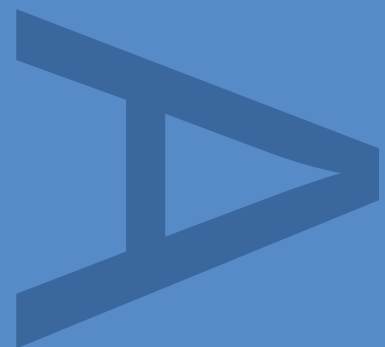


**11-12 BURY STREET
CITY OF LONDON**

**ASSESSMENT OF AN
ARCHAEOLOGICAL
INVESTIGATION**

BUY14

AUGUST 2015





PRE-CONSTRUCT ARCHAEOLOGY

DOCUMENT VERIFICATION

11-12 BURY STREET
CITY OF LONDON

EXCAVATION

Quality Control

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**AN ASSESSMENT OF ARCHAEOLOGICAL INVESTIGATIONS AT 11-12
BURY STREET, CITY OF LONDON EC3**

Local Planning Authority: City of London

Planning Ref: 13/01011/FULL

Site Code: BUY14

Central National Grid Reference: TQ 3337 8124

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1 Abstract

- 1.1** Pre-Construct Archaeology Ltd. conducted archaeological investigations at 11-12 Bury Street, City of London between the 6th of January and the 13th of May 2015, during redevelopment of the site.
- 1.2** Natural Terrace Gravel was recorded at the base of the sequence and was overlain by material that may have been a possible buried soil horizon of early Roman date. Large pits suggest that parts of the site may have been quarried for brickearth extraction during the Roman period but subsequently there was possibly domestic occupation with cess pits and possible timber structures being present. The base of a possible brickearth structure was also revealed. A notable element of the Roman artefactual assemblage was a quantity of material including crucible fragments, cullet and waste glass suggesting that glass-working had taken place on or in the near vicinity of the site in the late Roman period.
- 1.3** The late and/or post-Roman period was dominated by the accumulation of an extensive 'dark earth' deposit, similar to material dated as Anglo-Saxon at nearby sites but here lacking such dating evidence.
- 1.4** The site was not significantly re-occupied until the years immediately following the Norman Conquest; activity being represented by two apparent cess pits located towards the western edge of excavation. These features are likely to have been located in yard areas to the rear of properties fronting onto a forerunner of modern Bury Street and may provide evidence of an early street layout in the 12th century.
- 1.5** There was little evidence of later medieval occupation, mainly because later deposits were extensively truncated by construction of the current basement. However, there was clearly activity in the early post-medieval period, represented by a chalk block-lined well of likely 16th-century date, which also lay in a yard area to the rear of Bury Street properties. Final backfilling of the well probably took place in the 18th century, the last phase of activity detected archaeologically, prior to the construction of the basement.
- 1.6** Overall there was activity on the site throughout much of the Roman period, followed by a break, and then re-occupation by the 12th century and then most likely a continual presence through the medieval and post-medieval periods, culminating in the construction and occupation of the current 11-12 Bury Street buildings.
- 1.7** The most notable result from the archaeological investigation was the evidence of late Roman glassmaking on site including the use of crucibles in the manufacture of glass vessels. The crucibles are of local, regional and national importance as only one previous fragment of glass crucible has been found in Roman London before and only limited numbers from Roman Britain as a whole. It is proposed that further analysis of

the crucibles and the glass be undertaken, the results of which should be published in *London Archaeologist* or a peer reviewed journal.

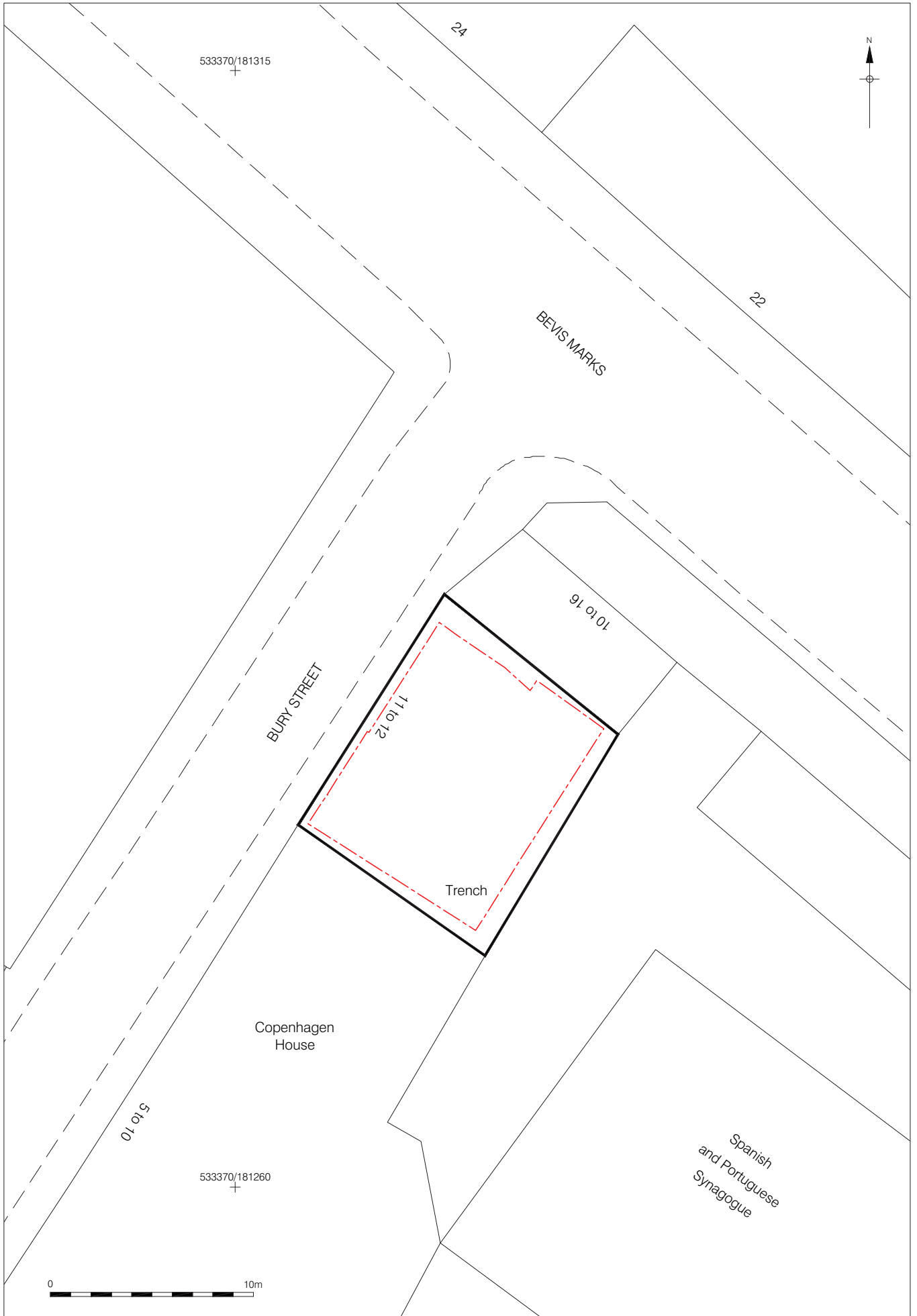
2 Introduction

- 2.1** It is proposed to redevelop 11-12 Bury Street, City of London (Figs. 1 & 2), works including refurbishment of the current extension, construction of a three-storey extension, lowering of the basement and insertion of a lift shaft. Planning consent for this work was approved by the City of London, though advice from their archaeological advisor prior to approval recommended that archaeological investigation of the site be included as conditions. Such conditions were attached to the consent and consequently archaeological works were commissioned in response to these conditions.
- 2.2** The site had previously been the subject of an Archaeological Impact Assessment (CgMs 2013) which considered it to have a potential for the Roman, Anglo-Saxon, medieval, post-medieval and modern periods.
- 2.3** Archaeological investigations were carried out on the site between the 6th of January and the 13th of May 2015 during various phases of the redevelopment programme and according to the planning conditions. The investigations followed the methodology outlined in the Project Design (CgMs 2014) and the Method Statement (Bradley 2014).
- 2.4** The work was commissioned by CgMs Consulting.
- 2.5** The archaeological investigations were managed for PCA by Tim Bradley and supervised by Joe Brooks, Charlotte Faiers and Deborah Koussiounelos. Richard Meager of CgMs Consulting monitored the site on behalf of the client.
- 2.6** The site was located at National Grid Reference (NGR) TQ 3337 8124 and was allocated the site code BUY14.



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Figure 1
 Site Location
 1:20,000 at A4



3 Planning Background

3.1 The development of the site is subject to planning guidance and policies contained within the National Planning Policy Framework (NPPF), The London Plan and policies of The City of London, which fully recognises the importance of the buried heritage for which it is the custodian.

3.2 In March 2012, the government published the National Planning Policy Framework (NPPF), which replaced existing national policy relating to heritage and archaeology (Planning Policy Statement 5: Planning for the Historic Environment (PPS5)). In summary, current national policy provides a framework which protects nationally important designated Heritage Assets and their settings, in appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions regarding the historic environment and provides for the investigation by intrusive or non-intrusive means of sites not significant enough to merit *in-situ* preservation. Relevant paragraphs within the NPPF include the following:

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.

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.*

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.

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.*

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 accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.*

3.3 The Glossary contained within the NPPF includes the following definitions:

Heritage asset: A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing).

Archaeological interest: There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.

Historic environment: All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.

Historic environment record: Information services that seek to provide access to comprehensive and dynamic resources relating to the historic environment of a defined geographic area for public benefit and use.

3.4 The London Plan, published July 2011, includes the following policy regarding the historic environment in central London, which should be implemented through the Local Development Framework (LDF) being compiled at the Borough level:

POLICY 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.

3.5 The local planning authority responsible for the study site is the City of London, which has developed a Local Plan in line with policies outlined in the NPPF and adopted on the 15th of January 2015. However, at the time a planning application was submitted for redevelopment of the site in 2013, current planning policies were those saved from the City's Unitary Development Plan (UDP) adopted in April 2002 and the Core Strategy adopted in September 2011. Saved UDP Policies included the following relating to the historic environment:

POLICY ARC 1

To require planning applications which involve excavation or groundworks on sites of archaeological potential to be accompanied by an archaeological assessment and evaluation of the site including the impact of the proposed development.

All of the City is considered to have archaeological potential unless it can be demonstrated that archaeological remains have been lost, due to basement construction or other groundworks. The Corporation will indicate the potential of a site, its relative importance, and the likely impact to a developer at an early stage so that the appropriate assessment and design development can be undertaken. Map 11.2 indicates areas of archaeological potential and this information will be updated periodically.

On sites of archaeological potential, which may be affected by development schemes or groundworks, an archaeological assessment will be required to be submitted with the application. This will set out the archaeological potential of the site and impact of the proposals. Where appropriate, this should be supplemented by evaluation, carrying out trial work in specific areas of the site to provide more information and inform consideration of the development proposals by the Corporation, prior to a decision on that application.

POLICY ARC 2

To require development proposals to preserve in situ, protect and safeguard important ancient monuments and important archaeological remains and their settings, and where appropriate, to require the permanent public display and/or interpretation of the monument or remains.

POLICY ARC 3

To ensure the proper investigation, recording of sites, and publication of the results, by an approved organisation as an integral part of a development programme where a development incorporates archaeological remains or where it is considered that preservation in situ is not appropriate.

On sites where important monuments or archaeological remains exist, development proposals should take this fully into account and be designed to enhance physical preservation and avoid disturbance or loss. This can be done by the sympathetic design of basements, raising ground levels, site coverage, and the location of foundations to avoid or minimise archaeological loss and securing their preservation for the future, although they remain inaccessible for the time being.

The interpretation and presentation of a visible or buried monument to the public and enhancement of its setting, should form part of the development proposals. Agreement will be sought to achieve reasonable public access. The Corporation will consider refusing schemes which do not provide an adequate assessment of a site or make no provision for the

incorporation, safeguarding or preservation in situ of nationally or locally important monuments or remains, or which would adversely affect those monuments or remains.

In some cases, a development may reveal a monument or archaeological remains which will be displayed on the site, or reburied. Investigation and recording of those features will be required as part of a programme of archaeological work to be submitted to and approved by the Corporation. Where the significance of the remains is considered, by the Corporation, not sufficient to justify their physical preservation in situ and they will be affected by development, archaeological recording should be carried out. A programme of archaeological work for investigation, excavation and recording, and publication of the results, to a predetermined research framework, by an approved organisation, should be submitted to and approved by the Corporation, prior to development. This will be controlled through the use of conditions and will ensure the preservation of those remains by record.

