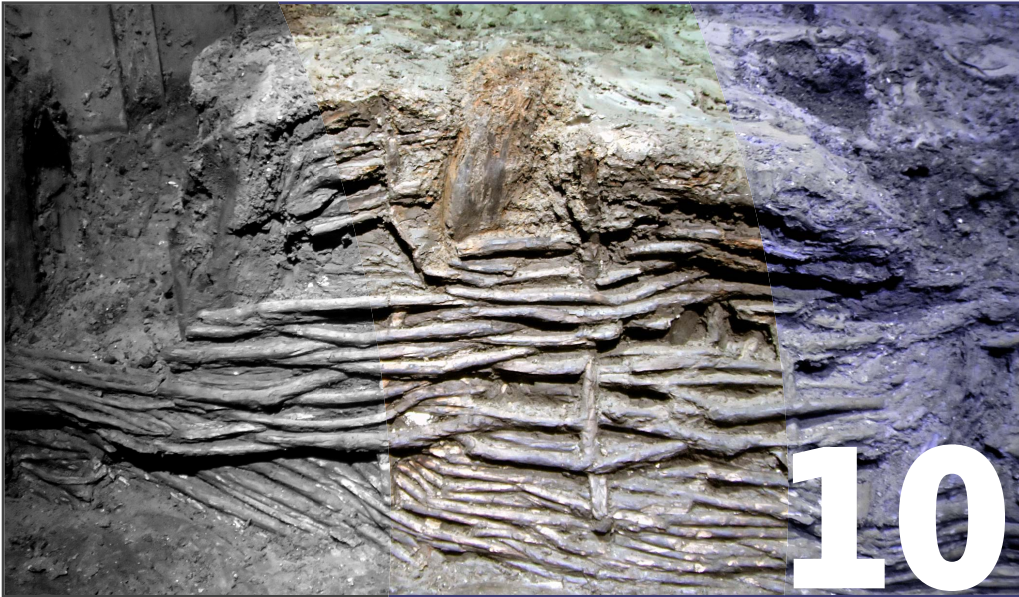


# LONDON BRIDGE STATION LONDON BOROUGH OF SOUTHWARK

THAMESLINK ARCHAEOLOGICAL ASSESSMENT



## Post-Excavation Assessment

July 2014

# **Thameslink Archaeological Assessment 10: Archaeological Excavations at London Bridge Station Improvement Works, London Borough of Southwark**

**Site Codes:** BVM12 (with reference to JNE99, LBS08 & LBZ10)

**National Grid Reference:** Centre - TQ 329 801

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# 1 ABSTRACT

- 1.1 This assessment details the results and working methods of archaeological investigations conducted as part of the London Bridge Station Improvement Works, London Borough of Southwark (Fig. 1). The archaeological work was funded by Network Rail and was undertaken to discharge conditions attached to the planning permission for the Improvement Works granted by LB Southwark on 29/03/12 (planning ref 11/AP/1987) as detailed in the 'London Bridge Station Improvements: Written Scheme of Investigation (Archaeology)' (NWR 2012b). Amendments to the latter were prompted by late changes to foundation designs, prompting the archaeological excavation of three additional trenches. These were referenced as Trenches WA1, WA2 and WA3, the results of which are included as Appendix 22, as these were very late additions to the scope of works and the main assessment report had been largely completed.
- 1.2 The archaeological investigations detailed in this document were centred at National Grid Reference TQ 329 801 and constitute 'Thameslink Archaeological Assessment 10 – London Bridge Improvement Works'. The archaeological investigations were conducted by OA-PCA under the site code BVM12 and included an extensive Geoarchaeological Borehole Survey undertaken under the same site code. The archaeological investigations were conducted between 18th July 2012 and 31st March 2013. These works were supplemented by the archaeological excavation of Trenches WA1 to WA3 between 7th October and 31st January 2014. A further phase of intermittent watching brief continued after the completion of these trenches and continues to the present. Any significant findings from these investigations will therefore be incorporated into later analyses and publication.
- 1.3 The archaeological investigations encountered the uppermost archaeological horizon at 4.21m OD and demonstrated the presence of a stratified archaeological sequence measuring up to c.3.25m in thickness.
- 1.4 The geoarchaeological borehole survey demonstrated an underlying geological sequence of Pleistocene gravels overlain by late Pleistocene/early Holocene sands, and freshwater fluvial sands. These were overlain by a thin but laterally extensive peat horizon potentially dated to the Bronze Age. Undulations in the topography consistent with the profile of Guy's Channel were evident from the respective elevations of the gravels, with indications of an eastern and western eyot edge environment located within the vicinity of Trenches G and H2. This sequence was overlain by Roman reclamation and channel deposits. Post Roman flood deposits are likely to correspond with the late 2nd/3rd-century failure of flood defences and decline of foreshore management strategies. Significant quantities of land reclamation sealed this episode of flooding and date to the late medieval and post-medieval periods.

- 1.5 The archaeological sequence comprised evidence of activity from the late 2nd/early 3rd century AD up to modifications immediately pre-dating and in association with the railways during the mid to late 19th century.
- 1.6 Limited evidence of Roman activity was encountered across the site barring extensive ground consolidation layers and surfaces recorded within augerholes. Two trenches yielded structural remains. Within one (Trench A5) were displaced structural elements relating to a land-tie, indicating that attempts were made to manage Guy's Channel during the late 2nd to 3rd century. The documented collapse and decline of Roman waterfronts and foreshore management was reflected in the archaeological and geoarchaeological record by extensive deposits of late Roman/post Roman flood layers and a return to tidal conditions across the majority of the site.
- 1.7 Three broad phases of activity were identified relating to the medieval period. These dated between the 11th to 13th centuries, later 15th century and early/mid 16th century. Widespread ground raising and management of the numerous channels that bisected the area were evident across the site. Development proliferated after 1480 and included the construction of a number of potentially high status properties associated with the ribbon developments along Tooley Street and Bermondsey Street. Some of the earliest evidence for particular industries was also recorded for this phase of activity, and included smithing, butchery and tawing. Evidence relating to the former precinct of St Thomas's Hospital was also evident in one of the westernmost trenches and comprised a number of graves presumably representing one of the hospital burial grounds.
- 1.8 The early post-medieval period saw continued attempts to manage the waterways and illustrated that the wider area was still prone to sporadic flooding. The industrial practices of butchery, leather working, metal working and smithing continued into this period, with a particular intensity of smithing works taking place in the south-west of the site. Other developments attributed to this phase included the construction of multi-phase properties associated with both domestic and industrial premises.
- 1.9 By the later post-medieval period the site became increasingly developed, with former properties being sub-divided and expanded into previously undeveloped areas. Evidence of industrial practices continued, but at a lesser scale than earlier periods and comprised leather waste, smithing/iron working and potential pin manufacture. Towards the early/mid 19th century the earlier revetted channels appear to have been largely replaced with brick culverts. These features may reflect increasingly demand for improved sanitation as well as facilitating in the construction of London Bridge Station and associated viaducts.

## 2 INTRODUCTION

- 2.1 This assessment details the results and working methods of archaeological investigations conducted as part of the London Bridge Station Improvement Works, London Borough of Southwark (Fig. 1). The archaeological work was funded by Network Rail and was undertaken to discharge conditions attached to the planning permission for the Improvement Works granted by LB Southwark on 29/03/12 (planning ref 11/AP/1987) as detailed in the 'London Bridge Station Improvements: Written Scheme of Investigation (Archaeology)' (NWR 2012b).
- 2.2 The principal objectives of Thameslink are: to reduce crowding on Thameslink and other London commuter services; reduce overcrowding in the underground; reduce the need for interchange between mainline and underground services; to provide new cross-London services, and; to facilitate dispersal of passengers from St Pancras following the completion of HS1. To achieve this, the Thameslink Programme included proposals for substantial construction works in London at Blackfriars Station, Farringdon Station, London Bridge Station and also between Metropolitan Junction and London Bridge Station. The construction works at London Bridge Station include substantial redevelopment work to provide a new station layout for improved passenger access and circulation. The works include the construction of a new street-level station concourse, the construction of new replacement facades on Tooley Street and St Thomas Street and the installation of new roof canopies, landscaping and other works associated with the station (NWR 2012b; Fig. 1).
- 2.3 The archaeological investigations of the Thameslink project have been divided into 10 areas, each of which is the subject of a separate assessment report. Nine of the areas are in Southwark, 8 along the course of the new Borough Viaduct (Assessments 1-7 & 9), one is at London Bridge Station (Assessment 10), whilst the remaining one is at Blackfriars Station, City of London (Assessment 8). The Assessments incorporate the results of the following archaeological investigations.

Assessment	Site Name	Site Code
Assessment 1	Vaults 2, 5 & 9, Railway Approach	BVL10
Assessment 2	11-15 Borough High St	BVK11
Assessment 3	Pile Cap P, Green Dragon Court	BVJ10
	Pile Cap P & Pile Locations 1-6, 16-26 Borough High St, 1-7 Green Dragon Court; Test Pit 5 (Borough High St); Test Pits 6 & 21 (7 Bedale St)	BVX09
	Pile Locations N1 & N2	BVW10
Assessment 4	2-4 Bedale St	BVG10
Assessment 5	Borough Market	BVF10
	Pile Locations K1, K2, L1, L2, M1 & M2 Borough Market	BVU09
Assessment 6	The Wheatsheaf	BVE11

	Rear of 6-7 Stoney St & Test Pits 1-2, 8-9, 13, Stoney St & The Wheatsheaf	BVT09
Assessment 7	Arches 12-16 Park St Pile Caps A-H rear of Southwark St & Park St; Test Pits 14 & 17 Redcross Way & Test Pits 10-12, 15-16 Park Street	BVB10 BVQ09
Assessment 8	Blackfriars Station, New Bridge St, Queen Victoria St & Blackfriars North	THB09
Assessment 9	Western Approach Viaduct (formerly Station Approach Viaduct)	BVC12
Assessment 10	London Bridge Station Improvement Works	BVM12

- 2.4 The archaeological investigations detailed in this document were centred at National Grid Reference TQ 329 801 and constitute 'Thameslink Archaeological Assessment 10: London Bridge Improvement Works' (hereafter 'The Site'). The site is located between Stainer Street in the west and a line drawn from Battle Bridge Lane to the junction of Weston Street and St Thomas Street in the east. 'Thameslink Archaeological Assessment 9 – Western Approach Viaduct' is located to the west of the site.
- 2.5 As part of the London Bridge Station Improvement Works, archaeological watching briefs were conducted on the reduction of modern made ground, followed by archaeological excavation to pre-defined 'project levels' set by the depth of the adjacent viaduct foundations. The depth was set to remove or minimise any impact on the structural integrity of the viaduct. The archaeological WSI also specified that archaeological deposits beneath this depth would be assessed during a comprehensive borehole survey (Appendix 20). If necessary, provision was also made 'for the excavation or preservation in situ of any substantial timber structures' (NWR 2012b).
- 2.6 The archaeological investigations conducted as part of Thameslink Archaeological Assessment 10 (BVM12) comprised: the archaeological excavation of 18 trenches (including one mitigation trench, A5), and 68 augerholes. These works were supplemented by watching briefs on larger or deeper areas of ground reduction which included the excavation of a large attenuation tank on Bermondsey Street (AT1), the excavation of a series of slit trenches (A4) to ascertain the presence or otherwise of cemetery soils, and the monitoring of pre-piling ground reduction in arches E39, E39A, E122 and E123.
- 2.7 An additional three trenches (WA1-3) were excavated between October 2013 and January 2014 in Western Arcade to the west of Stainer Street (Fig. 2). The summary results of this investigation are presented in Appendix 22.
- 2.8 The archaeological site work was supervised by Amelia Fairman, James Langthorne, Mark Beasley and Paw Jorgensen whilst the geoarchaeological survey was supervised by Carl

Champness. The site was undertaken under the project management of Peter Moore and Dan Poore. Chris Place (Network Rail Project Archaeologist) acted as archaeological advisor to Network Rail and the progress of the archaeological investigations were monitored by Dr Chris Constable (Senior Archaeology Officer, Southwark Council).

- 2.9 This document presents a post-excavation assessment of the stratigraphic record, finds and environmental data from the fieldwork.
- 2.10 The completed archive for 'Thameslink Archaeological Assessment 10' will be deposited at the London Archaeological Archive and Research Centre (LAARC) under the site code BVM12. The deposited archive will comprise artefactual material and written, drawn and photographic records.



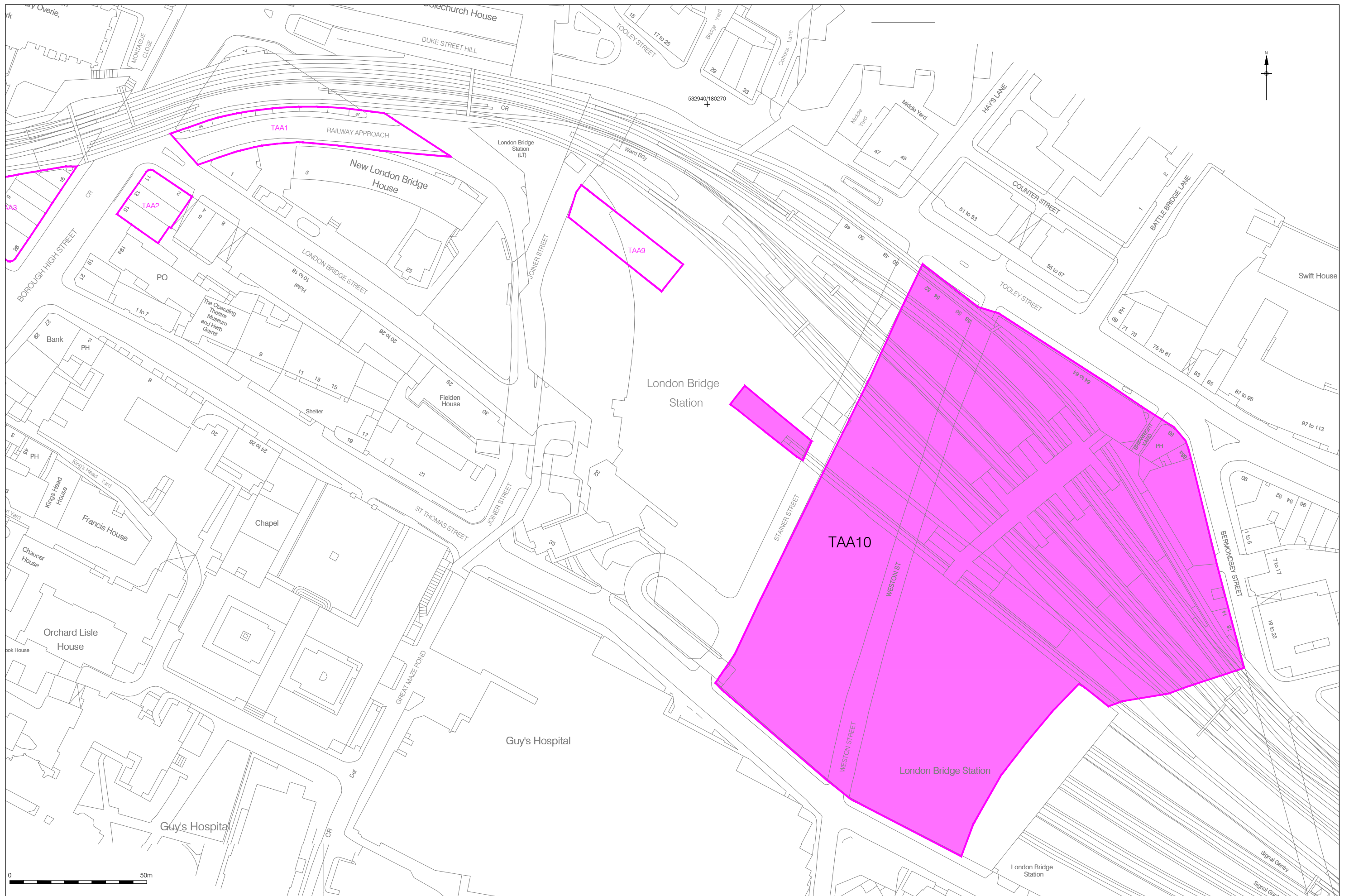




Figure 2  
Trench Locations  
1:800 at A3

### 3 PLANNING BACKGROUND

#### 3.1 London Bridge Improvement Works

3.1.1 Planning permission was granted by the London Borough of Southwark for redevelopment by Network Rail at London Bridge Station on the 29th March 2012 (planning ref 11/AP/1987). Several conditions regarding archaeological assets were attached to the planning permission. These comprised:

