opera House (Blackmore 2003). The main potential of the pottery is to date the context it was recovered from. There are no recommendations for further work on the sherd and if a publication text is required then the information from this report should be used.

Reference

Blackmore, L. 2003 'The pottery', in: G. Malcolm and D. Bowsher, *Middle Saxon London: Excavations at the Royal Opera House 1989-1999*. MoLAS Monograph 15, 225-41.

APPENDIX 3: Animal Bone Report

By Kevin Rielly

Introduction

This is the second collection of bones from an excavation at this site. The first occurred in 2012 (see Fairman 2012), an evaluation consisting of a number of trial pits and a trial trench recovering material dating to the 18th/19th centuries, undoubtedly dumped from one or more of the residences formerly fronting onto Bow Street (these demolished in the 19th century). In contrast, the present incursion, again alongside this same street, provided evidence for Middle Saxon occupation, essentially taken from the fill [31] of a single large pit. This provided a notable collection of animal bones, all retrieved by hand.

The middle Saxon settlement of Lundenwic has been extensively excavated with several sites providing large collections of animal bones, which in the immediate vicinity include those from the Royal Opera site and 67-68 Long Acre (Rielly 2003, Rielly 2012 and information concerning the distribution of sites in Cowie and Blackmore 2012, 4).

Methodology

The bone was recorded to species/taxonomic category where possible and to size class in the case of unidentifiable bones such as ribs, fragments of longbone shaft and the majority of vertebra fragments. Recording follows the established techniques whereby details of the element, species, bone portion, state of fusion, wear of the dentition, anatomical measurements and taphonomic including natural and anthropogenic modifications to the bone were registered.

Description of faunal assemblage

The site assemblage amounted to 154 fragments, all taken from pitfill [31]. There is a moderate level of fragmentation and most of the bones have undergone some surface damage. In addition it can be seen that this pit had clearly been used for the deposition of cess as shown by the green tinged concretions adhering to a large proportion of the bones.

There is a predominance of cattle and cattle-size fragments (much of the latter comprising vertebrae and ribs), accompanied by lesser and approximately equal quantities of sheep/goat and pig (see Table 1). In addition there are a few equid, red deer and chicken bones. While the latter can be classed as food waste, this is unlikely to apply to the equid and is definitely inappropriate to describe the deer remains. Both of the red deer bones are antler pieces, the presence of sawing confirming that they in fact represent antler working waste.

Species	N
Cattle	45
Equid	1
Cattle-size	60
Sheep/Goat	12
Pig	16
Sheep-size	17
Red deer	2
Chicken	1
Total	154

Table 1. Species abundance based on total fragment counts

Each of the three major domesticates comprise a wide array of skeletal parts thus indicating the presence of mixed processing and food waste. All three also include a large proportion of bones which can either be aged and/or measured, the quantity obviously being greatest amongst the cattle collection, thus allowing for exploitation and size analyses.

Conclusions and recommendations for further work

The date of this deposit, albeit based on a single shard, places the bone collection within the 7th to mid 8th centuries, up to the 'heyday' of this Middle Saxon settlement (after Cowie and Blackmore 2012, 108). In terms of animal exploitation, it fits into a period just prior to an increased usage of sheep, perhaps related to a rise in the importance of the woollen industry (ibid, 149-50). Though obviously featuring a rather moderate collection of bones, this collection certainly fits into the evidence amalgamated for the earlier period when cattle was by far the predominant species (and see Rielly 2013, 319).

It is recommended that this collection is worthy of further study, aiming initially to establish whether it follows the pattern described above concerning the exploitation of cattle and sheep. Thence the age and size information should be compiled and compared with that from contemporary Lundenwic sites.

References

Cowie, R, and Blackmore, L, 2012 Lundenwic: excavations in Middle Saxon London, 1987–2000, MoLA Monograph 63

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APPENDIX 4: Ceramic Building Materials Report

Kevin Hayward and Amparo Valcarcel

Context	Fabric	Form	Size	Date range of material	Latest dated material	Spot date	Spot date with mortar		
2	2276; 2586; Stoneware glazed pipe	Post medieval peg tile some of it burnt	7	1180	1950	1800	1950	1800-1950	No mortar
3	2586	Post medieval burnt peg tile	1	1180	1800	1180	1800	1500-1800	No mortar
4	3065; 3046nr3065	Early post medieval complete brick and floor tile sandy local fabric	2	1450	1900	1690	1900	1690-1800	No mortar
5	2279	Large group of pan tile possibly associated with a drain	9	1630	1850	1630	1850	1700-1850	No mortar
8	3101	Dump of loose sandy lime mortar with large chalk lumps	1						1500-1800
10	3032; 3101	Narrow small post great fire brick thick coating of a hard concrete like woody mortar	1	1664	1900	1664	1900	1780-1850	1800-1900
11	2276	Burnt post medieval peg tile	3	1480	1900	1480	1900	1600-1900	No mortar
16	3032; 3101	Narrow post great fire brick hard Portland cement	1	1664	1900	1780	1900	1850-1900	1840-1900+
21	3046,3065	Early post medieval sandy red bricks	3	1450	1700	1450	1700	1450-1700	1450-1750
31	3102;	Abraded, small and burnt lumps of daub; post medieval sandy red brick	9	1500BC	1700	1450	1700	1450-1700	1450-1700

Review

This small assemblage (38 fragments 18,51 kg) contains only daub and post medieval peg tile, floor tile and brick.

Four poorly made shallow un-frogged red bricks with sunken margins from demolitions rubble [4] [21] are probably the earliest items of building material from the site dating to 1450-1700. Although red bricks continue to be produced into the 18th and 19th century outside the confines of the City of London, (K.Sabel pers. comm.), the form (sunken margin) and size (<56-58mm depth) is typical of an earlier post medieval date. Also of interest from this feature is a rare locally produced floor tile possibly even a drain tile.

Masonry feature [5] is constructed out of curved pan tile which dates it between 1630 and 1850. With the other two masonry features, the red-brick wall [10] is constructed out of a post great fire brick with a hard concrete mortar that is typical of 19th century production. Furthermore the narrow brick dimensions conform to the brick tax regulations brought in after 1780 (see below).

Brick size regulation Act: took effect July 1777, first blanket national legislation. Min. size of bricks at 8 ½ x 4 x 2 ½ “. Last legislation on sizes until the 20 th century, remained in force until the 19 th century	216 x 101.5 x 63.5	Parliament (Act)
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The brick from [16] is wider and a dark Portland type cement and dates to the second half of the 19th century. Nine small lumps of daub were recovered from [31]. All fragments are burnt and abraded.

Significance and potential for assemblage and recommendations for further work

Most of the ceramic building material assemblage represents only the later 18th and 19th century activity of the site. Walls [10] [16] and the pan tile drain [5] are 19th and 18th century respectively and consequently as little intrinsic value other than to date the later phases of occupation of the site. The only items of interest are four Tudor-Stuart red brick [4] [21] and a rare locally produced unglazed floor tile from a 19th century demolition layer [4] which attest to earlier occupation in and around the general area of the Royal Opera House.

No further work recommended.

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