3.6 The Core Strategy contains the following Policy relating to the historic environment:

POLICY CS12: HISTORIC ENVIRONMENT

To conserve or enhance the significance of the City's heritage assets and their settings, and provide an attractive environment for the City's communities and visitors, by:

- 1. Safeguarding the City's listed buildings and their settings, while allowing appropriate adaptation and new uses.**
- 2. Preserving and enhancing the distinctive character and appearance of the City's conservation areas, while allowing sympathetic development within them.**
- 3. Protecting and promoting the evaluation and assessment of the City's ancient monuments and archaeological remains and their settings, including the interpretation and publication of results of archaeological investigations.**
- 4. Safeguarding the character and setting of the City's gardens of special historic interest.**
- 5. Preserving and, where appropriate, seeking to enhance the Outstanding Universal Value, architectural and historic significance, authenticity and integrity of the Tower of London World Heritage Site and its local setting.**

3.12.1 The City's unique townscape of historic buildings, streets and open spaces juxtaposed with contemporary modern buildings creates a varied, attractive and lively environment which attracts companies and visitors who support the services which contribute to its cultural vibrancy. The City contains a large number of heritage assets which include almost 600 listed buildings, 26 conservation areas, 48 scheduled ancient monuments and 4 historic parks and gardens. There are many protected trees in conservation areas and with Tree Preservation Orders. Historic buildings characteristic of the City include notable buildings such as Mansion House, Guildhall and St Paul's Cathedral, livery company halls and a large number of churches. In addition, the Tower of London, which lies just outside the City boundary, is inscribed by UNESCO as a World Heritage Site of universal significance and its protection includes a buffer area which is partly within the City.

3.12.2 The City is the historic core from which the rest of London developed. Its townscape is derived from its historical development and role as a centre of commerce and trade. The street pattern comprises medieval lanes and alleyways, overlain by later, wider streets. The dense nature of development is ameliorated by the many green spaces, including a high number of small open spaces such as former churchyards, as well as larger gardens.

3.12.3 The City is characterised by many historically important buildings and collections of buildings. Its varied townscape includes areas of formal layout, those with a more domestic and small scale character, as well as larger building complexes such as Smithfield and Leadenhall Markets. There is a close proximity of very different historic areas with a common purpose and business function, which contributes to the special character of the townscape. The City can claim to have one of the greatest concentrations of church buildings of outstanding architectural quality in the country, with 42 places of worship, all but one of which are listed. The City also possesses a modern architectural heritage including, for example, the listed Barbican and Golden Lane Estates.

3.12.4 The City is one of the most important areas in the country in terms of archaeology. Its unique archaeological heritage dates back to the Roman settlement and has evolved through Saxon, medieval and later periods. Many Roman, Saxon and medieval remains still survive in the City today, including buried as well as visible remains, such as the Roman amphitheatre below Guildhall, the Roman and medieval London wall and the reconstructed Temple of

Mithras in Queen Victoria Street. Archaeological investigation is an important aspect of development proposals.

- 3.7** In terms of designated heritage assets, as defined above, no Historic Parks and Gardens, Conservation Areas, Historic Battlefields or Historic Wreck sites lie within the study site or a study area defined by a 100m radius around the site.
- 3.8** However, two Scheduled Ancient Monument designations are present within 100m of the site, comprising lengths of Roman wall along the north side of Bevis Marks to the north and east. Nearby statutorily listed buildings include Holland House to the south (Grade II*) and the Spanish Synagogue immediately to the south-east (Grade I).
- 3.9** It is now proposed to redevelop the site, proposals comprising the refurbishment of the existing building including a three storey extension in place of the existing pitched roof. Intrusive groundwork associated with this process will entail underpinning the perimeter walls, the lowering of the basement slab, and insertion of a lift pit and pumping station.
- 3.10** Full planning permission has been granted for the redevelopment (13/01011/FULL). In response to the archaeological potential of the site, as outlined below, the following planning conditions have been imposed:

"7. Archaeological evaluation shall be carried out in order to compile archaeological records in accordance with a timetable and scheme of such archaeological work submitted to and approved in writing by the Local Planning Authority before any commencement of archaeological evaluation work.

REASON: To ensure that an opportunity is provided for the archaeology of the site to be considered and recorded in accordance with the following policy of the Unitary Development Plan 2002: ARC 1."

8. No works below basement slab level shall take place until the developer has secured the implementation of a programme of archaeological work to be carried out in accordance with a written scheme of investigation which has been submitted to and approved in writing by the Local Planning Authority. This shall include all on site work, including any details of temporary work which may have an impact on the archaeology of the site and all off site work, such as analysis, publication and archiving of the results. All works shall be carried and completed as approved, unless otherwise agreed in writing by the Local Planning Authority

REASON: In order to allow an opportunity for investigations to be made in an area where remains of archaeological interest are understood to exist in accordance with the following policies of the Unitary Development Plan: ARC2, ARC3."

9. No works below the basement slab level shall take place before details of the foundations and piling configuration, to include a detailed design and method

statement, have been submitted to and approved in writing by the Local Planning Authority, such details to show the preservation of surviving archaeological remains which are to remain in situ.

REASON: To ensure the preservation of archaeological remains following archaeological investigation in accordance with the following policies of the Unitary Development Plan: ARC2, ARC3.

3.11 In response to these conditions a project design and method statement for archaeological investigations on the site were prepared (CgMs 2014; Bradley 2014), which outlined a number of research questions to be addressed by the archaeological investigations:

- What is the nature of the archaeological remains surviving on site?
- What are the nature and depth of the underlying natural deposits?
- What is the nature and date of the Roman occupation of the site? Is there evidence for features such as burials, quarrying and refuse dumping, more typical of activity on the periphery of the main Roman settlement. How does the activity on this site fit in with that known from the surrounding area?
- What evidence is there for Saxon occupation. Do the dark earth deposits previously recorded to the southeast of the site at Heneage Lane continue into the site?
- What evidence is there for the development of site through the medieval period. Is there any evidence for activity associated with the Augustinian Priory of the Holy Trinity, situated immediately to the east of the site?
- What impact did the construction of the existing building's basement have on the archaeological deposits?

3.12 The archaeological investigations were carried out according to the method statement (Bradley 2014), which was approved by the City of London prior to the commencement of the works. The work also followed the methodologies set out in the Archaeology in the City of London: Archaeology Guidance: Planning Advice Note 3 (City of London 2004), Archaeology Guidance and the English Heritage Greater London Archaeology Advisory Service Guidance Papers; Archaeological Guidance Paper 3 Standards and Practices in Archaeological Fieldwork In London; Archaeological Guidance Paper 4: Archaeological Watching Briefs Archaeological Guidance Paper 5: Archaeological Assessment and Evaluations Reports. This report is an assessment of the findings of the archaeological investigations and has been prepared in order to satisfy the above archaeological conditions.

4 Geology and Topography

- 4.1** The site lies within the City of London, immediately east of Bury Street and a short distance south of the junction between this and Bevis Marks. The site lies at a surface elevation of c. 14.5m OD on ground that is generally flat with some minor undulations, but has been significantly modified by previous development of the area. South of the site, the current land surface slopes downwards towards the River Thames.
- 4.2** According to the British Geological Survey (Sheet 256; North London) the underlying geology of the site comprises sand, silt and clay of the Palaeogene (Eocene) London Clay formation, deposited between c. 34 and 55 million years ago. This is overlain by Quaternary Taplow Terrace Gravel, the surface of which lies at approximately 10.50m OD, but slopes downwards to the south and west of the site towards the River Thames and Historic Walbrook valley respectively. The gravel is capped by clay and silt brickearth, which has been variably truncated in the area by historic quarrying activity.
- 4.3** The site is bounded to the north-west by Bury Street, to the north-east by 10-16 Bevis Marks, to the south-east by land associated with the Spanish and Portuguese Synagogue and to the south-west by Copenhagen House, 5-10 Bury Street. It is located a little less than 750m north of the tidal River Thames on the eastern side of the upper reaches of the historic Walbrook valley, in an area that may have been crossed in the past by tributary streams of the River Walbrook, itself a tributary of the Thames.

5 Archaeological and Historical Background

5.1 The site has been the subject of an archaeological impact assessment which covered the geological, topographical, archaeological and historical background in detail (CgMs 2013). This study considered the site to have an archaeological potential for the Roman, Anglo-Saxon, medieval, post-medieval and modern periods. The site lies just within the Roman walled town and to the north-west of Holy Trinity Priory established in the early 12th century. Past post-depositional impacts were considered to have been severe as a result of several phases of redevelopment. A summary of the periods represented within that document are outlined below:

5.2 PREHISTORIC

5.2.1 The available evidence from the City of London as a whole points towards a moderate density of activity in the Bronze and Iron Ages, possibly represented by three or four small nucleated farmsteads engaged in arable cultivation. Finds of prehistoric date within the area include undiagnostic worked and burnt flint from 14-21 St Mary Axe to the north-west of the site.

5.3 ROMAN

5.3.1 The site lay just within the walled town, within an area labelled to be of 'relatively undeveloped open ground?' as shown on the MoLA map of *Londinium* reproduced in Figure 3 of the Impact Assessment. The wall was first built in the late 2nd century AD to enclose the city, from the Tower of London to south of Ludgate. Bastions were added in the 4th Century AD, and the wall was repaired into the medieval period. Remains of the wall are known at two points along the northern side of Bevis Marks, north/north-east of the site. They are nationally designated Scheduled Ancient Monuments. The base of a bastion was identified at 18 Bevis Marks, with a 5.79m long section identified at 19 Bevis Marks, and a 21.34m length identified at 17-18 Bevis Marks to the north-east. Further remains of the wall were identified at 28-30 Houndsditch. An associated ditch has been identified at 5-9 Bevis Marks, c. 46m long and up to 5m wide. A 36.58m stretch of wall identified at Bevis Marks in 1923 lay 2.29m below the contemporary ground surface.

5.3.2 Building remains within a 100m study area radius around the site include a floor surface at 32-34 Mitre Street to the south-east and at 4-8 Creechurch Lane to the south-east, a drain at 18 Bevis Marks to the north, and a cobbled surface, cess pit, ditches and pits at the former Baltic Exchange.

5.3.3 Quarry and rubbish pits have been identified immediately east of the site at 6-10 Heneage Lane; also to the south-east at 12-14 Mitre Street and 32-34 Mitre Street, at 13-16 Bevis Marks to the north and at 14-21 St Mary Axe and in association with dumping at 46 St Mary Axe, to the west. Pits and dumping have also been identified

at 4-8 Creechurch Lane to the south-east, and at 5-9 and 13-16 Bevis Marks to the north.

- 5.3.4 Ditches have been identified to the west at 14-21 St Mary Axe, where several postholes and a gully were also observed, interpreted as the remains of a possible structure. Ditches are also known from 33 Creechurch Lane to the east, and linear features have been identified at 5-9 and 13-16 Bevis Marks to the north. A Roman stone coffin was identified at Goring Street to the north of the site, north of Bevis Marks.

5.4 EARLY MEDIEVAL

- 5.4.1 Roman London became rapidly depopulated from the 5th century onwards. Early Saxon settlement, typified by discrete farmsteads and nucleated villages, is thought to have existed close to the Fleet River. The Saxon trading settlement known as *Lundenwic* was established in the 7th century as a trading settlement centred on what is now The Strand, some distance to the west of the site.

- 5.4.2 Finds of Saxon date within in the area radius include inhumation burials from 32-34 Mitre Street to the south-east described in the GLHER as probably comprising a continuation of a late Saxon nearby graveyard. Dark earth horizons identified in 1979 as Saxon were identified at 6-10 Heneage Lane immediately to the south-east.

5.5 MEDIEVAL

- 5.5.1 Substantial quantities of medieval material have been identified in the vicinity of the site. Principally this is due to the site of the Augustinian Priory of the Holy Trinity, established 1107-1108 by Queen Matilda, wife of Henry I, to the east of the site centred on what is now Mitre Street/Duke's Place and Cree Church Lane. The complex expanded during the 13th and 14th centuries, before being the first in London to be signed over to Henry VIII in 1532.

- 5.5.2 Repairs to the Roman wall to the north continued into the medieval period, before being demolished during the 18th and 19th centuries. A section of the medieval town ditch has been identified at 31 Houndsditch to the north of the site. The site of the Priory gatehouse has been identified to the north-east of the site, while 12th-century foundations for the Prior's House were identified during excavations in 1979 at Priory House to the east.

- 5.5.3 Remains of a cemetery formerly within the precinct of the Holy Trinity Priory were identified to the south-east at 12-14 Mitre Street, 29-31 Mitre Street and 32-34 Mitre Street. Burials have also been identified at 4-8 Creechurch and at Priory House. Building remains have been identified immediately east of the site at 6-10 Heneage Lane, and also to the south-east at 12-14 Mitre Street, 32-34 Mitre Street and the former Baltic Exchange.

5.5.4 Building remains including a cellar and substantial wall foundations have been identified at 14-21 St Mary Axe to the west. Wells and Rubbish pits have been identified immediately to the east at 6-10 Heneage Lane and also at 12-14 Mitre Street; 13-16 Bevis Marks to the north; to the west at 14- 21 St Mary Axe, 24-28 St Mary Axe and in association with dumping at 46 St Mary Axe; also at 4-8 and 33 Creechurch Lane to the east; and at 5-9 and 13-16 Bevis Marks to the north, associated with dumping. A ditch interpreted as a possible property boundary has been identified at 5-9 and 13-16 Bevis Marks to the north of the site. Cultivation soil possibly relating to a garden was identified immediately to the east at 6-10 Heneage Lane, 46 St Mary Axe to the north-west and 4-8 Creechurch Lane to the south-east.