- Condition 3

*Before any work hereby authorised begins, a detailed scheme showing the complete scope and arrangement of the foundation design and all ground works shall be submitted to and approved in writing by the Local Planning Authority and the development shall not be carried out otherwise than in accordance with any such approval given.*

*Reason: In order that details of the foundations, ground works and all below ground impacts of the proposed development are detailed and accord with the programme of archaeological mitigation works to ensure the preservation of archaeological remains by record and in situ in accordance with saved policy 3.19 of the Southwark Plan (July 2007) and policy 12 of the Core Strategy 2011.*

- Condition 4:

*Before any work hereby authorised begins, excepting demolition, the applicant shall secure the implementation of a programme of archaeological mitigation works in accordance with a written scheme of investigation, which shall be submitted to and approved in writing by the Local Planning Authority and the development shall not be carried out otherwise than in accordance with any such approval given.*

*Reason: In order that the details of the programme of works for the archaeological mitigation are suitable with regard to the impacts of the proposed development and the nature and extent of archaeological remains on site in accordance with saved policy 3.19 of the Southwark Plan 2007 and policy 12 of the Core Strategy 2011.*

3.1.2 A number of additional conditions relating to archaeology were also specified and comprised:

- *Requirement for a programme of public engagement works (Condition 5)*
- *Requirement for the submission of a post-excavation assessment report within twelve months of the completion of archaeological site works (Condition 6)*
- *Requirement that a display case in public areas be provided for significant finds (Condition 7)*

3.1.3 A written scheme of investigation (NWR 2012b) was subsequently compiled for the below-ground archaeological assets on site. Compilation of this document was advised by a programme of archaeological works which had been undertaken prior to the granting of planning consent. These comprised:

- *Desk-based assessment and field evaluation (MOLA 2011b);*
- *Environmental statement (Parsons Brinckerhoff 2011)*
- *Draft Scope of Archaeological Investigations (NWR 2012a)*

3.1.4 The 2012 WSI specified the following scope of works (see NWR 2012b for referenced drawings):

#### ***Removal of viaduct foundations***

*Removal will be localised to structures that represent impediments to piling or other groundwork. Geotechnical investigations indicate that stepped brick footings extend to approximately 1.4–2m below ground level and are built on weak concrete ‘pads’, extending up to 0.3m beyond the lowest brick offset, with a formation level at approximately 99.7m (i.e. –0.30m OD). Removal would be in open cut, stepped or battered to maintain stability.*

#### ***Street level concourse***

##### **Buttress walls**

*The buttress walls will be supported on rows of 450mm diameter piles, including an inner line of raking piles. The pile cap formation level is at a minimum of 102.35. The pile caps are typically 1.5m deep with 275mm of finishes on top (see drawings N420-WSP-DRG-ST-003021, N420-WSP-DRG-ST-003022, N420-WSP-DRG-ST-006041).*

##### **Construction of piling mat**

*Although not designed in detail, this would usually require the importation of Type 1 fill. Localised excavation may be required to remove unsuitable material, though a geotextile /light geogrid could be implemented to avoid excavation of soft spots.*

##### **Piling and pile caps for supporting columns**

*The proposed piles and pile caps are illustrated on drawings N420-WSP-DRG-ST-003011, N420-WSP-DRG-ST-003012, N420-WSP-DRG-ST-003021, N420-WSP-DRG-ST-003022, and N420-WSP-DRG-ST-006041. The pile diameters will be*

900mm and 450mm. The undersides of the pile caps extend to a minimum level of 101.575m and the pile caps are typically 2m deep with 375mm of finishes on top.

#### Lift pits and escalators

Locations are illustrated on drawings N420-WSP-DRG-ST-003011, N420-WSP- DRG-ST-003012, N420-WSP-DRG-ST-003021, N420-WSP-DRG-ST-003022 and N420-WSP-DRG-ST-006041. The bases to lift/escalator pits will typically be 450mm deep. A typical section through an escalator/lift services trench shows excavations extending locally to 1.07m below the finished floor level. Piling will be restricted to a minimal number (four) of 450mm diameter piles per structure.

#### Excavation to formation level

The street level concourse will consist of a 425mm thick reinforced concrete slab with a FFL of 103.83m to 104.47m (Drawing N420-WSP-DRG-AR-003004). Current information indicates that excavation to formation level will extend to a minimum level of 103.210. It is possible that localised excavation to greater depths may be required to remove unsuitable ground.

#### Attenuation tanks associated with new drainage

Details of the proposed new drainage for the concourse are illustrated on drawings N420-WSP-DRG-PH-000900, N420-WSP-DRG-PH-000901 and a preliminary sketch dated 18/01/12. The layout includes three attenuation tanks:

- the largest is in the eastern part of the main concourse and comprises two 1500mm diameter pipes within a 5.3m wide trench extending over a length of c 119m. The base of the trench extends to a minimum level of 101.00m (see sketch).
- a further attenuation tank is located in the Bermondsey Street Car Park area. Details have not yet been finalised, but it is likely to extend to a depth of 3.65m below ground level (information received from Costain via email, 19/04/12).
- another tank is located to the west of Bermondsey Street close to the junction with St Thomas Street, comprising twin pipes extending over a length of c 22m (depth unknown, but likely to be a similar depth to those mentioned above).

#### **Fire escape stairs either side of Bermondsey Street**

*The fire escape stairs will for the most part be supported on the existing slab. However, east of Bermondsey Street, Stair 13/14 will require a piled buttress and a piled mid support (illustrated on sketch DDNS 121 page 10, details not yet finalised).*

### ***The Western Arcade***

*Details of below-ground works in the area of the Western Arcade are illustrated on drawings N420-WSP-DRG-ST-003600 and N420-WSP-DRG-ST-003610, within addendum N420-NRT-CN-000001 to the Written Scheme of Investigations (Archaeology), NWR 2012b. For the most part, excavation will only be undertaken down to the existing pile caps installed in 1995 as part of the JLE works. No further excavation or piling is required, except for the interface with Stainer Street, where there will be new foundations. These comprise piles of 450mm and 900mm diameter, with pile caps varying between 1.2m and 2m deep.*

## 4 GEOLOGY AND TOPOGRAPHY

### 4.1 Geology

- 4.1.1 The site is located within the southern alluvial floodplain of the Thames, on the eastern edge of an outcrop of gravels (BGS sheet 256 1:50,000). Previous archaeological investigations in the area suggest that the landscape was comprised of a series of low-lying gravel islands, interspersed with braided channels (Sidell *et al.* 2000; Drummond-Murray & Thompson 2002; Cowan *et al.* 2009). Consolidation and stabilisation of the islands would have begun between the Late Glacial and early Holocene periods, with a decrease in river energy resulting in the deposition of sand and the consolidation of the braided channels into fewer and deeper interconnected channels (see Geoarch Appendix 20).
- 4.1.2 A watching brief conducted in 2008 at the junction of St Thomas Street and Bermondsey Street demonstrated that alluvium deposits exist in the area (LBS08, MOLA 2009). A geoarchaeological investigation was subsequently undertaken within the footprint of Thameslink Archaeological Assessment 10 under the site code LBZ10 (MOLA 2011b) during 2010 and 2011. The geoarchaeological work undertaken on site established that:

*‘... a profile for the underlying early Holocene land surface and illustrates that the site lies between two small areas of relatively high ground (greater than approximately 1m OD), islands that formed within the southern part of the Thames floodplain in the early Holocene.*

*Separating these were a complex network of stream channels that remained water-filled throughout much of the early to mid-Holocene. The eyots are formed of sand over terrace gravel, whereas the stream channels, in which the site is located, are cut into the river terrace deposits and are characterised by alluvial sands and silts, with peats and organic clays along the margins.*

*The site lies entirely within the tidal area of one of the former channels known as ‘Guy’s Channel’, which runs across the site from south-east to north-west. High levels for the probably untruncated surface of the alluvium (approximately 101.2m) towards the south end of Weston Street (TPs 129, 659 & 661) may indicate an area of mudflat.’ (MOLA 2011b)*

- 4.1.3 The results of the geoarchaeological work within the footprint of TAA10 is further substantiated by the results gathered during recent geoarchaeological investigations at ‘Thameslink Archaeological Assessment 9 – Western Approach Viaduct’. TAA9 is located to the immediate west and the geoarchaeological survey found that:

*‘The earliest deposits on site were recorded during the geoarchaeological borehole survey and comprised naturally deposited sandy gravel. The gravels occurred at -*

*1.75m OD in the west of the site and -2.50m OD in the east, with the variation indicative of a gradual west to east slope in the natural topography. Geological and archaeological mapping of the area places the site on the western edge of Guy's Channel, an extrapolation supported by the geoarchaeological borehole data.'* (Taylor & Champness 2012)

4.1.4 The geoarchaeological borehole survey conducted at TAA9 also demonstrated that:

*'... the natural gravels were overlain by a fine sand encountered between -0.50m OD in the west of the site and -2.00m OD in the east. The deposit is thought to represent a late Pleistocene/early Holocene sand which had probably been formed by both windblown and fluvial processes. A similar deposit was encountered at 0.38m OD during the excavation of ST1a (in the west) and probably represents the same episode of Late Pleistocene/Early Holocene deposition. The variation in levels across the site again supports the suggestion that the site is located on the western edge of Guy's Channel, with the higher levels recorded in the west being associated within the edge of an island and the lower levels in the east perhaps representative of the base of the channel.'* (Taylor & Champness 2012)

## **4.2 Topography (Fig. 2)**

- 4.2.1 The site is situated within vaults located beneath London Bridge Station, bound by Stainer Street to the west, Tooley Street to the north and by Bermondsey Street and St Thomas's Street to the east and south respectively. Concrete surfaces within the excavation areas were encountered between 4.85m OD (Trench D1) and 4m OD (Trenches H1/H2). The surface level of London Bridge Station at concourse level above the vaults is present at 11.91m OD within the ticket hall and 11.68m OD within outdoor land to the west.
- 4.2.2 The site is located approximately 165m to the south of the Thames, with the western part of the site situated above the projected location of the now buried Guy's Channel. The extrapolated location of the Southwark Street Channel, also now buried, is situated c. 250m to the south-west.
- 4.2.3 The extensive geoarchaeological borehole survey of the site defined its underlying topography and demonstrated that natural gravel was present between -3m OD and -1.75m OD and can be correlated with the Shepperton gravel formation. This was overlain by a sequence of late Pleistocene/early Holocene sands and fluvial sands deposited within the Neckinger channel sequence. The edge of the northern eyot, or 'Bridgehead Island', was identified within north-westerly Trench H2 and indications of a second eyot edge environment within Trench G. It appears that the majority of the study site encompassed the lower lying mud-flats bisected by a braided channel network.



## **5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND**

### **5.1 Introduction**

- 5.1.1 The archaeological and historical background for the Borough Viaduct sites has been compiled largely through reference to site excavations in the vicinity. However, a wealth of publications discussing the archaeology of Southwark, some of which are occasionally referenced in this text, do exist and will require full consideration and incorporation during the post-assessment process.

### **5.2 Prehistoric**

- 5.2.1 During the prehistoric periods the area of land now occupied by Southwark was typified as a series of variably sized, sandy islands separated by a network of channels. The tidal nature of the River Thames and its associated channels would have ensured that during high tide the land remaining above sea level was significantly reduced, a limiting factor for defined prehistoric occupation and settlement. However, the marshland environment within the tidal range would have provided significant economic attractions and it is probable that prehistoric communities exploited the island landscape at low tide (Sidell *et al.* 2002, 7).
- 5.2.2 The study site is located between two former islands known as the 'Northern Island/Bridgehead Island' and 'Horsleydown Eyot'. Guy's Channel is located between the two islands and is filled with alluvial clays, silts and organic rich deposits. At least some of the channel deposits are demonstrably prehistoric in date and objects and structures associated with the prehistoric use of the waterways have been found to exist *in situ* (MOLA 2011; Taylor & Champness 2013). A recent archaeological desk based assessment of the study site recorded that most prehistoric findspots in the area comprised stray finds of abraded pottery and worked flint, some of which were recovered from peat deposits in former channels (OA 2011).
- 5.2.3 Some evidence of prehistoric activity has been found within the vicinity of London Bridge Station, on the higher ground located close to the eastern edge of the northern island. In particular, geotechnical investigations at London Bridge Station (LBZ10) have established a profile for the underlying early Holocene land surface and have recorded that Mesolithic remains are preserved in the Holocene sands (MOLA 2011). Additional prehistoric findspots have also been made around the general London Bridge Station area (Fig. 3; Site 1/LBD95; Site 2/LBE95), along London Bridge Street (Fig. 3; Site 3/LBB95; Site 4/LWE07; Site 5/LBN08) and along St Thomas Street (Fig. 3; Site 6/4STS82; Site 7/11STS77) and relates to prehistoric use of the eastern edge of the northern island. The evidence consists of occasional prehistoric peat and silt horizons, a small number of ephemeral cut features, quantities of burnt flint and quantities of largely undated struck flint. The peat deposits date from the Mesolithic through to the Bronze Age and beyond, and potentially preserve organic artefacts

and structures (MOLA 2011). A Bronze Age loomweight has been found in the London Bridge Street area, whilst Iron Age pottery has been found along St Thomas Street; dateable finds which give an indication of when the landscape was being exploited.

- 5.2.4 Excavations further to the east of the northern island have also yielded evidence of prehistoric activity, demonstrating that the surrounding floodplain and smaller islands were of importance during the prehistoric periods. In this respect, it is of particular note that a Mesolithic hunting and processing site (Sidell *et al.* 2002) and a mid-late Bronze Age wooden trackway have been recorded in the Bermondsey area (Thomas & Rackham 1996). Rising sea-levels during the Iron Age period are likely to have resulted in widespread flooding, with the consequence that much of the environment was rendered economically unattractive during the latter part of the prehistoric period.

### **5.3 Roman (AD 43-AD 410)**

- 5.3.1 It seems that the London area lay on the periphery at the end of the prehistoric period and it is possible that the peripheral nature may have ensured the area was essentially neutral and may have contributed to Roman London's subsequent importance within the province. For many years studies of Roman London have focused on the north-bank settlement, treating the contemporary settlement at Southwark simply as a suburb. However, preconceptions and assumptions regarding the role, status and integration of Southwark within *Londinium* have been addressed over the past decade and the most recent map of Roman London (MOLA 2011b) shows Southwark as an integral part of Roman London.
- 5.3.2 Roman occupation in Southwark is currently accepted as beginning around AD 50. By this time a number of military roads leading from the south coast had been established, i.e. Watling Street and Stane Street, whilst a north-south orientated precursor of Borough High Street, i.e. Road 1, connected the convergence of these roads with the River Thames (Yule 2005, 86; Cowan 2003, 81). A complex sequence of Roman activity has been recorded to the west of London Bridge Station, however the study site itself occupies an area of land which would have been located above Guy's Channel and above an area of low lying, inter-tidal marshy land (NWR 2012b).
- 5.3.3 There is evidence to indicate that the river frontages of the northern island were developed during the Roman period, with the remains of buildings fronting onto the Thames recorded along Tooley Street (Fig. 3; Site 38/DHS75) and buildings fronting onto Guy's Channel recorded at Joiner Street (Fig. 3; Site 37/MSA92; Taylor & Champness 2013) and London Bridge Street (Fig. 3; Site2/LBE95; Site 35/NLB91; Site 39/LBI95). The development of the river and channel frontages generally dates to the 1st-2nd century and it is probable that at least some of the buildings represent warehouses associated with the use of the waterways for trade (NWR 2012b).

5.3.4 The Roman river channels themselves served an important role as a trade and communication supply, well demonstrated by the abandoned barge found within Guy's Channel and preserved *in situ* beneath Guy's Hospital (Fig. 3; Site 40/GYH10; MOLA 2010). There is also considerable evidence beneath the Hospital and in the wider area for the construction of timber revetments/waterfronts (e.g. Cowan *et al.* 2009; Taylor-Wilson 2002) and for Roman land reclamation within the river channels (NWR 2012b). Archaeological investigations at Western Approach Viaduct recorded mixed Roman alluvium and dump deposits within Guy's Channel (TAA9: Taylor & Champness 2013), whilst geoarchaeological monitoring beneath London Bridge Station revealed a lack of Roman or earlier artefacts/structures (MOLA 2011; LBZ10).

#### 5.4 Saxon (AD 410-1066)

5.4.1 Archaeological evidence for activity dating between the early 5th-mid 9th century is largely absent within Southwark, with the previously settled area seemingly abandoned during this time (MoLAS/EH 2000, 191). The Burghal Hidage (c. AD 911-919) details a burh named 'Suthringa geweorche', (variously translated as 'the southern work' or 'the work of the southern people' or the '[defence] of the men of Surrey'), which may refer to a settlement at Southwark (Sheldon 1978, 48; MoLAS/EH 2000, 191; Watson *et al.* 2001, 53). The location of the Southwark burh is largely hypothesised, however it is probable that the bridgehead area, adjacent to the river frontage and close to Road 1, was reoccupied during the Late Saxon period (MoLAS 2003a).

5.4.2 It is probable that an attack on London in AD 994 may have initiated a rebuilding of the bridge and, in turn, the fortification of Southwark (Watson *et al.* 2001, 53). These works may have utilised pre-existing Alfredian burghal defences. Southwark's Late Saxon defences are detailed in Snorre Sturlason's 13th-century description of an 11th-century attack on Danish-held London Bridge. A translation reads:

*'...They steered first to London, and sailed into the Thames with their fleet; but the Danes had a castle within. On the other side of the river is a great trading place, which is called Sudvirke. There the Danes had raised a great work, dug large ditches, and within had built a bulwark of stone, timber, and turf, where they had stationed a strong army. King Ethelred ordered a great assault; but the Danes defended themselves bravely, and King Ethelred could make nothing of it. Between the castle and Southwark (Sudvirke) there was a bridge, so broad that two wagons could pass each other upon it. On the bridge were raised barricades, both towers and wooden parapets, in the direction of the river, which were nearly breast high; and under the bridge were piles driven into the bottom of the river. Now when the attack was made the troops stood on the bridge everywhere, and defended themselves. King Ethelred was very anxious to get possession of the bridge, and he called together all the chiefs*

*to consult how they should get the bridge broken down...* (Sturlason c. 1225 - Para.11. 'Death of King Svein Forked Beard')

The account continues:

*'... The piles were thus shaken in the bottom, and were loosened under the bridge. Now as the armed troops stood thick of men upon the bridge, and there were likewise many heaps of stones and other weapons upon it, and the piles under it being loosened and broken, the bridge gave way; and a great part of the men upon it fell into the river, and all the others fled, some into the castle, some into Southwark. Thereafter Southwark was stormed and taken...' (Sturlason c. 1225 - Para.12. 'The Sixth Battle')*

- 5.4.3 The location, extent and orientation of these defences has caused much debate in recent years (Dawson 2011; 2012a; 2012b; Watson 2009; 2011/2), with one theory suggesting that the alignment of Montague Close and St Mary Overy Dock could represent the approximate location and orientation of the defences (Watson 2009). The location and alignment of any defensive earthworks on the eastern side of the settlement are also unknown; however, it is possible that St Thomas Street and the historic extent of Joiner Street could reflect their continuation. Recent archaeological work undertaken at Bedale Street (TAA4: Langthorne & Taylor 2013; Taylor & Butler 2014) and Western Approach Viaduct (TAA9: Taylor & Champness 2013; Taylor & Butler 2014) may have produced further evidence to suggest that the Saxon defences were positioned in these locations.
- 5.4.4 The evidence of late 9th/early 10th-century occupation in Southwark is by no means extensive, however, that which does exist is largely located within the proposed boundaries of the bridgehead settlement as discussed above (Watson *et al.* 2001, 53, 56). Beyond these proposed boundaries, there is a general absence of evidence for Late Saxon activity suggesting that these areas were little used during the Saxon period.

## **5.5 Medieval (1066-1485)**

- 5.5.1 Reference to Southwark in the Domesday Book (1086) suggests it was an un-manorialised settlement without a direct lord. At the beginning of the medieval period the settlement is described as comprising 'several dozen houses, a trading shore, a dock, a fishery and a 'Monesterium', probably the Priory of St Mary Overy, present day Southwark Cathedral (MoLAS 2003a). During the medieval period, the development of Southwark was dictated by the important trade routes into London from the south and south-east, with the main medieval settlement inevitably focused around the High Street leading up to the bridgehead (Carlin 1996, 18). The medieval settlement beyond this area may be reflected in the modern street pattern, in particular the location and alignment of Montague Close, Bedale Street, St Thomas Street and Joiner Street (Taylor & Champness 2013; Taylor & Butler 2014), with additional

areas of medieval settlement concentrated along Tooley Street and Bermondsey Street (NWR 2012b).

- 5.5.2 Religious institutions played an important role in Southwark's development, being responsible for 'religious activity, promoters of learning and culture, administrators of local charity, purchasers and employers of local goods and landlords to hundreds of local residents' (Carlin 1996, 67). The major religious institutions of medieval Southwark included the Priory of St Mary Overy (Southwark Cathedral), St Olave's church and St Thomas's Hospital. Part of the 14th-century manor, the Maze, is located within the footprint of the study site (NWR 2012b). Further to the east, Bermondsey Street represents the location of a road, which is known from the 11th century and may have originated as a causeway to Bermondsey Abbey (MOLA 2011). The recent archaeological desk based assessment conducted for the site concluded that:

*'during most of the medieval period the site lay within an area of gardens and meadows to the rear of the medieval line of Tooley Street, variously called St Olave's Street and Short Southwark and marked, as Battlebridge Street on Braun and Hogenburg's 1572 map of London.'*

- 5.5.3 Medieval masonry (Fig. 3; Site 6/4STS82; Site 7/11STS77; Site 19/STU92; Site 23/LNB97; Site 25/TAS08; Site 28/GLSMR090223; Site 32/LBJ95; Site 34/LBH94; Fairman & Taylor 2012; Taylor & Butler 2013) and evidence of occupation (Fig. 3; Site 2/LBE95; Site 5/LBN08; Site 22/LOB98; Site 36/TOM95) has been found at multiple locations around the London Bridge Street/St Thomas Street area and may be associated with the precinct of St Thomas's Hospital or other medieval buildings. Medieval chalk masonry has also been found at Joiner Street (Fig. 3; Site 37/MSA92) and during geotechnical work beneath London Bridge Station (MOLA 2011), which may relate to medieval buildings in these locations. In addition, disarticulated medieval human bone was found at The London Bridge Experience (Cohen 2009), whilst human bone was also found on the site of the former churchyard of St Olave's Church, c. 250 metres to the south-east (OA 2011).
- 5.5.4 The geotechnical investigations at London Bridge Station also recorded two phases of a probable timber jetty/revetment, the earliest of which was possibly medieval in date and was recorded at c. 0.10m OD (MOLA 2011). A 2010 evaluation at nearby 46 Weston Street also revealed the remains of a substantial, east-west orientated, 14th-15th-century 'stave and muntin' revetment at 1.20m OD (Grosso 2010) and it is evident that control of the waterways was being undertaken during the medieval period.

## **5.6 Post-medieval (1485-20th century)**

- 5.6.1 London Bridge remained of economic importance to the development of Southwark during the post-medieval period, with the bridge providing direct access to the important markets of the

City of London (MoLAS 2003a). The accessibility of the city, yet Southwark's geographical separation from it, encouraged the growth of industrial trades, with the area densely developed and increasingly exploited for industrial uses at this time (NWR 2012b).

- 5.6.2 Land beneath London Bridge Station was relatively developed by the mid-16th century and by the mid-18th century, some of the modern street names, e.g. 'Tooly Street', 'Joyner Street', and 'St Thomas's', had been established. By the end of the 18th century, Tooley Street, Joiner Street, Dean Street (now Stainer Street), The Maze (now Weston Street), Bermondsey Street and St Thomas's Street were all present. Between these principal streets was a warren of smaller alleys, yards and squares, including Glean Alley, Carter Lane, Silver Street, Frying Pan Alley and Canterbury Square (Baxter 2009).
- 5.6.3 Geotechnical work undertaken at London Bridge Station revealed evidence of brick buildings of probable 16th/17th-century date, apparently confirming 'that much of the area covered by the site was 'urbanized' during this period' (MOLA 2011). Evidence of mid 15th-16th-century cellars were also recorded during the London Bridge Phase 1a Watching Brief (MOLA 2009; LBS08). Elsewhere in the vicinity, a number of the post-medieval buildings located beneath the station were recorded during archaeological investigations at Western Approach Viaduct (TAA9: Taylor & Champness 2013). Post-medieval buildings have also been recorded in the London Bridge Station area (Fig. 3; Site 32/LBJ95; Site 4/LWE07; Site 5/LBN08; Site 21/BGH95; Site 27/BSE94), whilst evidence of post-medieval St Thomas's Hospital have been recorded along St Thomas Street/London Bridge Street (Fig. 3; Site 6/4STS82; Site 7/11STS77; Site 25/TAS08; Site 21/BGH95; Site 22/LOB98). *In situ* human burials recorded along London Bridge Street (Fig. 3; Site 35/NLB91); Site 39/LBI95) and London Bridge Station (Fig. 3; Site 1/LBD95) probably form part of St Thomas's Hospital burial ground/the Flemish churchyard of St Olave's (NWR 2009a).
- 5.6.4 The 19th century brought significant changes to Southwark, with London Bridge rebuilt in the early 19th century and Borough High Street widened and realigned at a contemporary date. St Olave's Free Grammar School was removed as a consequence of these road alterations (Baxter 2009; Malden 1912). During the mid 19th century, large tracts of Southwark land were compulsorily purchased to enable the construction of the new railways (MoLAS 2003a; Baxter 2009) and post-medieval masonry recorded at Joiner Street (Fig. 3; Site 37/MSA92) and around London Bridge Station (Fig. 3; Site 1/LBD95; Site 2/LBE95, Site 64/JNE99; Site 35/NLB91), represent the remains of buildings demolished at this time. In addition, recent excavations undertaken in the vicinity of London Bridge Station (TAA9: Taylor & Champness 2013; TAA1: Hughs & Taylor 2012) and along Borough Viaduct (TAA6: Taylor 2013; TAA7: Teague & Taylor 2013; Taylor & Butler 2014) have revealed further evidence of the post-medieval buildings, which were demolished.
- 5.6.5 The main phases of station development at London Bridge are detailed below (Baxter 2009):

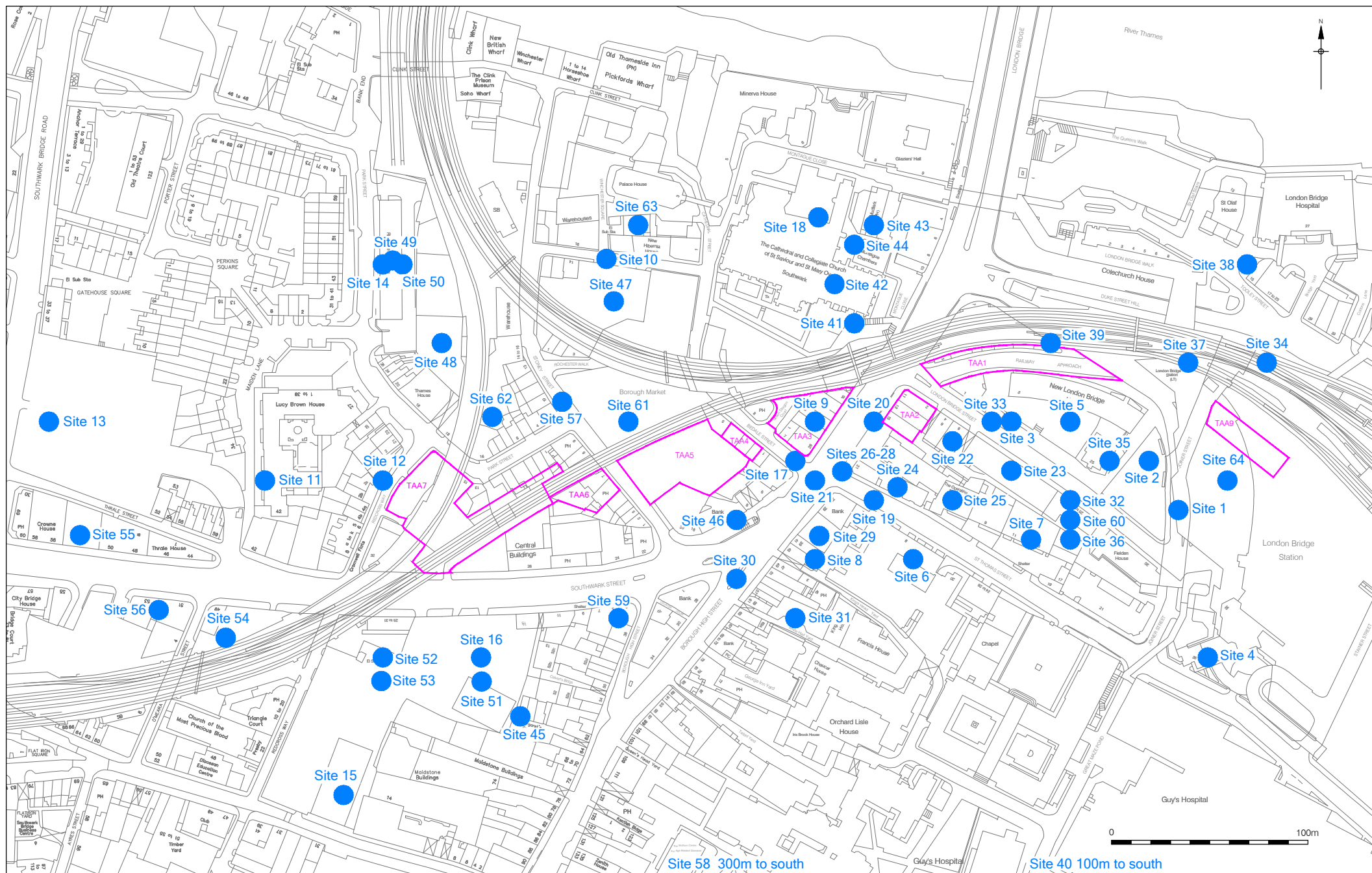
- 1836 - London Bridge Station opened as the terminus of the London & Greenwich Railway and at this date, the 'station' was essentially the end of the viaduct, which carried the tracks to Greenwich.
- 1839 - The London & Croydon Railway erected a terminus to the immediate north of the original London & Greenwich station.
- c. 1841 - The London & Greenwich Company widened the viaduct to four tracks. The station was also widened southwards at the same time.
- 1844/1845 - The footprint of the station terminus was extended to the south and a 'Joint Station' was constructed. The work was undertaken by a Joint Committee representing London & Croydon Railway, the South Eastern Railway and the London & Brighton Railway.
- 1845/1846 – The South Eastern Railway ('SER') leased the London & Greenwich Railway and the London & Brighton Railway Company and London & Croydon Railway Company amalgamated to form the 'LBSCR'. Disagreement between the two enterprises led to the SER occupying the northern half of the site and the LBSCR occupying the southern half. Both companies subsequently widened their parts of the viaduct.
- 1864 - The SER carried some of its tracks through to Charing Cross. New arches were erected on top of the original viaduct bringing the tracks up to two new plate girder bridges which carried three lines over station approach and Borough High Street. The new 'high level' station was accessed via subways through the new structure.
- 1864 to 1867 - The LBSCR expanded its terminus further south, establishing the southern boundary of the present station and realigning St Thomas's Street in the process.
- 1893 - The SER had expanded the station northwards to Tooley Street, which represents the final phase of London Bridge Station's geographical spread.
- (1899 – The SER and the London, Chatham & Dover Railway formed the 'South Eastern & Chatham Railway'.)
- 1914 - The South Eastern & Chatham Railway ('SECR') widened the viaduct over Station Approach and Borough High Street
- (1923 - The SECR and the LBSCR were amalgamated into 'Southern Railway')

1928 - Efforts were made to unify the two halves of the station, with an opening created and a footbridge erected

1939 to 1945 - London Bridge Station sustained considerable bomb damage with the top floors of the station frontage gutted by fire and subsequently removed.

1970s - Major remodelling of the station with the removal of almost all of the 19th-century elements.