5.6 POST-MEDIEVAL AND MODERN

5.6.1 The Agas Map dated c.1560 appears to show the site in an area of garden, fronting Bury Street, to the west of Holy Trinity Priory. Morgan's Map of 1682 shows the site developed and fronting 'Berry Street'. No change is shown on John Rocque's Survey of London (1745), nor on Horwood's Survey of 1799-1819 although the street name has now changed to Bury Street.

5.6.2 No 12 Bury Street is described as a 'solid five bay early nineteenth century house with rusticated ground floor, perhaps built after most of Bury Street burnt out in 1811' (Bradley and Pevsner 1999, 439). The 1st Edition Ordnance Survey Map of 1871 shows the site occupied by buildings divided into two; 11-12 Bury Street were certainly a single unit by 1877 when the plan and front and rear elevations were recorded in an indenture. The 2nd Edition Ordnance Survey Map 1893-1898 shows the buildings within the site as a single unit. The 1925 GOAD Insurance plan shows the site in use as offices; no change is shown on the 1943 GOAD Insurance plan. The 1959 Ordnance Survey Map shows no change within the site and neither does the 2012 edition.

6 Archaeological Methodology

6.1 The fieldwork was carried out in accordance with the project design and method statement (CgMs 2014; Bradley 2014), and all aspects of the work followed national (ClfA 2014) and local (GLAAS 2009) guidelines, and complied with PCA's own fieldwork manual (Taylor and Brown 2009).

6.2 Works within the basement were carried out over a number of stages and consequently archaeological work was also a staged process. The stages requiring archaeological attendance were as follows:

- **Stage 2: Break out existing basement slab between lines 1-4/A-D and reduce ground level from 11.6m OD to 10.6m OD.** The breaking out and removal of the existing basement concrete slab was undertaken by machine. All modern deposits within these locations were removed by mechanical excavator fitted with a flat bladed ditching bucket under archaeological supervision. Once the upper-most significant archaeological horizon, structure or feature was identified, archaeological excavation and recording commenced by hand. This process continued to 10.6m AOD. All exposed surfaces within the excavation areas were cleaned using appropriate hand tools. All investigation of archaeological levels, features and structures was by hand, with cleaning, examination and recording both in plan and in section. All finds were extracted for more detailed off-site analysis.
- **Stage 3: Commence underpinning on gridline A/1-4, D1-4 and 1/A-D.** The width of each excavated section was such that it did not compromise the adjacent wall foundation. All modern deposits within the underpinning pits were removed by mechanical excavator fitted with a flat bladed ditching bucket. The insertion of the underpinning was archaeologically monitored. Where significant archaeological deposits were found, and where health and safety considerations permitted safe access, these were archaeologically excavated and recorded. All finds were extracted for more detailed off-site analysis.
- **Stage 5: Reduce ground level from 10.6m OD to 10.02m OD (formation level of the slab) between gridlines 1-4 / A-D.** The process followed that detailed for Stage 2 above. This process continued to the formation level of the slab (10.02m OD) and the undisturbed natural stratum.
- **Stage 6: Break out existing basement slab between gridlines 4-5 / A-D and reduce level from 11.6m OD to 10.6m OD.** The methodology followed that set out for Stage 2 above.
- **Stage 7: Underpin walls on gridlines 4-5/A, 4-5/D and Grid 5/A-D.** The methodology followed that set out for Stage 3 above.

- **The Lift Pit & Pumping Station:** Additional deeper excavations were required for the lift pit (south side of basement) and pumping station (west side of basement). Excavation continued with the same methodology as outlined above, though archaeological deposits did not extend to the full depths of these excavations
- 6.3** Individual descriptions of all archaeological strata and features excavated and exposed were entered onto pro-forma recording sheets. All plans of archaeological deposits were recorded on polyester based drawing film at a scale of 1:20. A colour digital photographic record was made of the investigations as they progressed. Levels were measured during the different phases using on-site surveying equipment.
- 6.4** 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 BUY14.

7 The Archaeological Sequence

7.1 PHASE 1: NATURAL DEPOSITS

7.1.1 Natural deposits comprised sands and gravels [47] of the Quaternary Taplow Terrace Formation, which were exposed in the bases of some cut archaeological features at levels between 9.72m AOD and 10.20m AOD. No evidence of *in situ* natural brickearth overlying the terrace gravels was recorded, though material which appeared to be redeposited brickearth was present (see below).

7.2 PHASE 2: ROMAN (Fig. 3)

7.2.1 The earliest evidence of human exploitation of the site appears to date to the early Roman period. A deposit of apparently redeposited or reworked brickearth [2]/[15] recorded widely across the site was possibly a soil horizon of Roman date. This was up to 0.40m thick and recorded at upper elevations between 10.66m AOD and 10.54m AOD, though contained no artefactual material.

7.2.2 Towards the north-east of the site the disturbed brickearth was truncated by a large, sub-circular pit [46], measuring at least 3.40m east to west by 1.30m north to south and more than 0.84m deep. The pit exhibited gently sloping sides and an apparent concave base though this had been truncated. The single fill [45] comprised a firm, mid yellowish brown, silty clay and although very occasional flecks of charcoal and building material were observed, no dateable artefacts were recovered. The function of the pit was thus difficult to ascertain.

7.2.3 To the south was another pit [35], somewhat more irregular, measuring at least 1.46m east to west by 0.80m north to south but just 0.13m deep with gently sloping sides and a flat base. The fill [34] was a firm, dark greyish brown, silty clay, from which a small artefactual assemblage was recovered. The finds included two sherds of 3rd-century pottery, broadly dated Roman brick and Hassock Stone, and small assemblage of window and vessel glass, along with some glass-working waste and three fragments of animal bone. The original function of the pit was difficult to ascertain but had evidently seen re-use for rubbish deposition.

7.2.4 Both pits were truncated by another, more extensive pit [7]/[49] (Plate 1), which measured more than 5.50m east to west by at least 6.20m north to south and was at least 0.78m deep. It had steeply sloping sides, though the nature of the base was unclear and was filled with a friable, dark brown, clayey silt [5]/[40], which contained a moderate finds assemblage. The pit contained pottery dated AD 250-400 which include the notable finds of a crucible fragment with glass residue on the inside from context [40] and four other possible heat affected crucible fragments from context [5], 2nd- to 3rd-century building materials, window and vessel glass, along with glass-working waste and a small assemblage of animal bone. The pit had evidently been

re-used for rubbish deposition, though its scale suggests it may originally been a quarry pit for the extraction of brickearth. The large pit was truncated to the north by another extensive feature [44], a sub-circular pit measuring at least 3.00m east to west by 1.70m north to south and 0.80m deep. It had gently sloping sides and a concave base and was filled with a firm, mid greyish brown, silty clay [43] that contained a small assemblage of broadly dated Roman pottery, a fragment of Roman tile and a small assemblage of animal bone. Again, this may originally have been a quarry pit but was re-used for rubbish deposition. A shallow brickearth linear deposit [50] may have been the remains of a brickearth wall or other clay structure.

- 7.2.5 Towards the south-west of the site the disturbed brickearth was cut by a sub-rectangular pit [17] (Plate 2), which measured 1.50m east to west by 1.36m north to south and was 0.74m deep, the sides sloping to a generally flat base. The fill [16] was a soft, dark greyish brown, silty clay and produced a small artefactual assemblage, including 3rd-century pottery and 1st- to 2nd-century building materials, along with a few fragments of animal bone. This may have been a possible cess pit and was partly cut to the north-west by a heavily truncated pit [19], which exhibited stepped sides, though the base was not exposed. This feature measured at least 0.45m east to west by 0.30m north to south and was 0.33m deep. The single fill [18] was a soft, mid greyish brown, silty clay, which contained a single sherd of broadly dated Roman pottery along with a quantity of animal bone. The original function of the pit was unclear though had clearly been subsequently utilised for rubbish deposition.
- 7.2.6 A short distance north of pits [19] and [17] was irregular pit [37], measuring at least 1.22m east to west by 1.20m north to south and 0.28m deep, its sides sloping to a concave base. It was filled with a soft, mid greyish brown, silty clay [36] that contained a single sherd of 2nd-century pottery and 1st- to 2nd-century tile, along with a few fragments of animal bone.
- 7.2.7 Towards the eastern side of the site and probably extending east of the limit of excavation was a small group of postholes and stakeholes [21], [23], [25], [27], [29], [31] and [33] of varying forms and dimensions but most likely associated with a single timber structure aligned approximately north to south. This would have measured at least 1.60m by 1.00m, though was probably significantly larger. Three of the postholes [21], [27] and [33] produced small assemblages of Roman building material, suggesting that a small building was located here during the Roman period.
- 7.2.8 Covering much of the eastern part of the site, including backfilled large pit [7]/[49] was an extensive deposit of firm, dark brown, clayey silt [1] up to 0.70m thick and recorded at an upper elevation of 11.62m AOD. This contained 3rd- to 4th-century pottery and a fragment of Roman tile and appears to have been a 'dark earth' deposit that marked the cessation of Roman occupation in the area. Overall the activity during this period appears to have commenced with possible agricultural exploitation

followed by brickearth quarrying with some domestic and or/industrial activity following thereafter, though given the small number of features and finds the exact nature and date of the activity can only be broadly interpreted.

7.3 PHASE 3: MEDIEVAL (Fig. 4)

- 7.3.1 There was no evidence for activity on the site in the years following the Roman occupation but artefactual remains suggest that there was a presence shortly after the Norman Conquest. Towards the north-west corner of the site, the north-western part of Roman pit [44] was truncated by a smaller, rectangular feature [42], which measured at least 0.47m by 0.47m but extended beyond the northern and western limits of excavation. It was 0.81m deep with vertical sides and a concave base, and contained two fills. The primary fill [48] was a very soft, light greyish brown clay, which contained no dateable artefactual evidence though small fragments of wood were present, suggesting the deposit may have been remnants of a clay and timber lining. The more extensive secondary fill [41] was a soft, very dark brown silty clay, which contained fragments of animal bone, Roman tile and importantly, two sherds of 11th- to 12th-century pottery, indicating a likely medieval date for the feature though it is still likely to have been a cess pit.
- 7.3.2 Further to the south, Roman pit [37] had been truncated on its northern side by another sub-rectangular pit [39], which also had vertical sides. This feature measured 1.55m north to south by at least 0.47m east to west, extending beyond the western edge of excavation, and was 1.24m deep. The single fill [38] was a very soft, dark greyish brown silty clay, which contained Roman tile and a sherd of pottery most likely dating to the 12th century. This feature has also been interpreted as a possible medieval cess pit.
- 7.3.3 The two medieval cess pits along with a number of the Roman features were sealed by a 0.60m thick deposit of firm, very dark greyish brown, silty clay [14], very similar to the 'dark earth' [1] that covered Roman features elsewhere. However, along with Roman pottery, bricks and tesserae, medieval peg tile was also present in the deposit, suggesting this material was deposited at a later date than [1]. The actual depositional sequence however is likely to be more complex than this; because of the poor lighting during the excavation works a number of features were not visible until layers [1] and [14] had been removed and it is possible that medieval finds recovered from [14] were actually within features cut into it but not visible prior to its removal.
- 7.3.4 Overall the evidence for medieval occupation of the site is far less extensive than for the Roman period but the presence of two cess pits along the western edge of excavation suggests there was activity here in the 11th to 12th centuries, possibly associated with the rears of properties that fronted onto a forerunner of Bury Street.

7.4 PHASE 4: EARLIER POST-MEDIEVAL (Fig. 5)

7.4.1 Towards the centre of the site, large Roman pit [7]/[49] was partly truncated to the south-west by a sub-rectangular feature [12] (Plate 3), measuring 1.80m north to south by at least 0.90m east to west, having been truncated to the west. The feature, which was at least 0.6m deep contained a firm, dark brownish grey, clayey silt fill [10], from which 16th-century pottery along with Roman tile, medieval glazed peg tile and a small assemblage of animal bone were recovered. As the pit had been extensively truncated to the west it was not possible to clearly define its original function but may have been a cess pit or even a well. The latter suggestion is made as the feature truncating it to the west was a well, though this too had been significantly truncated to the south by a modern, structural support pillar. The well comprised a sub-rectangular construction cut [4], measuring 2.12m east to west by 1.66m north to south but was not fully excavated to its full depth. Within the construction cut was a circular masonry structure comprised of chalk blocks, bonded with a soft, sandy, light yellowish brown mortar, with an upper course of ceramic tiles, recorded at a maximum elevation of 10.55m AOD (Plate 4). The structure measured at least 1.12m in diameter and was at least 1.20m deep. The space between the masonry structure and the well construction cut was filled with a compact, light yellowish brown, silty clay [9], though no finds were recovered. Two backfilling deposits within the well were recorded; the lower fill [13] comprising a moderately loose, light yellowish brown, sandy silt, though the only artefacts within were chalk blocks having collapsed in from the masonry structure. The upper fill [8] was a friable, dark brown, organic-rich, silty deposit that included a small finds assemblage, including a quantity of animal bone, 16th-century pottery, Roman and medieval tile, and early post-medieval brick, thus providing a date at least for one phase of backfilling of the feature.

7.4.2 No further features of early post-medieval date were identified within the area of excavation and it appears that during this period the site still lay in a rear yard area of a property or properties that faced onto Bury Street, there possibly having been some continuity from the medieval period.


7.5 PHASE 5: LATER POST-MEDIEVAL

7.5.1 Very little evidence of later post-medieval activity pre-dating modern structural development of the site was recorded during the archaeological investigations. The upper backfill of the well comprised a friable, dark brown, clayey silt [3], which contained late medieval pottery and early and later post-medieval building material, suggesting the site probably remained open until at least the 18th century.

7.6 PHASE 6: MODERN

7.6.1 Modern activity on the site was represented by the basement concrete slab and associated bedding deposits, which were mechanically removed during the early phases of site works, along with the concrete support pillars of the building.

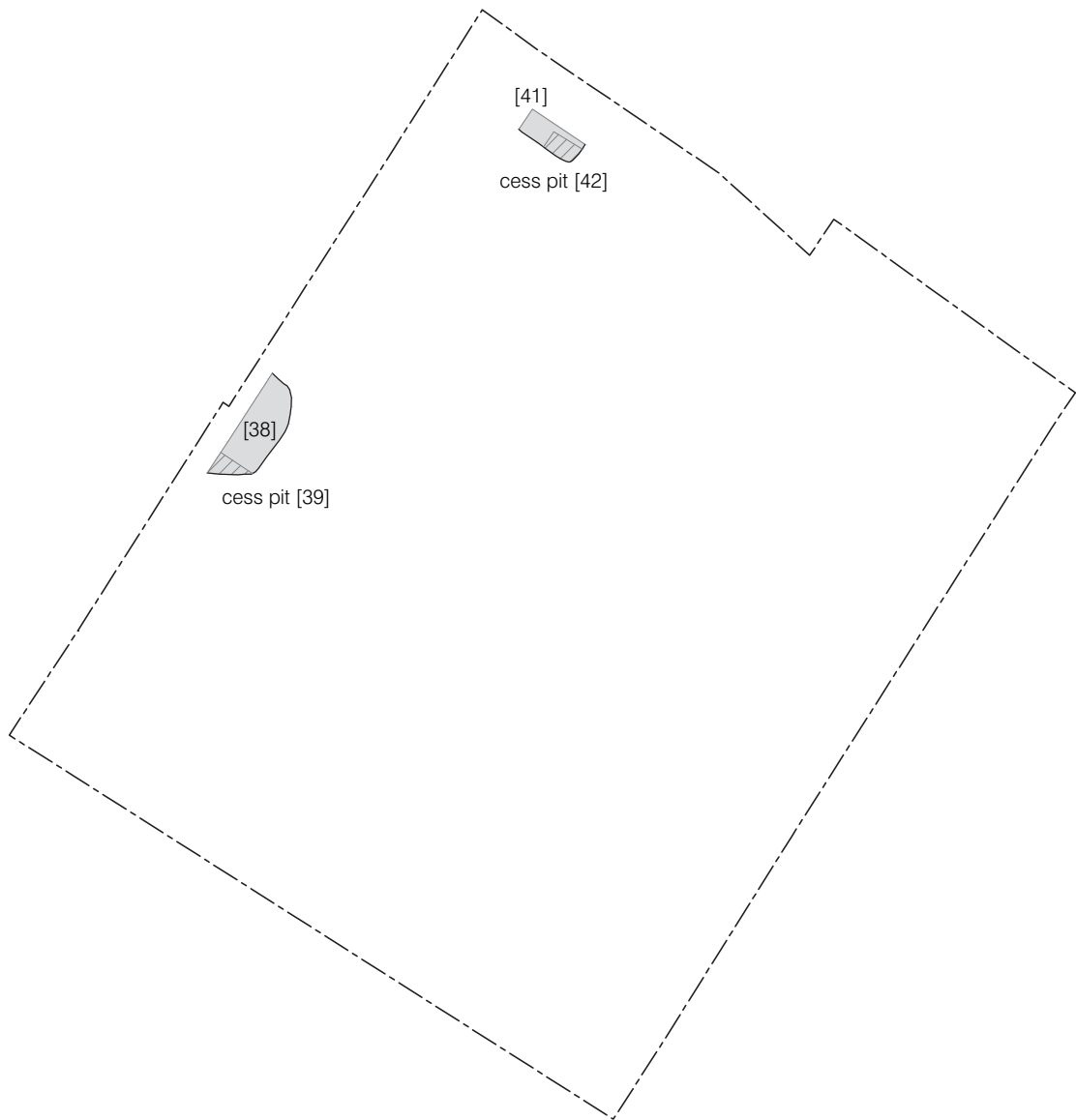



 Excavated Slot

0  5m

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Figure 3
Phase 2: Roman
1:100 at A4

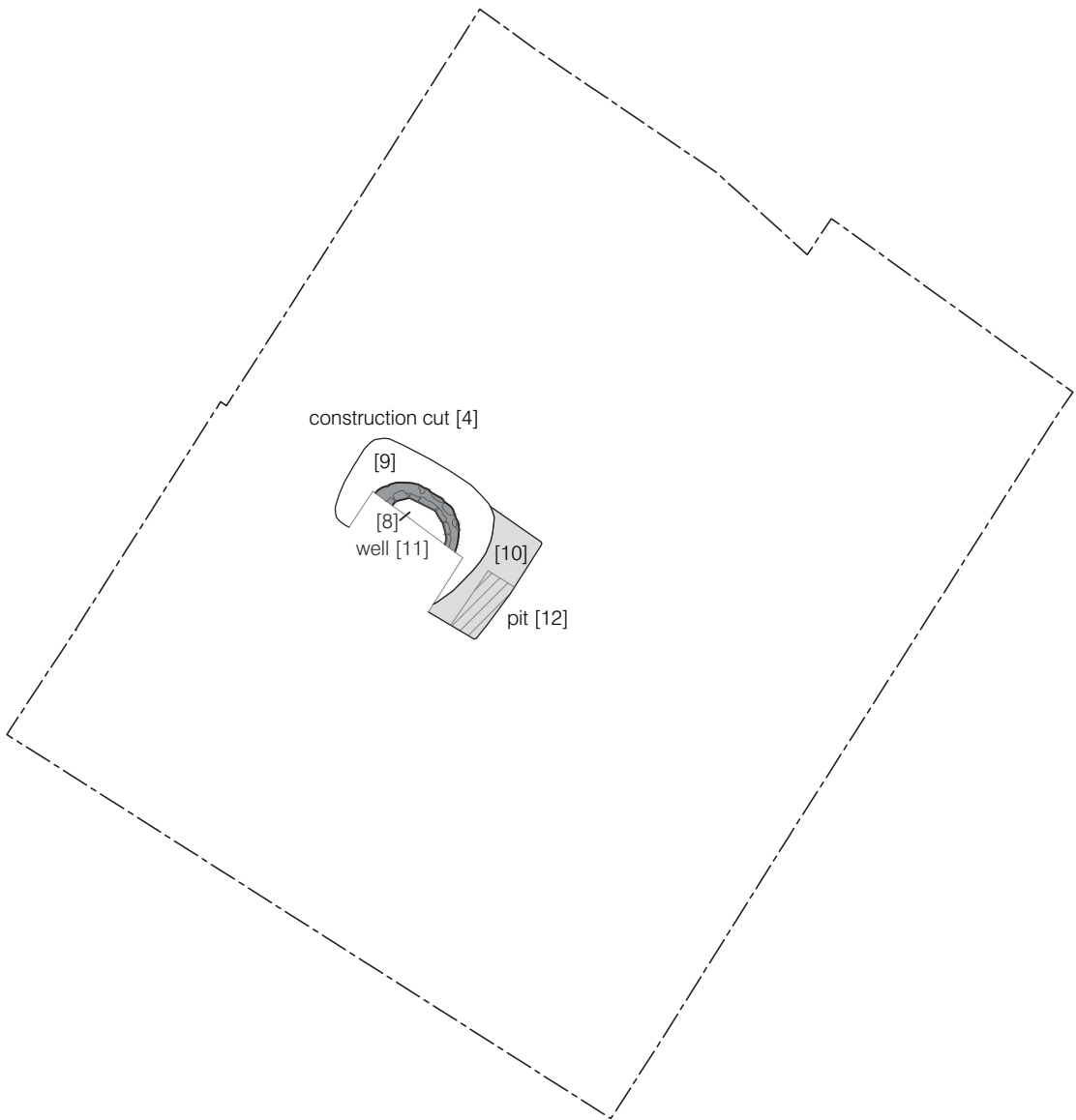


 Excavated Slot

0  5m

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Figure 4
Phase 3: Medieval
1:100 at A4



 Excavated Slot



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Figure 5
Phase 4 Early Post-Medieval
1:100 at A4



Plate 1: Slot Through Pit [7], Looking North-East (scale: 0.5m)



Plate 2: Roman Cess Pit [17], Looking North-East (scale: 0.5m)



Plate 3: Slot Through Post-Medieval Pit [12], Looking East (scale: 0.5m)



Plate 4: Well Structure [11], Looking North-West (scale: 0.5m)

8 Original and Additional Research Objectives

8.1 ORIGINAL RESEARCH OBJECTIVES

8.1.1 The method statement prepared before the commencement of the archaeological investigations outlined a number of research objectives that might be addressed by the project (Bradley 2014). These objectives are considered here, before additional questions raised by the fieldwork are discussed:

8.1.2 What is the nature of the archaeological remains surviving on site?

The investigations revealed archaeological remains from a number of periods surviving on the site below the basement slab. The earliest remains dated to the Roman period and included a possible soil horizon, quarry pits, a cess pit, postholes and other pits whose initial functions were unknown but were subsequently used for rubbish deposition. Evidence for medieval activity comprised two cess pits towards the western side of the site, whilst a pit and chalk-lined well provided evidence for activity in the early post-medieval period. Later post-medieval activity was evidenced by final backfilling of the well.

The most notable activity which was present on or near the site was glassmaking in the late Roman period. Glass and glass making waste including moils together with a crucible with glass residue and four other possible crucible fragments distorted by extreme heat were recovered from two pits dated to AD 200-300 and AD 250-400. The presence of crucibles is an extremely rare find from Roman London (only one fragment has previously been found) and would seem to confirm that glass workers used crucibles in the late Roman period whereas previously they had utilised tank furnaces.

8.1.3 What are the nature and depth of underlying natural deposits?

Natural deposits exposed on the site were sands and gravels of the Quaternary Taplow Terrace Formation, which were exposed in the bases of some features and intermittently elsewhere. The surface elevation of the sand and gravel varied between 9.72m AOD and 10.20m AOD. No *in situ* natural brickearth was recorded overlying the sand and gravel though a reworked brickearth deposit was present

8.1.4 What is the nature and date of the Roman occupation of the site? Is there evidence for features such as burials, quarrying and refuse dumping, more typical of activity on the periphery of the main Roman settlement? How does the activity on this site fit in with that known from the surrounding area?

Roman activity appears to have comprised possible agricultural exploitation, quarrying and domestic occupation, along with some glass working in the vicinity though it is difficult to finely date the sequence of occupation given the finds assemblages recovered; only a broad late 1st- to 4th-century period of activity can be

deduced, although it would appear that the glass working waste came from pits dated to the late Roman period (3rd and 4th centuries AD). Large pits on the site suggest some quarrying and this along with refuse deposition indicates activity on the periphery of the Roman settlement. However, structural evidence may suggest some domestic occupation and there was glass-working nearby, though this may have been another activity carried out at the settlement periphery. The nature of the evidence is similar to that from other sites in the vicinity; quarry and rubbish pits were identified immediately east at 6-10 Heneage Lane, to the south-east at 12-14 Mitre Street and 32-4 Mitre Street, at 13-16 Bevis Marks to the north and at 14-21 St Mary Axe, where postholes also indicated the presence of timber structures.

8.1.5 What evidence is there for Saxon occupation? Do the dark earth deposits previously recorded to the south-east of the site at Heneage Lane continue into the site?

There was no evidence for Saxon occupation recorded on the site during the course of the archaeological investigations, however, a 'dark earth' deposit was present. The difficulties in interpreting and dating this deposit because of the poor lighting conditions have been discussed and it seems most likely that the deposit dated to the late Roman period, though this does not preclude further accumulation in the post-Roman period.

8.1.6 What evidence is there for the development of site through the medieval period. Is there any evidence for activity associated with the Augustinian Priory of the Holy Trinity, situated immediately to the east of the site?

Evidence for activity on the site during the medieval period was limited to two cess pits located at the western edge of occupation, which suggested this area lay to the rear of properties that fronted the predecessor to Bury Street. Artefactual material suggested that occupation commenced soon after the Norman Conquest and may have continued throughout the medieval period but there was no evidence for activity associated with the Augustinian Priory.