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Figure 3  
Sites mentioned in the text  
1:2,500 at A4

## 6 ARCHAEOLOGICAL METHODOLOGY

### 6.1 Introduction

- 6.1.1 The archaeological investigations conducted as part of London Bridge Improvement Works comprised the controlled excavation of 18 trenches located within the viaduct arches (Fig. 2). The dimensions of the controlled excavation trenches are shown below:

Trench	Location	N-S (m)	E-W (m)	Depth (m)	Height at top (m OD)	Augering below project depth (m)	Depth of window sample (m OD)
A1	E39	5	3	3.11	4.11	2.10	-1.14
A2	E39	3	5	3.85	4.20	3	-2.65
A3	E39	5	3	3.92	4.22	3.10	-2.80
A5	E98	3	2	5.12	4.22	n/a	n/a
B1	E123	5	3	3.36	4.33	0.5 (obstruction)	2.86
B2	E123	3	5	3.29	4.33	5.13	-3.37
B3	E45	5	3	2.67	4.48	3.64	-1.83
C	E94	5	3	3.33	4.17	4	-3.16
D1	E925	5	3	4.05	4.85	n/a	n/a
D2	E122	3	5	3.60	4.30	4	-3.30
E1	E929	5	3	3.64	4.55	3	-2.09
E2	E930	5	3	3.55	4.35	4	-3.20
E3	E927	5	3	4.12	4.82	2.85	-2.15
F	E940	5	3	4.02	4.34	3.09	-2.74
G	E951	5	3	3.94	4.40	3	-2.54
H1	E957	5	3	3.49	4.00	3	-2.49
H2	E957	5	3	3.95	4.00	n/a	n/a
H3	E956	5	3	3.64	4.14	3	-2.50

Table 1: Dimensions of trenches (It should be noted that the variable depth of excavation is indicative of the depth at which augering commenced, i.e. the top of alluvium)

- 6.1.2 The archaeological investigations also included a geoarchaeological survey and an extended watching brief conducted on pre-piling ground reduction and other groundworks associated with the redevelopment of the site (Fig. 2). This includes, but is not limited to the following works listed below:

Works	Location	N-S	E-W	Depth (BGL)	Details
A4 ST1	E103	3	1	2.80	Slit trench to investigate extent of brick pier
A4 ST2	E103	6	1	3	Slit trench to investigate cemetery soil

A4 ST3	E103	3.90	1	3	Slit trench to investigate cemetery soil
A4 BHs	E103/E98	n/a	n/a	7.10	Boreholes 1-12; to investigate structural timber encountered within A4/BH1.
AT1	Bermondsey Street car park	25	7	4	Excavation of Attenuation Tank
AT1/MH1	Bermondsey Street car park	10	4	4	Manhole associated with attenuation tank 1.
Sewer Heading 1	Bermondsey Street car park	10.8	1.6	-	Sewer heading to AT manhole
Drain Run WB	Bermondsey Street car park	10.8	1.2	-	Drain run to AT1
Ground Reduction	E39/E39A	30	10	1.20	Widescale ground reduction in advance of piling works
	E122	35	10	1.60	Widescale ground reduction in advance of piling works
	E123	40	10	2	Widescale ground reduction in advance of piling works

Table 2: Other areas of investigation and watching brief

- 6.1.3 The OA-PCA archaeological site work was supervised by Amelia Fairman and James Langthorne and the geoarchaeological augerhole survey was supervised by Carl Champness. The archaeological work was project managed by Peter Moore and Dan Poore. Chris Place (Network Rail Project Archaeologist) acted as archaeological advisor to Network Rail and the progress of the archaeological investigations were monitored by Dr Chris Constable (Senior Archaeology Officer, Southwark Council).
- 6.1.4 Archaeological recording was undertaken using the single context recording system as specified in the Museum of London Site Manual (MoL 1994) and Pre-Construct Archaeology's Operation Manual I (Taylor & Brown 2009). Plans were drawn at a scale of 1:20 and full or representative sections at a scale of 1:10. Contexts were numbered sequentially and recorded on *pro-forma* context sheets. A full photographic record was maintained throughout the entirety of the archaeological work.
- 6.1.5 The primary phase of post-excavation analysis has included a complete check of the site archive, with the compilation of a digital context register, and digital stratigraphic site matrix. The initial phasing of the site was refined during the compilation of this assessment, however the specialist reports included in this document (Appendices 2-20) necessarily refer to 'Summary Phases'. All phase alterations will be considered prior to publication and alterations between 'Summary Phase' and 'Assessment Phase' are listed in Appendix 1 – Context Index'.

- 6.1.6 The completed archive comprising artefactual material and written, drawn and photographic records for site code BVM12 will be deposited at the 'London Archaeological Archive and Research Centre' (LAARC) where it will be accessible for public consultation.

## **6.2 Controlled excavation**

- 6.2.1 Pre-start watching briefs were conducted on the removal of low-grade deposits within the trenches until the uppermost archaeological horizon was reached. Watching briefs were also conducted during the installation and modification of temporary works within each trench.

- 6.2.2 The methodologies used during the pre-start and temporary works watching briefs are detailed below:

- No site work took place until the appropriate H&S documentation had been provided and approved by OA-PCA, Costain (hereafter 'The Contractor') and Network Rail. The contractor's engineer mapped out each trench location and once all approved permits, task briefs, risk assessments and emergency plans were in place, work commenced. The contractor's engineer/temporary works department provided OA-PCA with details of the agreed shoring methodology to be employed in each trench and any pre-defined 'shoring levels', 'formation depths' and 'project depths' were established prior to work commencing.
- Once the trench location had been set out, the contractor was responsible for locating/diverting/closing any known live services present within the trench footprint. The contractor also undertook a full CAT scan of the trench before the ground was broken and thereafter at regular depth intervals. Insulated tools were utilised in the upper levels of each trench.
- The trench footprint was then 'cut', so as to avoid irregular and unsafe trench edges, and the concrete floor slab was broken and removed by the contractor. Gas monitors, general lighting, task lighting, ventilation and trench specific methods of spoil removal were provided prior to the commencement of work. In addition, a work permit was provided and all staff working in the trench received a task briefing prior to work within the trench commencing.
- An archaeologist assessed the provisional breaking-out of the concrete floor slab under watching brief conditions to establish whether archaeological deposits were present immediately beneath. After its removal, 'soft' low-grade deposits were then removed by the contractor under the observation of an attendant archaeologist. Soft deposits were removed in horizontal 'spits' measuring between 100mm and 200mm in thickness and, if space permitted, a mechanical excavator fitted with a toothless ditching bucket was utilised. If space restrictions prohibited this methodology the contractor provided an

appropriately sized trench-specific ground crew to remove the low-grade material, again under watching brief conditions.

- The attendant archaeologist(s) observed the removal of 'soft' low-grade deposits until the uppermost archaeological horizon was reached or the first pre-determined 'shoring level' was attained. Any 'hard' deposits, e.g. masonry or concrete, were temporarily left *in situ* until each shoring level was attained. The contractor was responsible for the removal of all spoil from the trench.
- If no archaeological deposits were encountered prior to the first shoring level, the attendant archaeologist was given time to record and photograph the trench prior to the installation of temporary works. Ladder access was provided and a 'topman' and 'runner' remained with the archaeologist to prevent 'lone working'. Once the recording was completed, the trench was handed back to the contractor and the installation of the first set of shoring was undertaken.
- Once the first set of shoring had been installed and provision for new trench conditions had been made, the contractor's engineer/temporary works department inspected the shoring and signed it off as safe. At the same time, the trench specific task brief was reassessed to ensure that any alteration to working conditions was accounted for and new dangers were mitigated against. This entailed that scaffold barriers were installed, fixed ladder access/egress was provided and a winch/skip spoil removal system was established.
- Thereafter, the removal of low grade deposits under watching brief conditions recommenced and continued until the upper archaeological horizon or the next shoring level was reached. Harnesses, emergency evacuation equipment, i.e. a Davit System, and Confined Space classification were also incorporated into the trench specific task brief as greater depths of excavation were reached.

6.2.3 Controlled archaeological excavation was undertaken once the upper archaeological horizon was encountered. Archaeological excavation to project level comprised the excavation of archaeological deposits to interim levels to install shoring and thereafter to a pre-specified project level which correlated with the base of the adjacent viaduct foundations. Excavation to greater depths was precluded as it had been assessed that it would have constituted an unacceptable risk to the integrity of the existing viaduct.

6.2.4 The methodologies utilised during the archaeological excavation to project level are detailed below:

- The likelihood of encountering archaeological deposits increased as greater depths were reached within the trench and when the uppermost horizon was encountered the

attendant archaeologist advised that excavation of the trench should transfer to OA-PCA. A team of CSCS qualified archaeologists commensurate to the size of the trench were provided and this team then undertook archaeological excavation to each of the next applicable shoring depths until the eventual completion of the trench. The OA-PCA team was led by an SSSTS qualified supervisor who ensured that all archaeological staff were adhering to site H&S as defined by both the contractor and OA-PCA.

- The contractor provided three members of staff to be in attendance to the archaeological team. Two of these served as 'Topman' and 'Runner' whilst the third person was situated in the trench and controlled the removal of spoil through communication with the 'topman'.
- During the course of the archaeological excavation the contractor, the archaeological supervisor and the archaeological team ensured that the integrity of the shored trench was not compromised, e.g. no weight was placed on the walling, no excavation was undertaken directly beneath the sheets/timbers and excavation did not exceed the specified shoring depth.
- When shoring depth has been reached ply boards were placed over the base of the trench to protect the in situ archaeology and the trench was handed back to the contractor for the next set of shoring to be installed. Once the contractor's engineer/temporary works department had inspected the shoring and signed it off, the trench specific task brief was updated and all staff briefed on any alterations to working conditions. This methodology continued until project depth was reached.

### **6.3 Geoarchaeological Borehole Survey**

- 6.3.1 The archaeological investigations conducted at London Bridge Improvement Works also included a comprehensive geoarchaeological augerhole survey. The geological augerhole survey was conducted following the archaeological excavation of each trench to project level and were drilled from the base of each trench by a team of geoarchaeologists.
- 6.3.2 Drilling was undertaken with a power auger and the holes were drilled to the top of floodplain gravel. The borehole survey was undertaken to sample and assess the underlying deposits for archaeological remains and palaeoenvironmental evidence. Each augerhole location was located on the trench plan and levelled. The results of the geoarchaeological works are referenced in the main assessment text and are comprehensively detailed in Appendix 20.
- 6.3.3 Where archaeological obstructions, such as timbers, were encountered, additional holes were drilled to evaluate the extent of the obstruction. Small-scale, rapid test-pitting by hand and/or machine was undertaken if the presence of significant timber structures was suspected.

### **6.4 Monitoring of piling and other groundworks**

- 6.4.1 An archaeological watching brief was conducted during the course of piling and other significant ground works that impacted sub-surface deposits: e.g. excavation for pile caps and attenuation tanks, which ensured that provision was made for any exceptional or unforeseeable discoveries. The watching brief monitored works extending deeper than c. 1.5m below street level and was targeted on a case by case basis, depending on the scale of the impact and potential of the location.
- 6.4.2 The watching brief sought to achieve the following aims:
- establish the depth and thickness of modern made ground and other principal soil horizons, including any significant archaeological deposits;
  - establish the depth of underlying natural sand, gravel and alluvium;
  - establish the presence and location of any significant pre-modern masonry/brick/timber structures;
  - recover artefacts
- 6.4.3 Where significant deposits and features were identified, excavation, sampling and recording was undertaken in accordance with the requirements detailed in the 'Controlled Excavation' section (see above).

## **7 THE ARCHAEOLOGICAL SEQUENCE**

### **7.1 Introduction**

- 7.1.1 The following section of the assessment details the archaeological sequence recorded during the excavations at London Bridge Improvement Works. The archaeological sequence is discussed individually by trench, with a broader consideration of the archaeological sequence detailed in 'Section 8 – Phased Discussion'.
- 7.1.2 The archaeological sequence includes reference to each context identified during the excavations. Specific details, e.g. dimensions, orientation, Ordnance Datum heights etc., are described in detail within the text where appropriate and when not can be found fully detailed within 'Appendix 1 – Context Index'.
- 7.1.3 The archaeological sequence also references the results obtained during the geoarchaeological borehole survey, with a full discussion of these archaeological works detailed in 'Appendix 20 – Geoarchaeology'.

### **7.2 Phase 1: Natural**

#### Trenches A1, A2, A3, A4 and A5

- 7.2.1 Pleistocene gravels [694] were identified at a depth of –1.60m OD within Trench A2 and dipped down to –2.66m OD within the northern areas of A4/A5. These gravels were overlain by silty sands with inter-bedded clay bands, and sandy-gravels. These deposits became increasingly sandy towards the base of the sequence and were identified as layers [680], [681], [682], [683], [684], [696], [685], [686], [687], [688], [689], [690], [691], [692] and [693] within Trench A3 and comprised a 1.42m thick sequence. Laminated, fluvial sands were evident from -1.09m OD (layer [690]).
- 7.2.2 Boreholes recorded within the area of Trench A4/A5 identified a potential sequence through Guy's Channel. A greater concentration of gravel, charcoal and chalk inclusions were recorded within deposits overlying the gravel, than was present at the same depths within the other trenches. Clayey-sand with inclusions of wood, stone, chalk and snail shells was recorded between –1.25m OD and –1.55m OD in this area. Further analysis of these deposits suggested a date range of 1740-1605 cal BC (Appendix 20).

#### Trenches B1, B2 and B3

- 7.2.3 Natural gravels were recorded at depths of –3.09m OD in Trench B2 and –1.77m OD in Trench B3. Obstructions encountered within Trench B1 meant augering to establish the depth of the gravels could not be completed. Gravels were overlain by a series of grey, laminated sands ([84] and [85]) from –2.08m OD and alluvial clays ([83], [82], and [81] in turn). These



were sealed by a second sequence of alluvial clays ([80], [79], [78], [77], [76], [75]) that contained inclusions of gravels, wood and shell and a silty peat at around 0.11m OD. Although the latter was undated, the respective elevation is consistent with a Bronze Age date (as seen in A4 borehole 7, Appendix 20).

#### Trench C

- 7.2.4 Augering identified natural gravels at –2.89m OD. These gravels were overlain by fluvial sands and peat from between –1.71m OD and –0.31m OD dated to the middle Bronze Age 1404-1207 cal BC (Appendix 20). Overbank estuarine silts sealed the latter in turn.

#### Trenches D1 and D2

- 7.2.5 Natural gravels were not identified within Trench D1 as ground water flooding prevented augering from taking place. In Trench D2 however, these were encountered at –2.80m OD, and overlain by channel deposits of loose sands and fluvial clays. A spongy peat sealed the latter from between –0.25m OD and –0.07m OD and may be roughly contemporary with a similar peat deposit described above (Trench C) and therefore of a middle Bronze Age date.

#### Trenches E1, E2 and E3

- 7.2.6 Pleistocene gravels were identified by augering at depths of –2.04m OD (Trench E1), –2.99m OD (Trench E2) and –2.15m OD (Trench E3) and were overlain by weathered silty sand basal channel deposits. The latter were inter-bedded with gleyed silty and clayey sands which potentially reflected seasonal variations in river flow. Fragments of wood and wattle like materials were occasionally observed within these layers.

#### Trenches F and G

- 7.2.7 A comparable sequence of natural gravel overlain by silts and sands with occasional inter-bedded sand lenses were observed between both trenches. Gravels were identified at –2.25m OD in Trench F and –1.89m OD in Trench G. Within Trench F this sequence correlates with underlying gravel [887] and [888] overlain by silty-clay and sand with organics [886], [899], [885], [884], [898], [897], [896], [883], [881]/[882], [894]/[895], [880] and [893] as identified from 0.06m OD. A 0.14m thick deposit of peaty clay containing degraded tree roots [892] sealed the latter sequence from 0.19m OD and may be of prehistoric date.
- 7.2.8 It is noteworthy that no Bronze Age fluvial deposits or peats were identified within the Trench G sequence. The gravel deposits identified in this location were a mixture of well bedded gravelly sands and poorly sorted angular gravels, and may therefore represent the slope deposits close to an eyot edge.

#### Trenches H1, H2 and H3

- 7.2.9 A shallow sequence of foreshore deposits were identified within these trenches, with the Pleistocene gravel and sand rising up to demarcate the edge of the eyot within Trench H2. Sands here [1926] were identified at the base of the trench at 0.05m OD.
- 7.2.10 Pleistocene gravels were identified in Trench H3 at –1.92m OD and the Pleistocene sands in Trench H1 at –2.28m OD. These were overlain by potential Roman dump deposits from c.–1.26m OD in Trench H3. Comparable deposits were identified in Trench H1 but were less well defined.

#### Attenuation Tank 1

- 7.2.11 Alluvial deposit [1867] was identified at the project level of c. –0.20m OD. This contained occasional inclusions of oyster shell and small gravels, and is consistent with the channel sequences encountered within other excavation areas. Peat layer [1832] was recorded from c. –0.22m OD and may be contemporary with the Bronze Age peat deposits/horizons recorded within other trenches.

### **7.3 Phase 2: Prehistoric**

- 7.3.1 No features or residual artefacts were encountered or retrieved during the investigations indicative of prehistoric activity or exploitation of the area or immediate vicinity.