8.1.7 What impact did the construction of the existing building's basement have on the archaeological deposits?

Construction of the basement of the current building clearly had some impact on underlying deposits and the paucity of later medieval and post-medieval remains on the site was most likely the result of these deposits having been extensively removed during excavation and basement construction. Roman remains were probably also impacted upon to some extent but survival of these earlier and more deeply buried deposits was much greater than later remains.

8.2 ADDITIONAL RESEARCH QUESTIONS

8.2.1 In the light of the findings from the investigations it is clear that the archaeological evidence has fulfilled the original objectives. However, the investigations have produced additional information relating to various phases of site development. It has thus been necessary to formulate a set of Revised Research Objectives in light of the information retrieved.

8.2.2 What was the nature of Roman glass-working in the vicinity of the site and what further evidence is there for this activity elsewhere in the area?

A small but potentially interesting assemblage of Roman glass was recovered during the investigations. This included fragments of vessels and probable window glass but also importantly, production waste from glass working, including crucible fragments. Whilst it is by no means certain that glass working was being carried out within the area investigated such activity was clearly taking place nearby. Further analysis of the production waste may provide a greater insight into the nature of the work being carried out and it is important that this should be considered in relation to any other evidence for contemporary glass working from sites in the vicinity and further afield.

8.2.3 What is the importance of the crucibles found on the site?

The crucibles and glass working waste were recovered from two pits dated to the late Roman period. Only one fragment of crucible used in glass working has previously been found in Roman London at Norton Folgate associated with 3rd or possibly 4th century dumps (Shepherd & Wardle 2009, 29). It has been suggested that in the late Roman period the glass workers were utilising crucibles whereas in the earlier period they were using tank furnaces (J. Shepherd pers. comm.). Further analysis of the crucible fragments is vital to compare them with the Norton Folgate example and those found outside London.

9 Importance of the Results, Proposals for Further Work and Publication Outline

9.1 IMPORTANCE OF THE RESULTS

- 9.1.1 The findings from the archaeological investigations at 11-12 Bury Street have some importance at the local level. The evidence of occupation during the Roman period has added a small information to the dataset of known activity at this time in the local area and whilst the features recorded on the site are comparable with others nearby, suggesting a location in a marginal position at the edge of Roman *Londinium*.
- 9.1.2 In contrast to other sites nearby, there was no obvious evidence for Anglo-Saxon occupation on the site, though layers of 'dark earth', commonly associated with this period of activity were identified but interpreted to be more likely of later Roman origin. However, the sparse nature of the artefactual evidence does not preclude the possibility that the material recorded on site did date to the post-Roman period. The identification of the 'dark earth' is of some importance as it adds to the body of information concerning the extent of material associated with the apparent abandonment of the Roman settlement.
- 9.1.3 The limited evidence for occupation of the site during the medieval period is of some importance as it provides an indication of the redevelopment and layout of the settlement at this time. It has been presumed that the two 12th-century cess pits identified towards the western side of the site were located to the rears of neighbouring properties that fronted a forerunner of the present Bury Street to the west. As such, this may provide evidence of an early layout of the street plan in the local area, and therefore of this part of medieval London.
- 9.1.4 There was negligible evidence for later medieval occupation of the site, largely as a result of the construction of the modern basement, which probably removed extensive deposits of this and later dates. However, there was some evidence of occupation during the early post-medieval period, when the site still appeared to lie in a back yard area behind properties fronting Bury Street. Only two features of this date were identified but they probably represent a continuity of occupation from the later medieval period, whilst the final backfilling of the well indicates a further continuity of activity into the later post-medieval period.
- 9.1.5 However, the most important finds from the site were those associated with glass working in the late Roman period. The glass working waste and cullet together with the fragment of crucible with a glass residue adhering to it and four other possible crucible fragments were recovered from two pits dated to AD 250-400 and AD 200-300 and are evidence of late Roman glass working in a part of London where little or no evidence has been found before. The presence of the crucibles are of local, regional and national importance as so little is known about their use in London and

the rest of Britain in the Roman period. Only one other glass crucible fragment (from Norton Folgate) is known from London and very few have been found in the rest of Britain as a whole. The fact that the glass working would appear to be of 3rd- or 4th-century date is also of great importance as very little evidence of activity of that date has been found with the possible exception of two sites in the Norton Folgate area and the Tower of London (Shepherd & Wardle 2009, 23-29). Most sites to date which include numerous sites in the Walbrook Valley (Keily & Shepherd 2005, 147-155) and two large assemblages from the Guildhall Yard (Perez-Sala & Shepherd 2008, 202-208) and Basinghall Street (Freestone *et al.* forthcoming) are 1st- and 2nd-century in date and the evidence would suggest that tank furnaces were utilised at that time. The evidence from the late Roman sites at Norton Folgate and Bury Street might tentatively suggest that crucibles were used instead and in this context the finds from Bury Street are of the utmost importance.

9.2 FURTHER WORK

9.2.1 The development of the site during the Roman period will be considered with reference to evidence from contemporary sites nearby and within the wider landscape of Roman *Londinium*. The evidence for glass-working in the vicinity of the site is of particular importance and should form a significant element of research into the Roman history of the site. However, the majority of the further work will concentrate on analysis of the glass and crucibles associated with the glass working found on the site.

Roman glass and crucibles

9.2.2 The Roman glass and crucibles are potentially of national importance. The potential of the glass is to add further to an understanding of the glass industry in *Londinium*. In addition to the glass waste and possible cullet in the assemblage, a crucible with glass residue and other possible crucible fragments have been identified amongst the Roman pottery and add to the material culture of the glass industry identified on the site. The study of this small assemblage would be a major addition to our understanding of the later Roman glass industry in London - and, as such material in the UK is so rare - to the later Roman provinces of Britannia. Any analysis and study should also include comparison with the small amount of material from Norton Folgate. Specific research questions are:

- 1) Compare the glass in the crucible with known late Roman compositions in the western empire, to assess for glass source.
- 2) Compare the glass in the crucible and the other fragments associated with it to assess similarity or otherwise.
- 3) Compare the glass from this site, both debris and crucible, with the assemblage from Norton Folgate to assess what degree of relationship exists between them.

4) To examine if the glass from this site includes any glass making debris or only secondary working.

5) Examination of the pottery fragments should be carried out to calculate the temperatures required to cause the distortions to those shattered fragments.

6) Confirm the source of the pottery for the crucible (using thin section analysis and ICP-AES analysis).

Following the above research it is recommended that a publication report is written on the BUY14 glass working assemblage and crucibles. In order for the assemblage to be compared to other London glass working groups, then samples of the glass (and the fragment of ceramic crucible with glass residue) need to be subjected to X-ray fluorescence spectrometry (XRF). This will determine the composition of the glass. It is recommended that the glass jar rim and the three moils are drawn together with the crucibles, while other material can be illustrated using photography to complement the text.

Roman pottery

9.2.3 The small assemblage of Roman pottery excluding the crucible fragments from the site is of limited value in discussing the wider subject of Roman occupation but is useful as a dating tool and should be briefly discussed in any publication.

Building material

9.2.4 Approximately 75% of the building materials recovered from the site were of Roman date. Of particular interest were two large groups of “fresher” Roman brick suggesting the proximity of a masonry building or possibly levelling courses from a defensive wall. Four individual cubes of border tesseræ although indicative of a decorative floor in the vicinity are rather standard materials for London and merely comprise part of the background component to the overall assemblage. A small amount of the material could derive from a kiln, which may have implications for potential glass-working in the vicinity evidence by the pottery and glass assemblages. The Roman building material should be briefly discussed in any publication..

Post Roman pottery

9.2.5 The small assemblage of post-Roman pottery has little significance at a local level and is in keeping with the ceramic profile for the London area. The pottery has the potential to date the features in which it was found and to provide a sequence for them. However, none of the pottery merits illustration and there are no recommendations for further work on the assemblage.

Animal bone

9.2.6 The animal bone assemblage is too small to warrant any detailed analysis, though there are some interesting aspects, in particular the evidence for probable butchery during the Roman period. Despite biases in deposition and probably collection, the

predominance of cattle is undoubtedly a notable feature of contemporary collections from other Roman sites in the city, though these sites tend not to provide evidence for cattle butchering activities. Whilst the animal bone information highlighted in the assessment should be included in any forthcoming publication, there is no requirement for further analysis of this data.

9.3 PUBLICATION OUTLINE

9.3.1 It is proposed that the publication will consist of an article in *London Archaeologist* or a suitable peer reviewed journal and will focus on the evidence of late Roman glass working from the site. The article will be written by John Shepherd with contributions by Ian Freestone. It will include the following sections:

- Introduction
- Archaeological Background
- Late Roman Glass Working in north-east *Londinium*
- Analysis of the glass and crucibles
- Discussion and Conclusions
- Acknowledgements
- Bibliography

Illustrations to include:

- Site and trench locations
- Plan of Roman features on site
- Line drawings and photographs of the crucibles and selected items of the glass assemblage and waste

10 Contents of the Archive

10.1 The Written Record

Type	Quantity
Context Sheets	47
Plans	12 sheets

10.2 The Finds

Material	Quantity
Pottery	2 boxes
Building materials	3 boxes
Glass	1 box
Animal Bone	1 box

10.3 Photographic Archive

Photographs	72 digital images
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11 Acknowledgements

- 11.1** Pre-Construct Archaeology Ltd. would like to thank Richard Meager of CgMs Consulting for commissioning the work and special thanks are extended to Kathryn Stubbs, Assistant Director Historic Environment, City of London, for monitoring the project.
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APPENDIX 1: CONTEXT INDEX

Site Code	Context	Type	Plan	Section	Sample	Description	Date	Phase
BUY14	1	Layer	*	*	*	Possible dark earth	Roman	2
BUY14	2	Layer	*	*	*	Redeposited clay	Roman	2
BUY14	3	Fill	*	*	*	Backfill of well [11]	Later Post-Medieval	5
BUY14	4	Cut	Multi Context	*	*	Construction cut for well [11]	Earlier Post-Medieval	4
BUY14	5	Fill	Multi Context	*	*	Fill of pit [7], same as [40]	Roman	2
BUY14	6	VOID	*	*	*	Void but same as [5]		
BUY14	7	Cut	Multi Context	*	*	Large pit, same as [49]	Roman	2
BUY14	8	Fill	Multi Context	*	*	Backfill of well [11]	Earlier Post-Medieval	4
BUY14	9	Fill	Multi Context	*	*	Fill of construction cut [4]	Earlier Post-Medieval	4
BUY14	10	Fill	Multi Context	*	*	Fill of pit [12]	Earlier Post-Medieval	4
BUY14	11	Masonry	11	*	*	Chalk well structure	Earlier Post-medieval	4
BUY14	12	Cut	Multi Context	*	*	Irregular pit	Earlier Post-Medieval	4
BUY14	13	Fill	*	*	*	Backfill of well [11]	Earlier Post-Medieval	4
BUY14	14	Layer	14	*	*	Made ground	Medieval	3
BUY14	15	Layer	Multi Context	*	*	Redeposited brickearth	Roman	2
BUY14	16	Fill	Multi Context	*	*	Fill of pit [17]	Roman	2
BUY14	17	Cut	Multi Context	*	*	Possible cess pit	Roman	2
BUY14	18	Fill	*	*	*	Fill of pit [19]	Roman	2
BUY14	19	Cut	Multi Context	*	*	Rubbish pit	Roman	2
BUY14	20	Fill	Multi Context	*	*	Fill of posthole [21]	Roman	2
BUY14	21	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	22	Fill	Multi Context	*	*	Fill of posthole [23]	Roman	2
BUY14	23	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	24	Fill	Multi Context	*	*	Fill of posthole [25]	Roman	2
BUY14	25	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	26	Fill	Multi Context	*	*	Fill of posthole [27]	Roman	2
BUY14	27	Cut	Multi Context	*	*	Circular posthole	Roman	2

Site Code	Context	Type	Plan	Section	Sample	Description	Date	Phase
BUY14	28	Fill	Multi Context	*	*	Fill of posthole [29]	Roman	2
BUY14	29	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	30	Fill	Multi Context	*	*	Fill of posthole [31]	Roman	2
BUY14	31	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	32	Fill	Multi Context	*	*	Fill of posthole [33]	Roman	2
BUY14	33	Cut	Multi Context	*	*	Circular posthole	Roman	2
BUY14	34	Fill	Multi Context	*	*	Fill of pit [35]	Roman	2
BUY14	35	Cut	Multi Context	*	*	Rubbish pit	Roman	2
BUY14	36	Fill	Multi Context	*	*	Fill of pit [37]	Roman	2
BUY14	37	Cut	Multi Context	*	*	Rubbish pit	Roman	2
BUY14	38	Fill	Multi Context	*	*	Fill of pit [39]	Medieval	3
BUY14	39	Cut	Multi Context	*	*	Possible cess pit	Medieval	3
BUY14	40	Fill	Multi Context	*	*	Fill of pit [49], same as [5]	Roman	2
BUY14	41	Fill	Multi Context	*	*	Upper fill of pit [42]	Medieval	3
BUY14	42	Cut	Multi Context	*	*	Possible cess pit	Medieval	3
BUY14	43	Fill	Multi Context	*	*	Fill of pit [44]	Roman	2
BUY14	44	Cut	Multi Context	*	*	Circular pit	Roman	2
BUY14	45	Fill	Multi Context	*	*	Fill of pit [46]	Roman	2
BUY14	46	Cut	Multi Context	*	*	Semi-circular pit	Roman	2
BUY14	47	Layer	Multi Context	*	*	Natural gravel	Natural	1
BUY14	48	Fill	*	*	*	Lower fill of pit [42]	Medieval	3
BUY14	49	Cut	Multi Context	*	*	Large pit, same as [7]	Roman	2
BUY14	50	Fill	Multi Context			Brickearth wall?	Roman	2

APPENDIX 2: ROMAN POTTERY

Katie Anderson

INTRODUCTION

The Bury Street excavations yielded an assemblage of Roman pottery totalling 47 sherds, weighing 1120g and representing 0.76 EVEs (estimated vessel equivalent). All of the pottery was examined and recorded in accordance with the guidelines laid out by the Study Group for Roman Pottery (Perrin 2011) and using the standard terminology and codes advocated by the Museum of London Archaeology Service (Symonds 2002).

ASSEMBLAGE COMPOSITION

The assemblage comprised small to large sherds reflected in the relatively high mean weight of 23.9g. The assemblage was mid-later Roman in date, with a suggested date range of AD 200-300, for the majority of the assemblage, although there were a small number of earlier sherds. It is of note that several of the contexts were noted as containing both earlier and later Roman period pottery, suggesting a degree of residually to, certainly aspects, of the assemblage.

A limited number of vessel fabrics were identified (Table 1), with unsourced SAND fabrics occurring most frequently. Sourced Romano-British wares identified included five AHFA sherds, four BB2 sherds (100g) from one beaded, flanged bowl and a straight-sided dish, Imported wares comprised six Samian sherds (90g); including one SAMEG Dr31 dish, a SAMSG Dr18 dish and a SAMCG Dr37 bowl. A further six amphora sherds were also recovered (530g), including one NAFR1 sherd and one GAUL sherd. Finally, one CGBLK sherd (19g) from a beaker was collected.

Roman pottery was recovered from ten different context, with a further five unstratified sherds. Context [5] contained the largest quantity of pottery, totalling 14 sherds weighing 141g. This comprised a minimum of five different vessels, including the two BB2 vessels, two CSGW straight-sided dishes and a HWC jar, dating this context to 250-400. The remaining contexts each contained fewer than ten sherds. Four sherds from a possible crucible (81g) were also recovered from this context.

DISCUSSION

Overall, the small size of the assemblage limits any meaningful discussion on the nature of occupation. That said, the pottery does provide useful dating evidence, suggesting that the site was in use from the 2nd to the 3rd/4th century AD, with possible limited 1st century AD activity. The quantity of sherds suggests that this site was on the periphery of a Roman settlement, and the mixed date range noted in several contexts, implies that there had been a degree of redeposition.

Fabric	No.	Wt(g)
AHFA	5	88
AMPH	4	325
BB2	4	100
BBS	4	21
CC	2	52
CGBLK	1	19
CSGW	4	78
GAUL	1	79
HWC	1	5
NAFR1	1	126
SAMCG	1	23
SAMEG	3	57
SAMSG	2	10
SAND	12	119
WS	2	18

Table 1: All Roman pottery by fabric

Context	No.	Wt(g)	EVE	Context Spot date
Topsoil	5	239	0	AD140-200
1	4	141	20	AD250-400
5	14	232	24	AD250-400
6	2	35	0	AD50-400
14	5	44	0	AD150-250
16	3	37	0	AD200-300
18	1	14	0	AD100-300
34	2	21	0	AD200-300
36	1	23	0	AD100-200
40	7	288	32	AD150-250
43	3	46	0	AD50-300
TOTAL	47	1120	76	

Table 2: All Roman pottery by context

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APPENDIX 3: ASSESSMENT OF CRUCIBLE FRAGMENT

Chris Jarrett

A single fragment, weighing 134g of a ceramic crucible used to make glass was recovered from context [40] and it was found with Romano-British pottery dated AD150-250 (Anderson, Appendix 2). The item consists of an everted simple rounded rim, slightly thickened internally. On the external wall of the vessel is found 35mm below the rim a gentle rounded cordon. What survives of the vessel wall suggests that it has a rounded profile. The diameter of the rim is 360mm. Internally the vessel has a thin. Smooth clear glass coating which stops short of the top of the rim. The glass contains very occasional off white angular inclusions up to 4mm. The surfaces of the vessel are grey, as is the core from the top of the cordon to the rim, while the, lower core area is oxidised pale orange. The reduced grey surface colour of the vessel may be the result of the item being used in a high-temperature activity, such as glass production. The fabric of the vessel is hard, while the texture is fine. The inclusions consist of abundant, well-sorted, mostly off-white, sub-rounded quartz, up to 0.5mm in size and very occasional black and dark reddish purple iron-rich inclusions containing fine quartzes, up to 1.25mm, although usually smaller. In the area of the oxidised part of the core it was also observed that the fabric is also marbled finely dark pink.

SIGNIFICANCE, POTENTIAL AND RECOMMENDATIONS FOR FURTHER WORK

Romano- British glass working crucibles are extremely rare in the London areas (J. Shepherd pers. comm.) as fired clay tanks were the preferred medium to melt imported glass 'cullet'. The crucible from Bury Street therefore has the potential to provide an important addition to the understanding of the technologies employed in the Romano-British glass industry in London and Roman Britain. It is recommended that the crucible is published along with the Romano-British glass assemblage recovered from the BUY14 archaeological excavation. The crucible fragment should be scientifically analysed. The glass coating requires XRF analysis in order to compare its composition with the glass production waste recovered from the site and the rest of London. The fabric of the crucible also requires petrological characterising by means of thin sectioning and ICP-AES analysis. This will help to determine the location of the clay source used to make the crucible. The vessel also requires illustrating to supplement the publication text.

APPENDIX 4: ASSESSMENT OF BUILDING MATERIAL

Kevin Hayward

INTRODUCTION AND AIMS

Three boxes of stone, brick and mortar were retained from the excavations at Bury Street, City of London (BUY14). This moderate sized assemblage (77 examples, 14.6kg) was assessed in order to:

- Identify (under binocular microscope) the fabric and forms of the Roman building materials as well as any evidence for later medieval or post-medieval occupation
- Identify the fabric of any of the unworked and worked stone in order to determine what the material was made of and from where it was coming from.
- Reference should also be made to the access catalogues for the building material (BUY14.mdb)
- Make recommendations for further study.

METHODOLOGY

The application of a 1kg mason's hammer and sharp chisel to each example ensured that a small fresh fabric surface was exposed. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10) and compared with Pre-Construct Archaeology's stone and ceramic building material reference collection. The appropriate Museum of London building material fabric code was then allocated to each item.

CERAMIC BUILDING MATERIAL 76 examples 14.5kg

Three quarters of the assemblage (75%) consists of Roman ceramic building material, with smaller quantities of medieval and post-medieval brick and peg tile.

Roman 52 examples 11.6kg

Condition

Only two contexts [16] and [40] have Roman material in a fresh enough condition that would suggest that it may not have been reused. Both of these contexts have large assemblages of brick – indicating that they may have once represented structures. The rest is in a reused and fragmentary condition indicating some recycling.

Early London Sandy Fabric Group 2815 (AD 55-160) 31 examples 6.9kg

2452; 2459a; 3004; 3006

By far the most common fabric both here and Roman London are the early (AD 50-160) 2815 red group using local brickearth with coarse moulding sand. All of the larger *bessalis* brick chunks from [16] and most from [40] were made of this material. The very coarse sub-type 3004 is present in all of the tesserae.

Later London Sandy Fabric Group 2459b; (AD 120-250) 8 examples 3.4kg

Later mica-dusted sandy fabrics with much finer moulding sand do turn up in some quantity including large brick fragments from [40]

Radlett Iron oxide Group early 3023; 3060 (AD 50-120) 10 examples 1kg

Roman ceramic building made from the very early Hertfordshire fabric group 3023 (AD 50-120) with frequent black iron oxide and small lumps of silt or with red iron oxide 3060 are present in a lot of the reused, worn tile fragments. This material may have been recycled on more than one occasion.

Forms

Brick 15 examples 8kg

Two contexts [16] [40] have large quantities of horizontal partially complete Roman bricks in two fabrics 2452 and the later 2459b. The fact that many do not appear to be fresh would suggest that they derive from an on-site or nearby Roman structure.

Tesserae 4 examples 100g

From [16] and [40] are four large (25mm x 25mm x 20mm) border tesserae these are all made from the very coarse sandy London fabric 3004 (AD 50-160).

Tegulae 4 examples 0.8kg

Most of the flanged roofing tile is made from London sandy fabric 2815 fabric and is in a fragmentary condition.

Imbrex 2 examples 0.2kg

The curved elements are in a highly abraded state

Flat Undiagnostic Tile 22 examples 2.2kg

Horizontal elements in the form of small fragments of tile are common throughout the site.

The Daub 3102 4 examples 0.2kg

Worked slightly burnt daub attesting to the presence of timber framed wattle and daub construction in the vicinity were identified in small lumps from [5] and [26]

Medieval 12 examples 0.7kg

2271 (1180-1450), 2586 (1180-1450); 2587 (1240-1450)

Fragments of thin sandy and iron oxide rich rectangular medieval roofing tile with coarse moulding sand are present intermixed with post-medieval brick and tile from [3], [8], [10] and with Roman materials from [14]. One example from [10] had splash glaze.

Post-Medieval 12 examples 2.2kg

Brick 7 examples 1.9kg

3046 (1500-1700)

3032 (1664-1900)

Chunks of early post-medieval red bricks from [3] and [8] bonded in a white cream mortar (T1) would suggest derivation from a 16th to 18th-century building. One post Great Fire brick from [3] bonded in a grey light mortar is typical in its form of a late 18th to 19th-century build.

MORTAR; CEMENT

A summary of the mortar types as well as their period of use from the excavations at BUY 14 are given below (Table 1).

Mortar/Concrete Type	Description	Use at BUY14
T1 Hard White Lime Mortar	Hard flint gravel mortar Individual lumps of flint 40mm	Early post-medieval associated with red brick [3]
T2 Grey Clinker Mortar	Hard grey clinker mortar	18 th - 19 th century associated with clinker brick [3]

Table 1: List of mortar types identified from the excavation BUY 14

STONE 1 example 0.1kg

3105/3106 Kentish Ragstone/Hassock stone *hard dark grey calcareous sandstone (Kent Ragstone); – Glaucontic sandstone (Hassock stone) - Hythe Beds. Lower Cretaceous (Lower Greensand) Maidstone area, North Downs*

A fragment of ragstone building rubble was recovered from [34]. This is the most common building stone for Roman London and is therefore ubiquitous everywhere.

DISTRIBUTION

Context	Fabric	Form	Size	Date range of material	Latest dated material	Spot date	Spot date with mortar
1	3060	Reused Radlett tile	1	50 120	50 120	50-120+	No mortar
3	2276; 3046; 3032; 2586	A mixture of early and later post medieval building material brick and roofing tile T1 lime mortar and T2 grey 18 th -century mortar	5	1180 1900	1664 1900	1700-1900	1750-1900
5	2452; 2459b; 3004; 3006; 3102	Late and early Roman fabric tile and tegulae fragments and burnt daub fragments	12	1500 bc 250	120 250	120-250	No mortar
8	2271; 3006; 3046; 3060	Medieval peg tile and early post-medieval brick and Roman tile	7	50 1800	1180 1800	1450-1700	No mortar
10	2271; 2587; 2276; 2452; 3060	Fragments of Roman tile medieval glazed peg tile	15	50 1900	1480 1900	1480-1600	No mortar
14	2271; 2459b; 3004	Roman tesserae; medieval peg tile late Roman brick fragment	4	50 1800	1180 1800	1180-1450	No mortar
16	2452; 3023	Large group of Roman brick and Radlett tile	7	50 160	55 160	55-160+	No mortar
20	2459b	Roman tile late	1	120 250	120 250	120-250	No mortar
26	3102	Chunk of burnt daub	1	1500 bc 1600	1500bc 1600	50-400	No mortar
32	2452	Roman tile	1	55 160	55 160	55-160	No mortar
34	2452; 3106	Roman brick and	2	50 1600	50 1600	55-400	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
		Hassock stone							
36	2452	Roman tile	3	55	160	55	160	55-160+	No mortar
38	2452; 3023	Roman tile	2	50	160	55	160	55-160+	No mortar
40	2452; 2459b; 3004; 3023	Large group of early and late Roman brick, bessalis Roman tesserae border; tegula and tile fragments	13	50	250	120	250	120-250+	No mortar
41	3060; 2459b	Roman tile early and late	2	50	250	120	250	120-250+	No mortar
43	2452	Roman tile	1	55	160	55	160	55-160+	No mortar

RECOMMENDATIONS/POTENTIAL

An assessment of the building materials (stone; ceramic building material; daub) from Bury Street shows that nearly 75% of it is Roman building material. By fabric there is a sizeable group (3.5kg) of later (AD 120-250) Roman micaceous dusted brick group 2459b which conforms to the sizeable later Roman pottery group from this site (Appendix 2). Of interest are two large groups of “fresher” Roman brick from [16] and [40] suggesting the proximity of a masonry building or possibly levelling courses from a defensive wall. Four individual cubes of border tesserae although indicative of a decorative floor in the vicinity are rather standard materials for London and merely comprise part of the background component to the overall assemblage.