### **7.4 Phase 3: Roman**

#### Trench A5 (Fig. 4)

- 7.4.1 The earliest identified deposits within Trench A5 comprised soft, blue-grey alluvium [908] containing sub-angular flints, which was overlain by a 0.25m thick dump layer [906] of sandy-gravel with inclusions of Roman brick, tile, tegula, and imbrex, worked stone and pottery dated between AD 120 and AD 300. As such, the pottery was roughly contemporary to the recovered building material dated between AD 140 and AD 350. The latter was recorded from an uppermost elevation of –0.59m OD and was interpreted as levelling/ground consolidation. An analysis of these deposits suggested a date range of 252-403 cal AD (Appendix 20). The remnants of a collapsed tree [909] with axe marks (Appendix 15) and boxed heart oak beam [907] sealed dump layer [906] from –0.55m OD. Timber [907] measured 0.82m by 0.20m by 0.14m and was interpreted to be a displaced revetment timber, and had been worked with a lap joint with iron nails on the underside. The elevation and technological details are consistent with a Roman date, and might be interpreted as part of a revetment land-tie beam (Appendix 15). The analysis of fragments of [907] recovered during augering suggested a date range of 93 cal BC to 61 cal AD (Appendix 20).
- 7.4.2 A sequence of alluvial and dumped ground consolidation deposits [905]; [904]; [903] and [902] in turn sealed the timbers to a combined depth of c. 0.90m from –0.1m OD. Pottery retained

from these deposits (no pottery was recovered from upper layer [902]) was consistently dated between AD 120 and AD 150. Roman brick and tile retained from [905] and [904] inferred a slightly later date range of AD 170 to AD 350. Additional material recovered included a wooden disc and iron nails (sf 47, sf 48) and part of a possible iron bucket handle, and iron pitchfork (sf 44; sf 45) from layers [905] and [904] respectively. The animal bone recovered from these deposits was predominantly cattle with a number of horncores, and a number of non-food domesticates including the remains of two dogs (Appendix 12).

- 7.4.3 The dumped deposits were sealed by a further layer of degraded wood [901] along the northern and eastern limits of the trench. This extended to a maximum depth of 0.15m and contained a collection of irregular waterlogged roundwood, most likely branches, with no indication of working. It is possible that this is either a natural accumulation or the very disturbed remains of a fallen wattle fence (Appendix 15). Further alluvial deposition [900] sealed the latter deposit from -0.22m OD, which comprised a mottled deposit of brown-grey clay with organic debris inclusions, of broken pieces of roundwood. Both layers [901] and [900] were interpreted as Roman flood deposits.

#### Trench H2 (Fig. 94)

- 7.4.4 The heavily degraded remains of a driven timber stake [1927] were identified at 0.61m OD. This extended 40mm by 70mm in diameter by 44mm length, and was interpreted as relating to a Roman structure. This had been driven into a sterile deposit of sandy gravel [1925] which extended across the base of the trench to a maximum thickness of 0.23m. The stake was overlain by a 0.49m thick silty clay dump layer [1924], which contained pottery fragments dated between AD 100 and AD 250. Furthermore, a huge group of Roman sandy Eccles, Radlett and Hartfield brick, with tile, tegula, box comb and tessera were also recovered from the layer dating between AD 170 and AD 350. Further analysis of [1925] (Appendix 20, S39) identified a variety of palaeoenvironments. An abundance of bracken spores suggested a disturbed habitat, possibly related to cultural activities, and the identification of pollen from aquatic plants and marine influence on the area is consistent with an 'eyot edge environment'.

### **7.5 Phase 4a: Medieval (11th to 14th Century)**

#### Trenches A1, A2, A3 and A4

- 7.5.1 A number of alluvial deposits of silty-clay were identified across the trenches, which contained no firm dating evidence. These comprised [435], as identified within Trench A1 at 0.97m OD and [679] within Trench A3 at 0.78m OD. Based upon their relative elevations and stratigraphic positions these were tentatively interpreted as early medieval flood deposits. Comparable deposits were identified within Trench A4 [544]=[569]=[576] at higher elevations of between 1.77m OD and 2.02m OD. With the lack of any other dating evidence, these again

have been tentatively ascribed to this phase, and considered to represent either flood or ground consolidation deposits.

#### Trench C (Fig. 5)

- 7.5.2 A series of cut features truncated the upper horizons of land reclamation layer [246], dated between the late 13th and late 15th centuries. The underlying dump comprised a 0.49m thickness of silt clay and contained pottery dated between 1080 and 1350, building material dated from 1240 and animal bone. The earliest of the cut features was a roughly north-south aligned linear cut [245], which extended the full length of the trench by 0.24m width and 70mm depth from 1.14m OD. The steep-sided, flat-based cut appeared to lense out towards the south, most likely as a result of horizontal truncation, and had been backfilled with broken red tiles [244] which formed a rough surface. The tiles comprised a large assemblage of medieval tiles dated between 1240 and 1600, the majority of which were glazed. The entire trench was subsequently overlain by a 0.16m layer of alluvial blue clay that contained very occasional pottery sherds dating from 1270 to 1500.
- 7.5.3 A potential shift in property boundaries was suggested by east-north-east west-south-west aligned linear cut [242] which spanned the southern limits of the trench. The flat based cut extended 0.38m in width by 0.33m depth and was interpreted as a possible beamslot. The structure or property this related to, however, is unclear. Brown-grey clay [241] backfilled the cut and contained occasional fragments of lead, CBM (peg tile dated between 1180 and 1450), a copper alloy mount (sf 122) and animal bone.
- 7.5.4 Linear cut [242] was post-dated by a number of pits to the south ([229], [238], [240]) and to the north ([227], [219], [221]) of the feature. Sub-squared pits [238] and [240] were recorded from c. 1.20m OD and extended to a maximum of 0.15m in depth to flat bases. These had been backfilled with deposits of firm, blue-brown clay with cultural inclusions of iron, CBM and pottery dated from 1300 to 1500. Circular pit [229] extended to a diameter of 0.81m and had been backfilled with clay-silt [228] containing slightly earlier pottery fragments dated between 970 and 1100 and very occasional CBM fragments.
- 7.5.5 Pottery of a similar date (1000-1150) was recovered from backfill [226] within comparably sized circular pit [227] to the north of the beamslot. The remaining cut features in the north of the trench comprised irregular/linear cut [219] filled by [218], and ovoid pit [221] filled by [220]. These both extended c. 1m north-south by up to 0.41m width. Both features appeared to have backfilled naturally with accumulated alluvium, which contained a high proportion of small fish bones. Pottery was only recovered from fill [218] and dated between 1240 and 1350.
- 7.5.6 A series of postholes were identified as roughly following the alignment of beamslot [242]. Postholes [223], [225] and [231] ran from west to east respectively. Each posthole was excavated with near vertical sides to a tapered base, and measured c. 100mm in diameter by

0.15m depth. Backfills [222], [224] and [230] appeared reddish-brown and comprised the heavily degraded remnants of timber with clay. A further two postholes [236] and [233] followed a north-west south-east alignment, perpendicular to the former group, extending a further 0.85m to the south. These varied between 0.18m and 40mm in diameter and were filled by heavily degraded timbers [235] and [232] respectively. A small piece of timber [234] was recovered from fill [235] and was all that remained of the tip of a driven stake/post. A single fragment of medieval peg tile was also recovered from fill [235] dated from the late 12th to mid 15th century.

#### Trenches D1 and D2 (Figs. 6-8)

- 7.5.7 Similarly to the A trenches described above, a number of undated alluvial deposits were identified within Trenches D1 and D2. These were identified from 1.06m OD [1343] in Trench D1 and 0.48m OD [376]/[365] in Trench D2. The latter contained occasional inclusions of shell, limestone, degraded pottery and residual Roman material. Both sequences were thought to represent early medieval ground consolidation. The upper horizons of [376] were truncated by a rounded posthole [375] which measured 0.14m in diameter (Fig. 7). This had been backfilled with sterile clay-silt [374]. The function of the posthole remains unknown, and it may relate to an ephemeral, short-lived structure. The earliest evidence of activity within Trench D1 comprised a north-north-east south-south-west aligned channel [1397] which extended throughout the full length and width of the trench from 1.09m OD (Fig. 6). The channel extended beyond project level to an unknown depth, and only the concave eastern edge was firmly identified. It is possible that this defined the eastern limits of channel/ditch [360] as seen in Trench D2, described below.

#### ***Phase 4ai:***

- 7.5.8 A greater amount of activity was subsequently encountered dating to this period within Trench D2. This comprised an initial alluvial deposit [361] at 1.89m OD that sealed the previously described ground consolidation layers. This 0.97m thick deposit of mottled clay contained inclusions of pottery with a 1080 to 1350 date range, as well as some residual Roman 1st-century pot sherds. The upper horizon of this was truncated by a sub-rectangular pit [364] which extended 1.20m north-south by 0.70m width and 0.34m in depth with slightly undercut edges to a flat base (Fig. 7). A primary fill of silty peat [363] and secondary fill of peaty clay [362] had been used to backfill the pit. These contained a mixed assemblage of cultural material including animal bone, peg tile and curved tile (with a 1240 to 1450 date range), leather, glass (a square ink bottle) and pottery fragments. The latter were dated between 1270 and 1500, with some possibly intrusive sherds dating to 1400 recovered from [363].
- 7.5.9 The alluvial deposits were truncated by a series of intercutting pits and linear features representative of property boundaries. Roughly north-south aligned linear cut [360] was recorded at 1.79m OD and extended across the eastern limit of the trench by at least 1.11m in

width before continuing beyond the eastern limit of excavation by 0.29m depth (Fig. 7). The steep-sided, flat-based feature was interpreted as a possible ditch or property boundary, and had initially been partially backfilled with alluvial clay [359] which contained oyster shells, late 15th-century pottery, an axe shaped blade (sf 36) and medieval glazed peg tile. A predominance of sheep/goat bones within [359] might suggest these to be tawyers waste (Appendix 12). This primary fill was then sealed along its western boundary by a 0.65m thick deposit of clean blue alluvial clay [364] that lensed out towards the west. The abandonment of ditch [360] was indicated by dumped backfills [358] and [357] in turn. These capped the cut with a 0.18m thickness of silty-clays that contained organic material (hawthorn twigs/branches), oyster shell and very occasional iron objects.

#### ***Phase 4aii:***

- 7.5.10 A series of heavily truncated, sub-circular pits were identified from 2.27m OD (Fig. 8). These extended to a maximum diameter of c. 0.80m with steep near vertical sides to flat/slightly sloping bases (where seen). Pits [344], [342], [356] and [338] were backfilled by deposits of clay and sandy silts [343], [341], [355] and [337] respectively. The only fill to yield cultural material was [355] which contained pottery dated from the mid 14th century up to 1500, an iron tethering ring (sf 30) and sub-angular flints. The lack of material and high clay content may suggest that these features backfilled naturally with accumulated alluvium.
- 7.5.11 Linear north-south aligned cut [349] was identified in the east of the trench (Fig. 8) in the same location as earlier cut [360] and may indicate a continuity/maintenance of property boundaries. The cut extended the full width of the trench by a maximum of 0.75m width (continuing beyond the eastern limit of excavation), and measured 0.34m in depth with steep sides to a flat base from 2.17m OD. This had been backfilled sequentially with naturally accumulated clean, blue-grey silt [348] and dumped silty-clay [347] containing a mixed assemblage of CBM, pottery (dated 1270 to 1350), oyster shell and sub-angular flints.

#### Trench E2 (Fig. 90)

- 7.5.12 Silty-clay ground consolidation layers [1133]/[1131] and [774]/[766]/[773] were recorded within the northern and southern halves of the trench respectively. These were identified at the respective elevations of 1.89m OD and 2.21m OD. The only inclusions noted within deposits in the northern half of the area included mortar flecks and sand lenses. Those to the south however, contained peg tile dated between 1135 and 1220, shell and angular pebbles. A single fragment of late 15th-century peg tile recovered from [766] was considered to be intrusive.

#### Trench F (Fig. 93)

- 7.5.13 A sequence of alluvial ground consolidation layers were identified at the base of the trench from 1.14m OD and extended to a combined thickness of c. 0.90m. Deposits [891], [890] and

[878] contained no dating material with which to confirm these as being early medieval layers. However, the respective elevations and inclusions of degraded organics are consistent with layers encountered in other trenches assigned to this phase. Further work and topographic modelling of the wider area may help to refine these interpretations.

#### Trench G (Fig. 9)

- 7.5.14 Alluvial silty and sandy clays [2218], [2219] and [2220] were identified at the base of the trench at 0.52m OD and extended over 0.20m in depth. These were relatively clean of anthropogenic material barring occasional fragments of peg tile (from [2219] and [2220]) with a 1200 to 1500 date range. These were overlain by a 1.78m combined depth of alluvial silty clay [2217] and organic-rich dump layer [2216] in turn. The pottery and tile fragments recovered from these deposits was consistently dated between c. 1340 and 1500, and a small metal handle (sf 97) was also retained from [2217]. A group of three, squared timber stakes [2206], [2207] and [2208], were identified in the south-west of the trench from 1.12m OD. These extended to a maximum length of 0.21m by 20mm in diameter and served an uncertain function. An isolated, larger hawthorn root mass [2209] was recorded in the north-west of the trench, and measured 140mm in diameter. A small organic-rich dump layer [2215] adjacent to the latter post was recorded at a comparable elevation and contained pottery and peg tile with a 1300 to 1500 date range, in addition to a small metal handle (sf 96), copper alloy wire (sf 141) and an iron chest handle (sf 97).
- 7.5.15 Further dumped deposits of alluvial clays with mixed cultural inclusions [2205] and [2212] in turn, extended across the entire limits of the trench from 1.37m OD. These layers extended to the combined thickness of 0.62m and contained pottery dated from 1400 to 1450 and with a 1270 to 1500 date range, plus an iron horseshoe (SF95) and copper alloy lace-chape (SF100) from earlier deposit [2205]. A single posthole [2214] was also attributed to this phase of activity. Recorded from 1.09m OD, the posthole extended to 0.56m in diameter by 0.23m depth and had been backfilled sequentially with green-grey silty clays [2213] and [2210] in turn. The only dateable material recovered was from primary fill [2213] and comprised medieval peg tile dated between 1200 and 1500. The precise function of the posthole remains unknown however.

#### Trenches H1 and H2 (Fig. 94)

- 7.5.16 Similarly to the other trenches, a sequence of alluvial ground consolidation layers were identified in Trenches H1 and H2 and ascribed to this phase of activity. Within Trench H1 these comprised deposits [2019], [2016] and [2011]. Pottery and building material were recovered from [2016] and [2011] dated respectively to AD 50 to AD 160 and 1240 to 1350.
- 7.5.17 Within Trench H2, earlier Roman deposits were overlain by dumped alluvial silty-clay layers [1923] and [1913] in turn (Fig. 94). These were identified from 1.27m OD with a combined

thickness of c. 0.50m, and contained mixed cultural inclusions including pottery (residual Roman material dating up to AD 300), animal bone (equid and dog, Appendix 12), and oyster shell. The pottery from these deposits was considered to date between 1080 and 1200, and 1140 to 1220 respectively. A large number of Roman tiles, brick, imbrex and box flue combs were also retained from both layers dating between AD 71 and AD 160/AD350. Layer [1913] was overlain by a truncated cemented foundation [1915] (Fig. 10), which extended 1.88m in length along a north-west south-east alignment, by 1.04m width and 70mm in depth. The function of this is unclear, and the feature continued beyond the western limit of excavation. It is likely that feature [1915] represents the base of a structure, of which nothing of the superstructure remains. Dumped debris of silty-clay [1912] which contained pottery with a 1240 to 1350 date range sealed [1915] and may suggest that the latter to have been a relatively short lived structure.

#### Trench H3 (Figs. 11 & 95)

- 7.5.18 The earliest deposits encountered within this trench comprised alluvial/ground consolidation layers [1750] and [1751] in turn. Lower deposit [1750] was clean of anthropogenic material, whereas upper layer [1750] contained occasional pot fragments dated between 1175 and 1225. These were recorded at 1.25m OD with combined thickness of 0.76m.
  
- 7.5.19 The majority of the trench was subsequently occupied by part of a medieval building aligned north-east south-west. An initial, isolated posthole or small pit [1749] was identified at 1.21m OD with a diameter of 0.52m. The feature extended to a depth of 0.24m with a concave base and had been backfilled with grey-brown silty clay [1748] that contained a small fragment of glazed peg tile dated between 1135 and 1220. The precise function of this feature remains unknown and it was subsequently truncated by north-west south-east aligned construction cut [1745].
  