By comparison the medieval component is very small and is limited to standard peg tile. Similarly there are only small quantities of early and late post-medieval brick and tile.

Only brief comment of this standard Roman building material assemblage needs to be made for any future publication.

APPENDIX 6: GLASS ASSESSMENT

Chris Jarrett & John Shepherd

INTRODUCTION

A small sized assemblage of glass was recovered from the site (one box). The glass dates entirely to the Roman period. The fragments show no evidence for abrasion, except for the presence of naturally weathered items. The assemblage is in a fragmentary state and consists of vessel glass and more importantly production waste. The glass was quantified by the number of fragments and weight. The assemblage was recovered from three contexts and individual deposits produced small (fewer than 30 fragments) groups.

All of the glass (40 fragments, weighing 467g, of which none are unstratified) was recorded in a database format, by type, colour and form. The assemblage is discussed by the vessel shapes and waste products, *etc.* and its distribution.

THE FORMS

A breakdown of the basic shapes or production waste is as follows:

Vessel, etc. forms

Jar, small rounded: 1 fragment, 3g

Vessel glass: 8 fragments 9g

Unidentified: 3 fragments, 5g

Window panes/ glass discs for slump formed bowls: 3 fragments, 15g

Production

Glass-coated burnt clay: 14 fragments, 397g

Cut-offs and trails cut off: 5 fragments, 18g

Lumps/trails or over-blow: 4 fragments, 17g

Moils/(?): 3 fragments, 4.5g

Small 'tube': 1 fragment, 0.5g

All of the glass consists of soda (natron) type (typical for the Roman period) although it is often unusually weathered, perhaps because the waste products were not annealed

Vessel glass etc

Jar, small rounded

Green tinted glass, occasional very fine to fine bubbles, free-blown. Rim (65mm in diameter), everted, and internally folded with a cavity and internal lid seating. 1 fragment, 3g. Context [5].

Miscellaneous fragments

Clear glass, slightly iridescent glass, occasional fine bubbles, flat fragment, very slight weathering of the surface. 26mm x 16 mm x 1.5mm thick. 1 fragment, 0.5g. Context [5].

Clear slightly iridescent glass, occasional very fine to fine bubbles, ?cast, flat fragment with a straight edge and slight ?crizzling. One surface has striations. 23mm x 12 mm x 3.5mm thick. Possible window glass. 1 fragment, 0.5g. Context [5].

Pale green tinted glass, slightly iridescent, very occasional fine bubbles, asymmetrical girder shape in section (wall and sherd with ridges on the surfaces), slightly weathered, 1 fragment, 4g. Context [34].

Vessel glass

Clear glass, slightly iridescent, occasional fine/medium bubbles, free-blown thin walled wall fragment. 1 fragment, 0.5g. Context [5].

Clear glass, slightly iridescent, occasional very fine bubbles, free-blown wall fragment, 2mm thick. 1 fragment, 0.5g. Context [5]

Clear glass, iridescent, occasional: fine bubbles, basal fragment, very slightly 'kicked' (the interior is raised and rounded), external surface is roughened ?optically blown. The interior has patches of crazing and slight weathering. 1 fragment, 2g. Context [5].

Pale green tinted, iridescent glass, occasional: fine bubbles, free-blown, ?footring fragment (65mm in diameter), fire finished and rounded, the 'underside' surface is crazed. Patchy slightly weathered surfaces. Fairly thick walled (5mm). 1 fragment, 0.5g. Context [5].

Clear glass, very slightly iridescent, occasional very fine to fine bubbles, free-blown cylindrical form, very thin walled. External surface has two horizontal pairs of lines (?tooling marks). The surfaces have zones of white, horizontal, semi-opaque streaks. 2 fragment, 2g. Context [6].

Clear glass, very slightly iridescent, occasional: very fine to fine bubbles, free-blown cylindrical form, very thin walled. Tooling marks. Possibly from the same vessel found in context [5]. 1 fragment, 0.5g. Context [34].

Blue-green tinted iridescent glass, occasional fine bubbles, optically blown fragment, 27mm x 25mm x 1.5-3mm thick. Possible window pane. Slightly weathered surfaces. 1 fragment, 3g. Context [34].

Window panes?

This group of material has been identified as window panes, however it is quite possible, as indicated in the text, that some of the fragments were discs of glass which were intended to be turned into bowls or dishes by slumping the disc over a mould.

Blue grey glass, very slightly iridescent, occasional, very fine bubbles, ?cast. Fire rounded edge, not flat, one surface also has a white ?mortar deposit, 40mm x 35 mm x 2-3mm thick. Possibly a disc of glass used to make a bowl by slumping it over a mould. 1 fragment, 5g. Context [5]

Greenish blue grey glass, occasional: very fine bubbles, ?cast. Fragment, not flat and one surface is roughened, while the top surface is smooth with slight bumps and a small patch of weathering, 28mm x 26mm x 2mm thick. 1 fragment, 5g. Context [5]

Blue grey tinted glass, iridescent, frequent fine and medium, elongated bubbles, ?cast. Flat fragment, fire finished rounded edge, weathered surfaces. The air bubbles are elongated and aligned in one direction (diagonal to the surviving edge). The surfaces are fairly smooth, 38mm x 21mm x 3mm thick. Possibly a disc of glass used to make a bowl by slumping it over a mould. 1 fragment, 5g. Context [34]

Production waste

Glass-coated burnt clay

Has the appearance of slag or fired clay with slag like glass on the surfaces. 14 fragments, 397g. Context [5]

Cut-offs, lumps, over-blows and trails

Cut-off, bluish-green glass, iridescent, occasional, fine rounded bubbles, irregular, rounded lump of glass with weathered surfaces, one surface has ?dichroism while another has an altered brown surface (possibly the fragment fell into the ash pit) slightly weathered, 1 fragment, 11g. Context [34]

?Cut-off/trail, greenish-blue glass, iridescent, occasional-moderate fine, spherical bubbles, C-shaped in section. Possibly a trail attached to a cut off fragment. The glass contains fine inclusions. 1 fragment, 3g. Context [34]

?Cut-off, pale blue green tinted glass, iridescent, occasional bubbles. Possibly a slither of thick walled glass, lightly weathered surfaces, 1 fragment, 2g. Context [34]

?Lump/trail, pale blue green glass, occasional very fine bubbles, rounded external surface with fine scale like crazing, rounded projecting bevel, possibly tooled exterior, occasional cracks throughout the wall. 1 fragment, 3g. Context [5]

Lump/trail, clear/pale green glass, very slightly iridescent, occasional to frequent fine bubbles, lump of glass, semi-rounded with a cavity, the lump due to its density has a pale green tint while a thin trail is folded back on to the lump is in clear glass. The lump contains an inclusion. Surface has large sized crazing. 37mm x 21mm x 12-15mm thick. 2 fragments, 8g. Context [6]

Over-blow or lump in pale green tinted glass, very slightly iridescent, occasional very fine to fine bubbles, a fragment with 'pillowing' on the exterior, 1 fragment, 6g. Context [5]

Moils

Clear, very pale green tinted glass, very slightly iridescent, moderate to frequent, very fine and bubbles, possibly aligned, free-blown flattened top (18mm in diameter) with an internal bevel with blackened/discoloured glass on the internal bevel. Black impurity spots on the interior of the conical neck. Diagonal tooling marks. 1 fragment, 3g. Context [5].

?Moil. Clear glass, iridescent, occasional fine bubbles, free-blown part of a very thin walled narrow cylinder. Distorted with a pinched cut end. The surfaces have weathering. 14mm x 10+mm in diameter, 1 fragment, 1g. Context [34].

?Moil. Clear glass, iridescent, occasional fine bubbles, free-blown, part of a very thin walled narrow cylinder. The surfaces have a white weathering, 30mm x 10mm in diameter. 1 fragment, 0.5g. Context [34]

Small 'tube'

Small 'tube', clear glass, slightly iridescent, occasional very fine bubbles, free-blown. Penannular tube with broken ends. There is a gap running down the length of one side, but partially closed at one end. ?possible rod for trailing. 34mm in length x 3mm in diameter. 1 fragment, 0.5g. Context [5]

DISTRIBUTION

All of the glass was recovered from Phase 2 contexts. Its distribution is shown in Table 1.

Context	Phase	Size	No. of fragments	Weigh (g)t	Forms, etc	Spot date
5	2	S	27	427	altered glass, jar, small rounded, ?lump/trail or over-blow, moil, small 'tube', unidentified, vessel and window pane	50-400 AD
6	2	S	4	10	Lump/trail or vessel	50-400 AD
34	2	S	9	30	?cutoffs/trail, ?moil, unidentified, vessel and window pane	50-400 AD

Table 1. BUY14: distribution of the glass showing each context it occurred in, the phase and quantification by number of fragments, assemblage size, the forms present and a considered deposition date is shown.

SIGNIFICANCE, POTENTIAL AND RECOMMENDATIONS FOR FURTHER WORK

The glass is of significance at a local level. Glass making in Roman London was largely confined to the northern area of the town, with a notable assemblage recovered from Basinghall Street (BAZ05) and although evidence has been recovered from across the settlement, it is rare in the area of the eastern part of the square mile. Indeed, the Bury Street assemblage adds to the corpus of a small number of sites in this area, which consists of dumps dated to the late 1st century found to the south at St Dunstan's Hill (GM13) and the Inmost Ward, Tower of London (GM163) (Museum of London <http://archive.museumoflondon.org.uk/Londinium/analysis/worklife/Craft/>).

The potential of the glass is to add further to an understanding of the glass industry in *Londinium*. In addition to the glass waste and possible cullet in the assemblage, a possible crucible has been identified amongst the Roman pottery and adds to the material culture of the glass industry identified on the site (see Appendices 2 & 3).

We now have a large amount of information for the glass working industry in Roman London. Redeposited furnace debris and glass-working waste has come from sites dating from the third quarter of the first century through to the end of the second century. All of this suggests that broken glass was being recycled, although there might have been some localised alteration of the composition of this glass in order to achieve better quality results. The debris of this date appears to be found either on or adjacent to the glass working sites themselves, for example at Regis House, Old Bailey, Guildhall Yard, and Basinghall Street (Shepherd & Wardle 2009).

There is only one very small group of glass that appears to come from the later Roman period, found as part of the landfill dump at Norton Folgate in the third or fourth century. This small assemblage, however, is significant in that it contains the only potential glass-working crucible fragment that can be identified from the entire pottery assemblage from Roman London. All evidence before the third century suggests that the furnaces contained the glass in small tanks or reservoirs, included in the superstructures of the furnaces themselves. The use of pottery crucibles would appear to be a later development of the furnace design, requiring a shelf to be built inside the furnace.

Crucible fragments from York also date to the late Roman period - and it is possible that these were used for primary glass making as opposed to secondary glass working. These crucibles were ordinary ceramic vessels, selected, one would presume, because they were fired at a high temperature and so likely to withstand reheating to those temperatures required for glass making and working.

The crucible fragment from context [40] would appear to be made of Overley-Tilford ware, or Portchester D. It matches Millett's Dish Type 7, Neatham types 26 and 27 (Millett 1979 See also *Britannia* X, 1979, p.124-5, fig.2.7. It is Millett's fabric 2, which he describes at the foot of page 123. He states that at Neatham this fabric post dates AD 320, a date that might be of significance here. One would suspect that these thick-walled, sandy fabric bowls would be

suitable for glass working and the fragment here has a thin layer of glass down one side - although not across the entire interior of the fragment. There are other heavily secondarily fired fragments which may also be damaged and discarded crucibles.

The date of the other pottery from the context in which it was found, being late Roman, would make this contemporary with the material found at Norton Folgate. That both have crucibles fragments, in contrast to the absence of crucibles in the earlier assemblages, makes this at a glance consistent with our expectations that the later industry was crucible reliant, rather than tank/reservoir.

The study of this small assemblage would be a major addition to our understanding of the later Roman glass industry in London - and, as such material in the UK is so rare - to the later Roman provinces of Britannia. Any analysis and study should also include comparison with the small amount of material from Norton Folgate. Specific research questions are:

- 1) Compare the glass in the crucible with known late Roman compositions in the western empire, to assess for glass source.
- 2) Compare the glass in the crucible and the other fragments associated with it to assess similarity or otherwise.
- 3) Compare the glass from this site, both debris and crucible, with the assemblage from Norton Folgate to assess what degree of relationship exists between them.
- 4) To examine if the glass from this site includes any glass making debris or only secondary working.
- 5) Examination of the pottery fragments should be carried out to calculate the temperatures required to cause the distortions to those shattered fragments.
- 6) Confirm the source of the pottery for the crucible.