- 7.5.20 Construction cut [1744] ran across the northern limits of the trench, perpendicular to north-east south-west construction cut [1745]. It is likely that both cuts were roughly contemporary, and ran to a maximum observed length of 1.98m north-west south-east by 4.07m north-east south-west and c. 1m in width by up to 0.43m in depth. Prior to the construction of overlying walls/foundations [1741] and [1742] each construction cut had been backfilled with a 0.16m thick deposit of compacted gravel [1743]/[1746] which contained fragments of Kentish ragstone and glazed peg tile dated from the early 14th century. A further deposit of shelly mortar [1747] sealed gravel [1743] to a maximum thickness of 80mm and may have been utilised as a rough bonding material for wall foundation [1741]. Nothing of the superstructure for either wall survived with which to establish any further phasing. Differences in the foundation material however, may infer slight differences either in phasing or function for each wall. Northernmost wall foundation [1741] comprised large chalk fragments, recorded from 1.46m OD, whereas the southern counterpart [1742] utilised compacted sandy-gravel with fragments of ragstone, recorded at 1.30m OD. An analysis of the shelly mortar within both



constructions was given a date range of 1300 to 1700. These features defined at least two internal areas in the west and east of the trench, each extending beyond the limits of excavation to a maximum length of 3.5m by 1.99m width. It is likely that the area in the north of the trench lay external to the structure these defined, but this again is speculative.

- 7.5.21 Traces of a 100mm thick compacted sandy-gravel surface [1740] were identified in the westernmost space. This covered a 2.55m by 1.50m area at an elevation of 1.38m OD. Within the make-up material of the surface were a large group of medieval glazed peg tile dated between 1200 and 1600. The surface was overlain by a 0.15m thick spread of sandy-clay [1739] containing chalk and building rubble inclusions, in addition to a number of glazed peg tiles (dated between 1240 and 1600). This dump layer roughly respected the alignments of the bounding foundations [1741] and [1742] and may therefore represent infill following the robbing/removal of the superstructure of the walls. The latter deposit is indicative of the abandonment of the building.

## **7.6 Phase 4b: Medieval (Late 15th to mid 16th Century)**

### Trench A2 (Figs. 12 & 87)

- 7.6.1 The earliest evidence of activity within Trench A2 comprised a series of intercutting pits which truncated the upper horizon of underlying alluvial clay [577] from c. 1.48m OD. The clay contained sand lenses, oyster shell and small fragments of early medieval glazed peg tile dated between 1450 and 1600. The sub-circular pits ([563], [561], [565]) all exhibited concave sides and base, and extended to a maximum diameter of c. 1.10m and depth of 0.30m. The pits had been backfilled with deposits [562], [560] and [564] respectively which comprised firm, brown-grey sandy-silts with frequent inclusions of oyster shell and occasional medieval peg tile and pottery fragments dated between 1480 and 1500. A 0.40m thick dump layer of blue-grey sandy silt [537] sealed the pits and contained early 16th-century pottery fragments, including a piece of frying pan, in addition to oyster shells, animal bone fragments, medieval glazed peg tile, slag indicative of smithing and charcoal. The upper horizons of the latter dump layer were in turn truncated by an additional sub-circular pit, [556]. This extended 0.80m in diameter to a maximum depth of 0.24m and had been backfilled with clay-silt [555]. The backfill contained occasional inclusions of oyster shell and charcoal flecks, but no dateable material.
- 7.6.2 Similarly to Trench A1, a timber revetment was identified as belonging to this phase within a north-east south-west aligned ditch. Ditch [559] ran along the northern half of the trench and extended beyond the northern limit of excavation. This continued 4.36m in length by 1.26m in width and over 1.32m in depth from 1.75m OD. The cut exhibited concave sides and was not fully excavated, the base extending beyond 0.43m OD. The southern edge of this feature had been reinforced by the construction of pile and plank revetment [665]. It is noteworthy that structure [665] followed a slightly differing north-south alignment that may suggest a localised

narrowing of the ditch. The structure itself was initially formed by the installation of north-south aligned oak plank [656] to define the western limits of the revetment. Squared, elm pile [653] was driven in to the east of plank, to a maximum length of 0.54m. A further three planks lay to the north of the trench following a roughly east-west alignment. These were formed of an oak beam [652], elm plank [654] and oak plank [655], the largest example extending to 0.70m in length by 0.20m and 20mm width (plank [655]). Slightly larger (0.98m long), but poorly preserved oak plank [558] was also identified, but may represent a displaced part of the structure. The only traces of former driven posts were inferred by the presence of a series of circular postholes [664], [658], [660] and [662]. The backfills of these [663], [657], [659] and [661] all comprised sandy gravel, largely sterile of any cultural material, and is likely to represent naturally accumulated material following the removal of the original posts. A few fragments of building material recovered from the fill of posthole [660] comprised late medieval peg tile with a 1480 to 1700 date range. The dimensions of the cuts suggested the posts would have had an average diameter of c. 100mm.

- 7.6.3 Primary fill [581] of ditch [559] lay to the east of the ditch and therefore bore no stratigraphic relationship to the revetment. This deposit of organic rich clay continued for 3.7m in length and 0.30m in thickness, and contained pottery fragments dated from the late 15th to late 16th century. Also within this fill were undiagnostic iron deposits, and a smithing hearth bottom indicative of smithing activities (Appendix 9), plus a large concentration of animal bone (Appendix 12). The upper limits of the ditch, and sealing the revetment [665] were a series of clay-silt fills, [548], [547] and [541] with a combined thickness of 0.82m. Fills [548] and [541] contained pottery sherds dated between 1480 and 1550, a pinner's bone of cattle metatarsus (sf 111), iron wire (sf 277) with the latter containing some residual Roman pottery dated to the 1st century AD. It is noteworthy that a late 14th-century Penn Tile was recovered from [548] and the pottery within this deposit was of an industrial nature (Appendix 4, Appendix 10).

#### Trench A3 (Figs. 13, 14 & 88)

- 7.6.4 Archaeological features within Trench A3 dated to the late 15th to early 16th centuries were divided into two episodes of activity; an earlier industrial phase, followed by later pitting. Earlier industrial usage was suggested by a large squared pit [621] which dominated the entire trench, extending over 4.4m north-south by 2.5m in width and over 1.17m in depth from 0.78m OD (Fig. 13). The full profile of the cut was not observed, with the depth only being ascertained through localised augering, which inferred a base at c. -0.39m OD. The pit had been backfilled sequentially by dumped elder/blackthorn roundwood [678] (Appendix 16) and deposits of silty-sand and clays [677], [676], [675], [674], [651]/[673], [671] and [670] in turn. Each deposit contained variable quantities of gravels, oyster shell, CBM and pottery consistently dated between 1480 and 1550. Numerous small finds were also recovered from these fills and included large quantities of leather (sf 26 from [677], a near complete single strap fastened shoe of 14th to 15th-century date, sf 25 from [676] representing parts of a

pouch or jerkin, Appendix 14), whole pieces of leather shoes (sf 23 and sf 24 from [674]), and wooden objects (sf 27), including two wooden nit combs (sf 22, sf 28), also from fill [674]. The leather assemblage suggests this to be waste from shoemaking or translators waste (recovered from [673], [674], [676], Appendix 14). Upper fill [670] also contained a small iron knife (sf 20) with a bone-scale handle, and part of a glass vessel (sf 21). It is also noteworthy that a dish and cylindrical jar with sgraffito decoration were recovered from deposits [674] and [677] respectively. A Westminster floor tile recovered from [677] and Penn floor tile from [675] were also noteworthy as being decorated with a petal/floral designs (Appendix 10).

- 7.6.5 The upper fills of the large tanning pit [621] sealed and were sealed by alluvial deposits [695] and [666] respectively. These silty-clay layers contained pottery of a similar date to that of the pit fills, dating from 1500 to 1630, which may suggest the backfilling of the feature was a fairly rapid process. This was further supported by the presence of occupation layer [594] and dump layer [672] that lay to the north and west of the pit respectively. These sealed the upper pit fills with a thickness of 0.25m of debris, and both contained late 15th/early 16th-century pottery.
- 7.6.6 A series of intercutting, sub-rounded pits were identified from an uppermost horizon of 1.09m OD (Fig. 14). The earlier of these, [598] filled by [597], [650] filled by [599] and [593] filled by [592] extended to c. 0.90m in diameter and contained backfills of silty-sands with inclusions of late 15th-century pottery with fragments of leather, an iron sheet fragment (sf 267 from [599]) animal bone, chalk and charcoal. These were subsequently interpreted as refuse pits, and were truncated by larger c. 1.5m diameter pits [596] and [588] in turn. Backfills [595] and [587] were comparable to those of the earlier pits, comprised of grey-brown clay-silts containing a very mixed assemblage of leather fragments, oyster shell, charcoal, chalk, animal bone, iron objects (an iron mount (sf 278) was recovered from [587]), a bone bead (sf 113) and pottery dated from the late 15th to mid 16th centuries. Both pits also displayed a comparable profile with concave sides to flat bases, and were also interpreted as refuse pits. Fill [595] was also notable for containing a particularly rich sample of fish bones (Appendix 13).
- 7.6.7 Linear cut [586] was identified along the southern limit of excavation and followed a north-west south-east alignment 1.48m in length by over 0.22m depth (Fig. 14). The base of the feature was not observed, and continued beyond the project depth of 0.86m OD. However, the steep sides and silty-clay backfill [585] that contained late 15th-century pottery with oyster shells, charcoal and animal bone were highly comparable to ditch [559] as seen in Trench A2 to the south. If these features represent the northern and southern limits to a large ditch, this would have measured c. 7m in width.
- 7.6.8 Isolated oak post [669] was located in the west of the trench (Fig. 14) and extended to a maximum length of 0.15m with a diameter of 40mm. The function of this post remains uncertain. This post and the remainder of the trench was subsequently overlain by a 0.35m combined thickness of dumped sandy-clay [566] and [557]. Similarly to the pit fills, these

layers contained a mixed assemblage of cultural material including a lead window came and iron sheet mount (sf 18 and sf 396 from [566]), an iron fitting (sf 395 from [557]) late 15th-century pottery (including a conical lid, slipware dishes with sgraffito decoration and a distillation flask used to make nitric acid), brick, charcoal, glass fragments, animal bone, glazed tile and mortar.

#### Trench B2 (Fig. 15)

- 7.6.9 The only evidence for the medieval period within Trench B2 comprised box quartered post [69] and associated horizontal beam [70], which sealed a 0.52m thickness of dumped debris [73]/[74]. The latter deposits were identified from an uppermost horizon of 1.60m OD within localised augering, and comprised a high clay content with inclusions of chalk, wood and late 15th-century pottery and tile fragments. The timber fragments were therefore assigned to this phase on the basis of the pottery dates. The limited exposure of both timber pieces means that it is difficult to say with any certainty whether these represent part of a larger east-west aligned revetment or are isolated examples of discarded structural material. These pieces were identified from 2.11m OD, with the upright post formed of a boxed quartered post, 0.16m by 0.14m and 0.43m in length. The horizontal plank lay to the immediate south of this and extended over 1.10m in length by 0.21m in width. If this were part of a revetment, it is possible that this reinforced the northern bank of a channel/ditch associated with that recorded between Trenches A2 and A3 (see para. 7.6.7). Similar posts have been recovered from late 12th to 13th-century buildings or associated with post-medieval workshops (Appendix 15). Further work may therefore be required to confirm which phase the timbers should be assigned to.

#### Trench B3 (Fig. 16)

- 7.6.10 A series of intercutting refuse pits were identified from c. 2.5m OD. The earlier of these truncated a 0.40m thick layer of alluvial clay [99] that extended throughout the base of the trench. The upper horizons of this contained occasional fragments of CBM, charcoal and pottery dated from 1480 to 1650, in addition to a number of residual Roman pottery sherds. The southern and eastern limits of the trench were occupied by a cluster of sub-circular pits [615], [613] and [617]. These extended to a maximum of c. 1.45m in diameter (pit [617]) by 0.35m depth, and all exhibited a concave profile. The pits had been deliberately backfilled with silty clays [614], [612], and [616] containing oyster shells, mortar, very occasional pottery sherds (from pit fill [617] only), dated from 1080 to 1350 and occasional sherds of medieval glazed peg tile dated from 1240 to 1450 (from fill [614] only). Other material of note was recovered from [612] and comprised slag and iron indicative of smithing activity (Appendix 9). Similar material was also retained from the fill [608] of an additional pit [609] identified in the north of the trench. These southern pits were subsequently overlain by 0.10m of alluvial clay [93] from 2.69m OD, which contained flecks of chalk, mortar and glazed tile dated from the late 15th century.

- 7.6.11 The northern group of pits [609], [607] and [605] were similarly sub-circular in appearance with concave sides and base. These measured between 1.7m and 0.50m in length by up to 0.45m in depth. Backfills [608], [606] and [604] generally comprised mixed silty clays with inclusions of oyster shell, charcoal and occasional fragments of building material, including late Roman imbrex (from fill [606]) and medieval peg tile (from fill [608]). A small piece of bone working waste (sf 13) was recovered from fill [606], and the pits, similarly to those recorded to the south and east of the trench were interpreted as rubbish pits. The identification of squared posthole [611] to the north of the trench may suggest the presence of a property boundary to the north of the trench. However, with only one isolated posthole, firm interpretations regarding function are difficult to establish. The flat-based cut had been backfilled with charcoal rich silty clay [610], with no indications of any eroded timbers.
- 7.6.12 Irregular pit [620] was identified in the north of the trench. The cut had been excavated with near vertical sides to a depth of over 0.40m (extending beyond project level in depth) from 2.16m OD. The pit had been backfilled with naturally accumulated alluvial clay [618] that contained flecks of organic material. Following this event however, oak roundwood stake [619] had been driven into the backfill. The stake measured 80mm in diameter by 0.31m length, and served an as yet unknown function.

#### Trench C

- 7.6.13 Levelling deposits [216]=[217] were the only indications of activity dating from the late 15th to 16th century. These silty-clay layers covered the entire base of the trench, sealing all earlier material to a maximum depth of 0.18m from 1.54m OD. Within these deposits were oyster and mussel shells, charcoal, pottery dating from 1480, worked bone (sf 16), an iron hinge strap (sf 149) and a heavily worn silver coin (sf 17).

#### Trench D1 (Fig. 17)

- 7.6.14 Earlier channel [1397] (Phase 4a) appears to have backfilled naturally with alluvial clay [1345] containing pottery sherds at some point after the late 15th century. A 0.12m thick deposit of alluvial clay [1396] sealed fill [1345] and was observed in section. The layer was clean of any cultural material and may either represent a flood deposit, or an additional fill related to the channel. Dumped deposits of crushed mortar [1394] and alluvial clay [1360] capped the eastern limits of the channel in turn with a combined thickness of 0.44m. Upper deposit [1360] contained fragments of chalk, oyster shell, a piece of an elm pile tip and pottery dated from 1450 to 1550.
- 7.6.15 A number of features truncated the upper horizons of ditch fill [1345]. Squared pit [1342] was located in the north of the trench and extended 1.56m by 1.12m and over 0.30m in depth. This feature was not fully excavated due to project depths. Dumped debris [1341] of loose,

grey-brown silty clay containing fragments of CBM, bone, metal and pottery (dated 1480-1600) had been used to backfill the pit. Also within the pit fill was a small fragment of oak clapboard.

- 7.6.16 The identification of a partially truncated, north-south aligned wattle revetment [1349] extending c. 1.5m in length across the western limits of the trench might suggest that the earlier channel may have been re-cut, and retained some longevity of use. The structure comprised a series of small, soft roundwood poles varying between 40mm and 100mm in diameter, identified as [1398], [1350], [1351], [1352], [1353], [1354], [1355] (the only squared post), [1356], [1357] and [1358] from south to north respectively. The use of these softwood poles is dated on technological grounds to the 16th century (Appendix 16). The southern posts [1350], [1351] and [1352] secured plank [1359] which extended 0.80m in length by 80mm width from 1.47m OD.
- 7.6.17 The eastern limits of the revetment (i.e. within the channel/watercourse) were infilled by a process a naturally accumulated alluvium [1348] followed by deposits of organic debris and dumped material [1322] and [1321] in turn, with the combined thickness of 0.89m from 1.67m OD. The primary accumulation of grey-green alluvial clay [1348] extended to 0.61m in thickness and contained pottery dating between 1500 and 1580. Upper clay-silt dump layer [1321] also contained fragments of pottery with a roughly contemporary date range of 1480 to 1600.