Following the above research it is recommended that a publication report is written on the BUY14 glass working assemblage. In order for the assemblage to be compared to other London glass working groups, then samples of the glass (and the fragment of ceramic crucible) need to be subjected to X-ray fluorescence spectrometry (XRF). This will determine the composition of the glass. It is recommended that the glass jar rim and the three moils are drawn, while other material can be illustrated using photography to complement the text.

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APPENDIX 7: POST-ROMAN POTTERY ASSESSMENT

Chris Jarrett

INTRODUCTION

A small sized assemblage of post-Roman pottery was recovered from the site (one box). The pottery dates from the medieval and early post-medieval periods. Very few sherds show evidence for abrasion and were probably deposited fairly rapidly after breakage. The fragmentation state of the pottery consists only of sherd material although the forms could mostly be identified. The pottery was quantified by sherd count and estimated number of vessels (ENV), besides weight. Pottery was recovered from four contexts and individual deposits produced only small (fewer than 30 sherds) groups of pottery.

All of the pottery (eighteen sherds, 15 ENV and weighs 452g and none is unstratified) was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in a database format, by fabric, form and decoration. The classification of the pottery types is according to Museum of London Archaeology (2013). The pottery is discussed by types and its distribution.

THE POTTERY TYPES

The quantification of the pottery for each post-Roman archaeological period is as follows:

Medieval: seven sherds, 7 ENVs, 255g

Post-medieval: eleven sherds, 8 ENVs, 197g

The range of pottery types is listed in Table 1

Medieval

The earliest pottery types occurred together in context [41] and consist of single body sherds of early medieval sand- and shell-tempered ware (EMSS), dated 1000-1150 and early medieval shell-tempered ware (EMSH), dated 1050-1150. Both sherds are externally sooted and were probably derived from cooking pots. Made in c. 1080-1200 dated coarse London-type ware (LCOAR), is a cooking pot with an expanded, narrow squared rim and the item is reduced. It was solely found in context [38]. The other medieval pottery recorded in the assemblage dates more so to the late medieval period. Sherds of coarse Surrey-Hampshire border ware (CBW), dated 1270-1500, although more common in London from c. 1350, occurs as two sherds from unidentified forms (context [10]), while a glazed sherd found in context [3] may be from a large rounded jug dated c. 1340-1500. A sherd of Cheam ware (CHEA), dated 1350-1500 was noted in context [3] and was from a green-glazed jug.

Post-medieval

The most frequent post c. 1480 dated ware occurs as London-area early post-medieval redware (PMRE), dated 1480-1600 and it is recorded as bowl or dish sherds found in contexts [3] and [8], while from the latter deposit is found the base of a rounded jug. London-

area post-medieval slipped redware with clear glaze (PMSRY), dated 1480-1650 occurs only in the form of a bowl or dish base with a reduced glaze and this was found in context [8]. A sherd of early Surrey-Hampshire border whiteware (EBORD), dated 1480-1550 was found in context [10] and may have been derived from a drinking form, perhaps a cup. The only imported ware in the assemblage are sherds from a German Raeren stoneware (RAER) rounded drinking jug, the form being dated c. 1480-1600 and it was recovered from context [3].

Pottery-type	Code	Date range	SC	ENV	Weight (g)
Medieval					
Coarse Surrey-Hampshire border ware	CBW	1270-1500	3	3	36
Cheam whiteware	CHEA	1350-1500	1	1	4
Early medieval shell-tempered ware	EMSH	1050-1150	1	1	24
Early medieval sand- and shell-tempered ware	EMSS	1000-1150	1	1	37
Coarse London-type ware	LCOAR	1080-1200	1	1	154
Post-medieval					
Early Surrey-Hampshire border whiteware	EBORD	1480-1550	1	1	2
London-area early post-medieval redware	PMRE	1480-1600	5	5	116
London-area post-medieval slipped redware with clear (yellow) glaze	PMSRY	1480-1650	3	1	61
Raeren stoneware	RAER	1480-1610	2	1	18

Table 1. BUY14: post-Roman pottery types quantified by sherd count (SC), estimated number of vessels (ENV) and weight measured in grams.

DISTRIBUTION

Table 2 shows for each context containing pottery, the number of sherds, ENV and weight, besides the earliest and latest date for the most recent pottery type. The pottery types found in each deposit are shown, as is a spot date for the group. All of the Post-Roman pottery was recovered from Phases 3, 4 and 5.

Context	Phase	Size	SC	ENV	Wt (g)	Context ED	Context LD	Pottery types	Spot date
3	5	S	7	6	147	1480	1550	CBW, CHEA, PMRE and RAER	1480-1550
8	4	S	5	3	76	1480	1650	PMRE and PMSRY	1480-1600
10	4	S	3	3	14	1480	1550	CBW and EBORD	1480-1550
38	3	S	1	1	154	1080	1200	LCOAR	1080-1200
41	3	S	2	2	61	1050	1150	EMSH and EMSS	1050-1150

Table 2. BUY14: Distribution of pottery types showing individual contexts containing pottery, what phase the context occurs in, the number of sherds, ENV and weight, the date range of the latest type, the fabrics present and a suggested deposition date (spot date). SC: sherd count, ENV: estimated number of vessels.

SIGNIFICANCE OF THE COLLECTION

The pottery has little significance at a local level. The pottery is in keeping with the ceramic profile for the London area.

POTENTIAL OF THE COLLECTION

The pottery has the potential to date the features in which it was found and to provide a sequence for them. None of the pottery merits illustration.

RECOMMENDATIONS FOR FURTHER WORK

There are no recommendations for further work on the assemblage.

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APPENDIX 8: ANIMAL BONE ASSESSMENT

Kevin Rielly

INTRODUCTION

The site is situated in the north-eastern part of the City close to the Roman and medieval northern perimeter and just north of Leadenhall Street and immediately east of St Mary Axe. Excavations revealed Roman, early medieval and early post-medieval occupation horizons, each of which provided minor quantities of animal bones, all of which was hand collected. The fish bones from deposit [8] were identified by Philip Armitage.

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.

Context	Date	Phase				
		ER	LR	EM	EPM	UD
1	250-400		1			
3	1480-1550				6	
5	250-400		3			
8	1480-1600				40	
10	1480-1550				4	
16	200-300		5			
18	100-300		15			
34	200-300		3			
36	100-200	7				
38	1080-1200			2		
40	150-250	5				
41	1050-1150			8		
43	50-300		4			
45						1
Grand Total		12	31	10	50	1

Table 1. Distribution of animal bones by context and 'phase' (based on dating evidence) where ER is Early Roman, LR Late Roman, EM early medieval, EPM early post-medieval and UD is undated

DESCRIPTION OF FAUNAL ASSEMBLAGE

The site provided a hand recovered total of 104 animal bones, as shown in Tables 1 and 2. These have been sorted into approximate 'phases' based on the dating evidence, as shown for individual deposits in Table 1 and amalgamated in order to describe the distribution of species in Table 2. The great majority of the bones taken from these deposits were well preserved and there was no indication of gross fragmentation. However, a single abraded

piece was recovered from an early post-medieval deposit [3] and there was a general scatter of cess encrusted fragments.

Dating:	ER	LR	EM	EPM	UD
Species					
Cattle	10	21	4	3	1
Equid	2				
Cattle-size		5		5	
Sheep/Goat		1	3	4	
Pig		1	1	2	
Sheep-size		3	2	6	
Common sole				1	
Turbot				1	
Uniden fish				28	
Grand Total	12	31	10	50	1

Table 2. Distribution of animal bones by species and 'phase' (based on dating evidence) and see Table 1

Roman

The Roman deposits provided about 50% of the bones and most of these (including the cattle-size fragments) could be identified as cattle. Both 'phases' tend to favour head and foot parts, ER with 8 out of 10 bones and LR with 18 out of 21, perhaps indicative of waste from butcher's shops/markets in this locality. All of the cattle bones were from adult individuals. There is a minor quantity of sheep/goat and pig, with the remainder of the Roman collection comprising two equid fragments – the major part of a fused radius/ulna and a pelvis fragment. The former bone displays some exostoses (bony growth) at the base of the ulnar semilunar articulation. Notably, the sheep/goat fragment, a metatarsus, is from a young lamb, suggestive of the exploitation of succulent meats or perhaps representative of an infant mortality and therefore indicative of local animal stalling/breeding.

Early medieval

This collection featured a greater mix of species and skeletal parts. One of the sheep/goat bones was clearly identifiable as sheep – a large ram horncore. All of the bones were clearly from adult individuals.

Early post-medieval

The bones from the latest phase consisted of another mix of species and parts. A small quantity of fish bones was recovered from [8], these including caudal vertebrae of common sole and turbot with the remainder, comprising spines and fin rays, probably derived from these two fish. There was the usual predominance of adults amongst the domesticate collection, with a single exception, a cattle tibia from [8] which is clearly juvenile, possibly representing a veal cut.

CONCLUSION AND RECOMMENDATIONS FOR FURTHER WORK

The collections from each 'phase' are clearly too small to warrant any detailed analysis. There are some interesting aspects, in particular the evidence for probable and extended butcher's activity in this locality during the Roman period. Such deposition will have clearly biased species representation, however, the predominance of cattle is undoubtedly a notable feature of contemporary collections from other Roman sites in the city, as for example at the nearby sites of 14-21 St Mary Axe and 71 Fenchurch Street (Rielly 2002, 97 and Rielly 2006, 166). It is perhaps worth stating that neither of these sites provided evidence for cattle butchering activities.

While the information highlighted in this report should be included in any forthcoming publication, obviously an edited version following a more thorough review of the dating and stratigraphic information, there is no requirement for further analysis of this data.

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APPENDIX 9: OASIS FORM

12.1 OASIS ID: preconst1-215855

Project details

Project name 11-12 Bury Street, City of London

Short description of the project Natural Terrace Gravel was recorded at the base of the sequence and was overlain by material that may have been a possible buried soil horizon of early Roman date. Large pits suggest that parts of the site may have been quarried for brickearth extraction during the Roman period but subsequently there was possibly domestic occupation with cess pits and possible timber structures being present. A notable element of the Roman artefactual assemblage was a quantity of material suggesting that glass-working had taken place on or in the near vicinity of the site utilising crucibles. The late and/or post-Roman period was dominated by the accumulation of an extensive 'dark earth' deposit, similar to material dated as Anglo-Saxon at nearby sites but here lacking such dating evidence. The site was not significantly re-occupied until the years immediately following the Norman Conquest; activity being represented by two apparent cess pits located towards the western edge of excavation. These features are likely to have been located in yard areas to the rear of properties fronting onto a forerunner of modern Bury Street and may provide evidence of an early street layout in the 12th century. There was little evidence of later medieval occupation, mainly because later deposits were extensively truncated by construction of the current basement. However, there was clearly activity in the early post-medieval period, represented by a chalk block-lined well of likely 16th-century date, which also lay in a yard area to the rear of Bury Street properties. Final backfilling of the well probably took place in the 18th century, the last phase of activity detected archaeologically, prior to the construction of the basement.

Project dates Start: 06-01-2015 End: 13-05-2015

Previous/future work No / No

Any associated project reference codes BUY14 - Sitecode

Type of project Recording project

Site status None

Current Land use Industry and Commerce 2 - Offices

Monument type PIT Roman

Monument type CESS PIT Roman

Monument type POST HOLE Roman

Monument type CESS PIT Medieval

Monument type PIT Post Medieval

Monument type	WELL Post Medieval
Significant Finds	POTTERY Roman
Significant Finds	BUILDING MATERIAL Roman
Significant Finds	GLASS Roman
Significant Finds	ANIMAL BONE Roman
Significant Finds	POTTERY Medieval
Significant Finds	BUILDING MATERIAL Medieval
Significant Finds	ANIMAL BONE Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	BUILDING MATERIAL Post Medieval
Significant Finds	ANIMAL BONE Post Medieval
Significant Finds	CRUCIBLE Roman
Investigation type	"Part Excavation", "Watching Brief"
Prompt	National Planning Policy Framework - NPPF

Project location

Country	England
Site location	GREATER LONDON CITY OF LONDON CITY OF LONDON 11-12 Bury Street
Postcode	EC3A 5AT
Study area	118.00 Square metres
Site coordinates	TQ 3337 8124 51.5138228245 -0.0777465700657 51 30 49 N 000 04 39 W Point
Height OD / Depth	Min: 9.72m Max: 10.20m

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project originator	brief Kathryn Stubbs
Project originator	design Richard Meager
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Type of Developer
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Project archives

Physical Archive LAARC
recipient

Physical Contents "Animal Bones","Ceramics","Glass"

Digital Archive LAARC
recipient

Digital Contents "Animal Bones","Ceramics","Glass"

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

Paper Archive LAARC
recipient

Paper Contents "Stratigraphic"

Paper Media "Context sheet","Matrices","Plan","Unpublished Text"
available

Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title AN ASSESSMENT OF ARCHAEOLOGICAL INVESTIGATIONS
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