#### Trench D2 (Fig. 18)

- 7.6.18 An alteration or modification of property boundaries, and/or increased necessity for water management was evident during the mid/late 15th century within this trench. The earliest of these appeared to be two linear cuts [329]=[336] and [340] which extended along a north-north-east south-south-west alignment, towards the western limits of the trench. Both cuts extended across the full width of the trench by 0.88m and 0.20m in width respectively, with cut [329]=[336] extending beyond the western limit of excavation. The latter feature exhibited steep/near vertical sides and flat base at 1.99m OD and had been backfilled with blue-grey silty clay [328]=[335] containing sub-angular gravels, CBM, chalk and pottery with a 1480 to 1600 date range. A small bone pin/needle (sf 29) carved from pig fibulae was also recovered from the northern extent of fill [335], and may represent residual Anglo-Saxon material (Appendix 8).
- 7.6.19 The later property boundary may have been relatively short lived, given its truncation by pits [325] and [327] to north and south. The full dimensions of either pit are difficult to determine given their extensions into the limit of excavation. Each sub-squared pit was identified from c. 2.27m OD and exhibited comparable profiles with steep/near vertical sides and flat bases. These had been backfilled with [324] and [326] respectively which comprised silty-clays with pottery, bone and CBM inclusions. The pottery dates differed slightly between the pits, dating

from the late 15th century for fill [324], with that recovered from [326] having a 1350 to 1500 date range.

- 7.6.20 Linear cut [340] exhibited concave sides and a base that sloped down to 2.08m OD, with a noticeable declination from north to south. This had potentially backfilled naturally with soft, alluvial clay-silt [339]. Within the fill were sub-angular gravels, oyster shell, an iron blade fragment (sf 274) and pottery dated to the late 15th century, but with some residual Roman material with a late 1st to mid 2nd-century date range. This was interpreted to be part of a drainage channel that had presumably been heavily truncated horizontally, given the shallow 0.13m depth of the cut.
- 7.6.21 An additional, irregular 'kidney' shaped pit [346] was identified in the east of the trench. This feature exhibited concave, slightly undulating sides and base, which may suggest this to be a natural hollow rather than an anthropogenically cut feature. This had been backfilled with sandy-clayey-silt [345], clean of cultural material. The entire trench was subsequently overlain by a 0.20m thick layer of soft, silty-clay levelling material [321]. Pottery recovered from this later was, similarly to other features attributed to this phase, dated from 1480 to 1600.

#### Trench E1 (Fig. 19)

- 7.6.22 The earliest evidence of activity within Trench E1 comprised alluvium and foreshore deposits [1496] and [1495] respectively. These were identified from 0.85m OD with the combined thickness of 0.60m. Foreshore deposit [1495] comprised loose silty-clay with coarse grit and large fragments of timber. Little cultural material was recovered from either layer, however the pottery that was retained was consistently dated to the late 15th century to 1600, and a small wooden object (sf 87) was retained from [1495]. Indications of butchery within the immediate vicinity were indicated by the presence of at least 6 cattle skulls from the latter deposit, with evidence of butchery marks (Appendix 15). A near complete broad-toed ankle boot was also recovered from [1495] and represents a style of shoe popular during the later 12th to 13th centuries (Appendix 14).
- 7.6.23 Foreshore deposit [1495] was truncated to the south by the installation of a possible tanning pit. Construction cut [1030] continued beyond both eastern and southern limits of excavation with an approximate diameter of 1.64m. The cut may have been sub-squared in plan and extended with steeply sloping sides to a concave base, 0.78m in depth. This had been initially backfilled with silty-clays [1033], [1032] and [1031] in turn, which were clean of cultural material. Placed into the uppermost of these were a series of timber posts to define a tank/pit. The tank was aligned roughly north-east south-west and defined an approximate area of 0.47m<sup>2</sup>. The northern and eastern corners were demarcated by rounded posts [1475] and [1473] which measured 0.17m in diameter and were identified from c. 1.3m OD. The larger of the two, [1473], extended 2m in length. The north-eastern side of the tank was defined by smaller rounded posts [1474] and [1472], and south-eastern side defined by squared posts

[1471] and [1468], each with a diameter of between 55mm and 100mm. Additional rectangular posts [1489] and [1432] were located along the north-western side of the pit. Post [1432] was the largest timber exposed, with a width of 0.23m; this was also identified from the highest level of 2.01m OD, a comparable elevation to similar rectangular post [1468]. It is possible that these two examples represent driven posts relating to a slightly later phase of use than the remainder of the structure.

7.6.24 The abandonment of the timber-lined pit was indicated by dumped clay layer [1457] which sealed the southern limits of the trench. This 0.83m thick deposit of silty clay contained a small copper alloy lace chape (sf 81), and pottery fragments with a late 15th to mid 16th-century date range. Quantities of waste leather potentially from shoemaking were also recovered from [1457], as well as a near complete open latchet type shoe (Appendix 14) of possible 14th-century date. Layer [1457] was, in turn, truncated by rectangular elm piles [1469] and [1470] to the west of the trench. These were identified from 1.82m, and measured a maximum of 0.26m in width by 1.54m in length and had been driven into cuts [1029] and [1028]. It is likely that these relate to a structure that extended beyond the western limit of excavation.

7.6.25 The timber piles, and entirety of the southern excavation limits were then sealed by a 0.10m thick clay slab [1435] and 0.20m thick clay levelling layer [1424] in turn. Few finds were retrieved from either deposit, but pottery from [1435] was dated, similarly to other layers within this phase, from 1480 to 1600.

#### Trench E2 (Figs. 20, 90 & 91)

7.6.26 The upper horizons of the undated alluvial layers were truncated from 2.36m OD by north-east south-west aligned linear cut [768]=[1130]. This linear cut extended across both halves of the trench to a maximum observed length of c. 4.6m by c. 1.4m width and 1.73m in depth. The full width of the feature could not be established as this extended beyond the eastern limit of excavation within the southern half of the trench and had been heavily truncated by later pitting within the northern half of the trench. The base of the steep-sided cut extended beyond project depth but from the levels of the sides that were observed appeared to drop from north to south. Silty-clay fills [779], [775], [767]=[1129], [1132], [1128] and [763] backfilled the cut in turn. These contained shell inclusions, with fragments of animal bone, including horn and a possible peacock tibia (Appendix 12), chalk flecks and pottery dated up to 1550. A crudely carved pin (sf 60) was also recovered from secondary fill [775], which capped a collapsed oak log pile [778], and two small sherds of late 15th-century peg tile were recovered from fill [1129]. The fills were thought to represent a combination of naturally accumulated silts and deliberate backfilling. A number of intrusive pottery, clay tobacco pipe and brick fragments dating to the 19th century were recovered from fills in the north-eastern limits of the trench. It is likely that these were derived from one of the large modern intrusions in this area, and should be considered as contamination.



- 7.6.27 The upper limits of the ditch fills were truncated by a number of oak stakes [769], [772] and [776] of uncertain function. Stakes [769] and [776] exhibited hewn tips, and measured up to 1.20m in length by 100mm diameter. The latter stake [776] was the only example to have been driven into a posthole [770], which was recorded from 1.99m OD, extended 0.16m in diameter and contained 100mm of soft degraded wood [771] overlying the stake itself. Pile tip [772] represented recycled material and had been hewn from a morticed building timber (Appendix 15). The precise function of the stakes/piles remains uncertain.
- 7.6.28 Demolition spread [762] sealed the southern limits of the trench from 2.38m OD. The 0.29m thick layer of compacted silty-clay contained a mixed assemblage of CBM, charcoal and chalk flecks, stone fragments and late 15th-century pottery sherds. Truncating this and continuing beyond both southern and eastern limits of excavation was rounded pit [765]. The pit extended over 2.10m in diameter and 0.34m in depth with concave sides to a flat base. Within the refuse pit was deliberately dumped silty-clay [764] which contained fragments of iron, CBM rubble, including part of a Reigate stone mould and peg tile, animal bone and undated pottery. The rubble was considered to have a late 15th to late 17th-century date range.
- 7.6.29 A comparable sequence was observed to the north of the trench. A 0.35m thick spread of compacted silty-clay levelling/demolition material [1108] was recorded from 2.60m OD. This contained a variety of material including CBM (mostly peg tile dated from 1430 to 1700), mortar fragments/flecks, chalk and oyster shell. An irregular, heavily truncated pit [1127]=[1125] truncated the latter deposit, and extended to a maximum of 0.40m in depth. This had been deliberately backfilled with sandy-silty-clay [1126]=[1121] which contained a high percentage of building rubble, including mortar, brick and tile fragments. A group of timbers found within the eastern extent of the pit [1125] may suggest the 'pit' may have been part of a localised drainage system. Two planks on edge [1123] and [1124] of softwood and oak respectively were found along the southern edge of the cut, and were associated with a heavily decayed softwood post [1122].

#### Trench E3 (Fig. 21)

- 7.6.30 Trench E3 was heavily truncated due to later post-medieval drainage features, and therefore the evidence relating to any earlier activity is extremely fragmentary. A 0.45m thickness of blue silty-clay alluvium was identified at the base of the trench from 1.23m OD. Layers [1233]=[1234]=[1232]=[1229] contained inclusions of mortar, charcoal and pottery with a 1480-1650 date range. These deposits were overlain by a 0.20m thick dump layer [1221] of mixed clay and charcoal, and a 0.72m thickness of alluvial clay [1213]. The latter was clean of cultural inclusions.
- 7.6.31 A number of squared oak stakes were driven into the underlying alluvium. Posts [1228], [1222] and [1223] measured between 80mm and 200mm in diameter and served an uncertain function ([1228] not illustrated). These may have related to a localised revetment or part of a

structure which extended beyond the western limit of excavation. The latter two posts were overlain by horizontal beam [1224] which despite poor preservation appeared to have been formed from a boxed heart with a diameter of 0.16m. This is likely to be a displaced structural element rather than being part of an *in situ* structure. These timbers were overlain by clay dump layers [1226] and [1225] in turn, with the combined thickness of c. 0.45m from 2.37m OD. Barring occasional fragments of undiagnostic CBM and charcoal flecks, these deposits were clean of cultural material.

- 7.6.32 North-south aligned cut feature [1212] was identified at the south-western corner of the trench, and extended into both western and southern limits of excavation from 2.25m OD. The cut extended to a maximum length of 1.4m by over 0.92m in width and 0.40m depth with steeply sloping sides. It was assumed that the true base of the feature lay beyond the limit of excavation. The backfill of this feature [1211] comprised soft, black silt with organic inclusions and fragments of early post-medieval brick and peg tile, charcoal, chalk, mortar and fragments of animal bone.

#### Trench F (Figs. 22 & 92)

- 7.6.33 The earliest evidence of activity within the trench comprised silty clay dump layers [889] and [877] which were identified from 1.10m OD. These sealed earlier alluvial clays with a 0.41m thickness of mixed material, including oyster shell, gravels, CBM, animal bone, pottery, chalk and wood fragments. Dump layer [889] identified to the north of the trench contained pottery dated from 1450 to 1550, whereas the dump layer [877] from the south of the trench contained a slightly earlier assemblage dating from 1350 to 1400. This also contained some residual Roman pottery fragments dating from the late 1st to mid 2nd century, a Westminster floor tile with a large fleur-de-Lys design (Appendix 10), a small copper alloy needle (sf 66), iron pintle (sf 67), an angled iron strap from a chest or casket fixing (sf 68) and an iron barbed iron arrowhead (sf 69), possibly for hunting (Appendix 8).
- 7.6.34 A large proportion of the southern limits of the trench were truncated by sub-squared pit [875]. The pit exhibited near vertical sides, 0.33m in depth, to a flat base at 0.67m OD. The cut extended over 1.82m in width and continued beyond the southern limit of excavation. This was backfilled sequentially with deliberate infills of silty-clay, peat and clayey-sand [876], [874] and [879] in turn. These backfills were extremely mixed with inclusions of animal bone, CBM, chalk and charcoal flecks, oyster, cockle and mussel shell, ragstone, pottery, metal fragments, degraded wood and sub-angular flints. Dateable material was retained from primary and secondary fills [876] and [874] only and the pottery dated from 1400 to 1500. A number of small finds were also recovered from these fills and included copper alloy wire (sf 62, sf 63), an iron strap (sf 64), and an iron strip (sf 283).
- 7.6.35 The pit was subsequently overlain by a series of dumped deposits. Silty-clay dump layers [855]=[873], and [837] were identified from 1.76m OD and exhibited a slight downward slope

to the south. These deposits extended throughout the trench with a combined thickness of c. 0.76m and contained a very mixed assemblage of shell, animal bone, charcoal, worked stone, an iron mount (sf 41 from [837]), a piece of iron horseshoe (sf 282 from [873]) medieval and residual Roman tile, mortar and pottery inclusions. The pottery fragments gave a 1400 to 1500 date range, with a few residual fragments of Roman pottery dating to the 1st century AD. The building material was similarly dated between 1450 and 1700.

- 7.6.36 A series of intercutting pits were observed to truncate the upper horizons of the latter dump layers. The largest of these [856]=[872] extended throughout both halves of the trench 3.9m in length, on a slight north-east south-west alignment, which may suggest this to be more of a linear feature rather than a large pit. The cut exhibited steeply sloping sides, with a base that extended beyond the western limits of excavation. Deposits of sandy-clay [857] and [871] backfilled the 0.30m deep feature and contained fragments of building material and shell.
- 7.6.37 The latter pit [856]=[872] was truncated to the north of the trench by sub-squared and rounded pits [830], [832], [834] and [836], none of which was fully exposed in plan. All of the pits were relatively shallow, extending up to 0.22m in depth, with concave sides and flat bases. These had been backfilled with silty and sandy clays [829], [831], [833] and [835] respectively. These contained a mixed assemblage of animal bone, CBM, metal, mortar, shell and charcoal inclusions. The only fills to yield dateable pottery fragments were [829] and [835] which inferred 1270 to 1500 and 1480 to 1600 date ranges, and fills [831]/[833] contained occasional fragments of medieval glazed peg tile dated from the late 12th to mid 15th centuries. All pit fills were sealed by 0.23m thick dump layer [828] of silty clay that contained a comparable assemblage of material to the pits, in addition to several fragments of glazed Flemish floor tile, and a sherd of a rare fabric type with an underfired internal glaze (Appendix 4).
- 7.6.38 All pits were truncated by a larger rounded pit to the north of the trench which extended up to 1.14m in diameter by 0.26m depth. Pit [827] was deliberately backfilled with sandy clay [826], which was comparable to the earlier pit fills, containing a mixed assemblage of late 15th-century pottery, CBM, slag, oyster shell, an iron fitting (sf 269) and animal bone. This, in turn, was sealed by 0.15m thick dump layer [825] from 2.16m OD, which comprised grey sandy clay with inclusions of contemporary pottery fragments, mortar, CBM, animal bone and metal.

#### Trench G

##### ***Phase 4bi (Fig. 23)***

- 7.6.39 Activity within Trench G dating to the 15th and 16th centuries was subdivided roughly into two phases, but of a roughly contemporary date range. An initial sequence of dumped alluvial clay-silt [2204]/[2203] containing mixed debris, including CBM, and pottery sherds with a 1480 to 1500 date range was identified from 1.65m OD and extended to 0.60m in depth across the entire base of the trench. A large iron rotary key (sf 93) and copper alloy signet ring (sf 94)

were also recovered from layer [2204], the ring was inscribed 's b e' and may indicate the presence of trade and merchandise (Appendix 8). The key was for a fixed lock on a door, most common during the late medieval period (Appendix 8).

- 7.6.40 In the north of the trench circular construction cut [2202] was identified from 1.27m OD. This extended up to 1.38m in diameter, with vertical sides, 0.13m deep, to a flat base. The cut was backfilled with 70mm of clean, blue-grey silty clay [2211]. Into this backfill a number of rounded wooden hoops [2201] remained which defined a smaller area 0.85m in diameter. The hoops were all that remained of a robbed out barrel well. These were sealed by fills [2200] and [1699] in turn which comprised blue-grey clay and sandy silt with fragments of degraded timbers, pottery with a 1400 to 1500 date range and a crudely carved bone pin (sf 98). It seems likely that the barrel well was only utilised for a short period of time, as this had been robbed and sealed by dumped silty clay and mortar deposits [1698], [1696] and [1668] in turn which contained roughly contemporary pottery dated between 1350 and 1500. Deposits [1696] and [1698] contained glazed medieval peg tile with a 1240 to 1600 date range.
- 7.6.41 Truncated circular pit [1666] extended to a diameter of c. 1.7m by 0.82m in depth from 2.29m OD. This was located in the north of the trench and exhibited concave sides and a flat base. The pit had been backfilled with relatively clean sandy-silt [1669] which contained fragments of pottery dated between 1500 and 1550, a mid to late 13th-century Chertsey tile decorated with a large fleur-de-lys design (Appendix 10) and a small iron spur (sf 90). To the south of this feature a heavily truncated linear cut [1695] was identified from the slightly lower elevation of 1.61m OD. The cut extended to a maximum of 0.20m in depth with vertical sides to a flat base. The north-north-east south-south-west alignment of the cut is comparable to later masonry that truncated its northern limits, and it is possible that this represents a construction cut for an earlier property boundary, or short-lived extension. Relatively clean brown-yellow clay [1691], with very occasional fragments of pottery with a 1300 to 1650 date range, had been used to backfill the cut.
- 7.6.42 Cut [1695] was overlain by a 0.46m wide strip of crushed mortar levelling [1690] which extended across the trench along a north-east south-west alignment. This similarly mirrors the alignment of later masonry and may demarcate a former property boundary. A number of the dump layers observed within this trench roughly respect this alignment, and many of the deposits of contemporary date in the south of the trench were identified at a slightly lower elevation than those to the north. These inconsistencies might suggest that a boundary existed at this point, of which no traces remain archaeologically. No dateable material was recovered from [1690]. The southern limits of this boundary were subsequently overlain by a 0.20m thickness of dumped sandy-silt [1681] which contained a mixed assemblage of animal bone, chalk and mortar fragments, oyster shell and pottery dated to the last quarter of the 15th century. Squared postholes [1689] and [1693] truncated [1681] and served an uncertain function. It is unclear whether these functioned together or are related to entirely separate

structures. Each posthole extended c. 0.14m<sup>2</sup> by up to 0.80m in depth and had backfilled naturally with accumulated silt [1692] and [1688] respectively.

- 7.6.43 A 0.35m combined thickness of dumped sandy-silt extended across the southern limits of the trench and sealed the postholes from 2m OD. Deposits [1679], [1680] and [1684] contained fragments of pottery dated up to 1500, with degraded peg tile and mortar and animal bone. These dump layers may represent a combination of demolition and domestic debris. A similar assemblage was noted within fill [1682]. This had been utilised to backfill an irregularly shaped pit [1683] in the south of the trench. No dateable material was recovered from [1682] and it was assumed to be roughly contemporary with the dump layers it truncated.

***Phase 4bii (Fig. 24)***

- 7.6.44 Structure [1671] occupied the north-eastern corner of the trench. This comprised an initial construction cut [1678] which followed a north-north-east south-south-west alignment, with an eastern return to the south. The cut was recorded from 1.91m OD and extended with vertical sides to a flat base at 1.39m OD. The base of the cut was initially filled with silty-clay backfill [1677] and a degraded post [1686] that lay horizontally. The post extended up to 0.88m in length by 0.16m width and appeared squared with a slightly tapered point. It is possible that this was utilised as foundation material. Onto the post a tile, chalk and ragstone wall foundation [1676] was constructed. The 0.26m wide feature extended to a maximum depth of 0.52m with the material laid in random courses. This defined an internal area of c. 1.80m north-north-east south-south-west by 0.50m, as seen. The materials incorporated into the build inferred a mid 15th to 18th-century date range. An irregularly coursed Hassock stone and chalk wall [1675] and red unfrogged brick repair [1674] capped the foundation from 2.19m OD. The former was dated between 1200 and 1600 based upon the building material utilised. The internal space, to the east of the walls, was subsequently backfilled with firm clay-silt [1697] that was largely clean of any anthropogenic material, but did contain one small bone stylus (sf 91) and a few sherds of pottery dated between 1270 and 1500. A small mortar spread [1673] identified to the south of the structure, and therefore external to the walls, comprised a 0.40m thick layer of lime mortar, and is likely to relate to the construction and/or repair of wall [1674]. This contained occasional fragments of pottery with a 1350 to 1500 date range.
- 7.6.45 The entire western limits of the trench were overlain by a 0.48m thick layer of gravel [1657]. This may have been utilised as levelling or as a rough surface external to the property represented by structure [1671]. Pottery recovered from the layer inferred a 1480 to 1500 date range. This was truncated by a number of rounded postholes measuring between 0.12m and 0.19m in diameter, all with steep sides to a tapered base indicative of driven stakes. Postholes [1661], [1659] and [1663] were all located in the north-west of the trench at c.2m OD, extending up to 0.60m in depth, and followed a curvilinear north-west south-east alignment. Each posthole had been backfilled with grey-brown silt [1660], [1658] and [1662]

respectively, with very few cultural inclusions, other than occasional fragments of medieval peg tile (from [1662] only). A fourth posthole [1665] backfilled by [1664] was located to the south of this group, identified from a comparable elevation and of comparable dimensions. It is likely that this related to a separate structure or property boundary.

- 7.6.46 The abandonment of structure [1671] was indicated by a 0.31m thick depth of grey-brown clay-silt and mortar rich silt demolition material [1694] and [1672] in turn. These backfilled the internal area of the structure and contained frequent inclusions of tile, brick, mortar and oyster shell. Pottery recovered from primary demolition infill [1694] dated between 1500 and 1600, and a small pin carved from a pig fibula (sf 99) was also retained from the layer.
- 7.6.47 A combined depth of 0.36m of dumped material overlay the entire trench from 2.36m OD. Layers [1656], [1654], [1655] and [1653] comprised mixed deposits of coarse sandy-clay and silty sand with inclusions of pottery, glazed Flemish floor tile, peg tile, worked stone fragments (Reigate stone) and shell (oyster, cockle and mussel) with lenses of organic debris. The pottery and building material recovered was all roughly contemporary, dating from 1480 to 1550 and the deposits are likely to represent a combination of levelling material and dumping of domestic debris.

#### Attenuation Tank 1 (Fig. 25)

- 7.6.48 Evidence of a medieval building and water management features were identified during the excavation of the Attenuation Tank and associated groundworks (AT1). A former 2.84m wide channel was defined in the northern excavation area, delineated by two parallel lines of timber revetting measuring up to 6.34m in length along a east-north-east west-south-west alignment, and recorded from c. 0.22m OD. Each revetment had been constructed with a series of horizontally lain planks supported by squared posts. The northern line of revetting utilised planks measuring between 0.29m and 1.25m in length by up to 40mm thick ([1862], [1863], [1864], [1865], [1866]), supported by posts measuring an average of 200mm by 200mm ([1858], [1859], [1860], [1861]). By contrast the southern line of revetting utilised planks of a comparable size ([1822], [1824], [1827] and [1828]), but were supported by both squared posts ([1821], [1823], [1825], [1829] and [1830]) and timber beams ([1819], [1820], [1826] and [1831]) measuring between 100mm by 100mm and 160mm by 160mm. An examination of [1823] revealed this to be the abraded top part of a box quartered revetment upright, dated stylistically to the very late 15th to 16th century (Appendix 15). A series of ground consolidation layers had been dumped to the south of the southern revetment, presumably to secure the feature. These deposits of organic silty-clay [1842], fluvial sand [1841] and organic silty clay [1840] were clean of anthropogenic material. It is possible that given the organic nature of these deposits, that material dredged/excavated from the channel during the construction of the revetment was utilised as backfill.

- 7.6.49 Compacted alluvial clay [1839] backfilled the full width of the channel from 0.42m OD. This sealed an additional squared post [1857], set 1m north of the line of revetting. The latter post may be associated with a secondary structure, or represent the remnants of a tie back. Further levelling deposits [1856] and [1857] raised the ground in this vicinity by a further c. 1m, in advance of the construction of chalk foundation [1854]. The foundation lay parallel to, and respected the alignment of the earlier revetment and extended to a maximum width of 0.55m by 0.40m depth. This had been constructed with roughly finished chalk nodules bonded with a compacted grey mortar. The feature exhibited a northern return to the east which may suggest that the internal area lay to the north of the wall, and external face towards the earlier channel. No other traces of sub-divisions or masonry were identified with which to confirm this.
- 7.6.50 Foundation [1854] was considered to be roughly contemporary with a small complex recorded to the south of the former channel. This similarly comprised a series of chalk foundations, which defined at least five internal spaces over an area of 52m<sup>2</sup> from 2m OD. The structure was aligned north-north-west south-south-east and therefore lay perpendicular to the channel described above. Chalk footings [1801]=[1804] extended to 6.74m in length with a 2.32m long return to the east and an additional 1.58m long northern extension. These incorporated natural beach/river cobbles within the foundation material (Appendix 10). The 0.49m wide foundation defined the western limit of at least three spaces. These measured 1.7m by 0.55m, 2.7m by 1.7m, and 3.58m by 1.8m respectively from north to south. The latter two spaces were divided by an internal 0.27m wide chalk foundation [1805].
- 7.6.51 The western boundary of a third space measuring 2.6m by 1.5m, was defined to the north-west of the structure by 0.27m wide chalk foundation [1802], with the eastern boundary defined by [1801]. To the south of this a linear space or corridor of 6.74m in length by 2.42m width was defined by [1804] to the east and stone foundation [1806] to the west. The latter wall foundation extended to a width of 0.46m and had been constructed with a flint core and faced ragstone and greenstone blocks. The difference in construction technique of [1806] by comparison to the other walls may either suggest a difference in phase or function for this extent of the complex. A 2.10m by 1.10m wide crushed chalk layer [1803] in the north of the corridor may relate to a former surface. This was recorded from 1.98m OD and extended to a maximum thickness of 100mm. The foundation had been laid onto a levelling deposit of firm silty-clay [1808] and the internal areas subsequently sealed by a levelling/bedding layer of silty-clay with charcoal [1807].
- 7.6.52 A series of squared upright posts were recorded to the north of the masonry structure. These all measured between 120mm<sup>2</sup> and 140mm<sup>2</sup> and had been driven into the underlying alluvial clay. Posts [1835], [1834] and [1833] roughly respected the alignment of the western face of foundation [1802] extending a further 1.10m from the last recorded point of the wall. Similarly, posts [1838] and [1837] roughly followed the western face of parallel feature [1801]. An

isolated post [1836] lay midway between these two alignments and might suggest that these represented structural timbers associated with the construction of the masonry building.

- 7.6.53 A third line of timber revetting was identified in the south of the excavation area at c. 0.06m OD. This covered a length of 6.15m along a north-east south-west alignment. Horizontally lain timber planks/beams measuring between 0.28m and 1.70m in length ([1846], [1816], [1848], [1852], and [1850]) were supported by squared posts ([1844], [1818], [1817], [1843], [1851], and [1815]) from west to east respectively. A lack of excavation due to project depths did not allow the course of the channel to be identified, and it remains unknown whether this passed to the north or south of the revetting. An isolated post [1845] was located 2.78m north of the revetment and served an uncertain function. A group of driven posts ([1810], [1811], [1812], [1813] and [1814]) were also identified c. 0.20m south of plank [1846]. It is possible that the latter group represented a localised reinforcement, with isolated post [1845] either part of a tie back, or associated with an entirely different structure. If this interpretation is correct, timbers [1847] and [1849] which were located 1.97m south of the revetment, may represent the heavily degraded remnants of the southern counterpart that revetted the opposite bank.
- 7.6.54 Of uncertain relationship to the remainder of the features described was a possible chalk and tudor brick wall [1869] (not illustrated). This was identified during the excavation for a secondary shaft at a depth of c.0.20m OD and therefore could not be located with any accuracy.

## **7.7 Phase 4c: Medieval (Early/mid 16th Century)**

### Trench A3 (Figs. 26 & 88)

- 7.7.1 The north-eastern limits of Trench A3 were occupied by a series of intercutting east-west aligned grave cuts. These all extended beyond the eastern limit of excavation and measured up to 0.50m width. The earliest grave cut [591] was identified at 1.20m OD, and contained a heavily truncated supine skeleton [590]. The silty clay backfill [579] contained flint pebbles and pottery sherds with a 1480 to 1600 date range, and medieval tiles (a mid 13th-century Chertsey Tile and later 14th-century Penn Tile). A second phase of grave cuts were identified at 1.48m OD. Graves [584] and [580] were both recorded at this level, and also contained heavily truncated supine, extended skeletons [583] and [578]. Both skeletons (adult) were found to exhibit signs of spinal degenerative joint disease and periodontal disease (Appendix 11). Small fragments of pottery dated between 1480 and 1550 were recovered from silty-clay backfills [582] and [579]. In addition a small iron binding fragment (sf 19) was retained from backfill [582].
- 7.7.2 It is possible that the area used as a burial ground was also utilised for the burial of industrial refuse. Sub-rectangular and oval pits [554] and [540] truncated the same horizon as graves [584] and [580] and contained contemporary pottery within backfills [553] and [539]. Other



objects recovered from [539] included a pinner's bone of cattle metacarpus (sf 110), bone working waste (sf 162), pieces of an iron strap (sf 276), waste leather from shoemaking or translators waste (Appendix 14), and an additional bone offcut from a cattle longbone (sf 112) from [553]. It is noteworthy that the soil adhering to the slag recovered from [539] contained lots of hammerscale flake and a smithing hearth bottom (Appendix 9) and the recovery of a fragment of *tegula mammata* (Appendix 10) appeared to derive from a late first to early second-century building where it was utilised as heated walling. These and the previously described graves were overlain in turn by a 0.12m thick dump layer. Layer [534] comprised a compacted silty-clay with inclusions of oyster shell, animal bone, CBM and pottery with a 1550 to 1580 date range. A small copper alloy mount (sf 15) and sherds of late 16th-century glass were also recovered from this deposit.

- 7.7.3 The land, or its immediate vicinity, continued to be utilised as a burial ground however. A later grave cut [520], located similarly in the north-east of the trench, was recorded from 1.72m OD. The human remains however comprised a skull only [521] and had been disturbed by later modern intrusions to the north. The silty clay backfill [519] contained few inclusions of cultural material, including degraded wood, pot and CBM, none of which could be dated. The grave was then sealed by a 30mm thick dump layer [479] which extended throughout the trench. The firm, silty-clay contained a mixed assemblage, of CBM, mortar, chalk, an incomplete tang-hafted knife (sf 14) oyster shell, a corroded iron object (sf 275), animal bone, pottery and slag inclusions. The pottery was roughly contemporary to other features assigned to this phase, and dated between 1480 and 1550. Within this assemblage was a small rounded bowl in a rare fabric type of early Surrey-Hampshire border whiteware (Appendix 4).

## 7.8 Phase 5a: Early Post-medieval (Mid to Late 16th Century)

### Trench A1 (Figs. 27 & 86)

- 7.8.1 The earliest activity identified within Trench A1 comprised a 0.50m depth of dumped deposits ([186]=[192]; [185]=[191]) recorded from 1.58m OD. These comprised layers of firm, blue-grey sandy-silty clays with inclusions of pottery dated between 1480 and 1550 in addition to sub-rounded flints, oyster shell and chalk flecks. Building material was also recovered from deposits [186] and [185], which was dated between the mid 14th and 16th centuries. These ground consolidation layers were truncated to the north of the trench by the installation of a north-west south-east aligned revetment [403].
- 7.8.2 Structure [403] extended to a maximum observed length of 2.6m by 0.60m width and 0.85m in depth from 1.11m OD. The linear construction cut [194] exhibited near vertical sides from 1.58m OD and continued in depth beyond the base of the trench at 0.11m OD. The southern edge of the feature was subsequently lined by a series of eight upright posts ([401], [400], [199], [195], [196], [197], [198], [199]). These were formed of squared ([401], [195], [197], [198]) and rounded ([400], [196], [199]) driven posts ranging in diameter between 0.054m (post

[195]) and 20mm (post [400]) and a maximum length of 0.88m. Horizontal plank [402] lay between the posts, and extended to a maximum length of 1.75m by 0.34m width and 20mm thickness.

- 7.8.3 The structure is likely to represent part of a channel draining into the north-south aligned 'Maze' channel to the east (Appendix 15), with the water lying to the north of the structure. Further analysis of the piles [195]-[198] revealed these to be recycled rafters from a roof dated to the mid to late 15th century. Noteworthy features of these were that they appeared to have derived from the same roof of a building where the attic had been plastered out as a garret for occupation (Appendix 15). The sheathing plank of the revetment was also recycled material and had derived from a sawn, elm clinker boat plank. This form of planking first appears in London in the 16th century (Appendix 15).
- 7.8.4 Channel fill [193] sealed the northern limits of the structure to a maximum depth of 1.58m. This comprised firm, brown-grey silty-clay with lenses of organic material, sub-rounded flints and fragments of pottery and clay tobacco pipe dated between 1580 and 1700, and 1680 to 1710 respectively. The clay tobacco pipe may represent intrusive material from the deposits above however. Irregular pit [190] was identified in the south of the trench and extended 2.20m by 0.75m and 0.40m in depth. This had been possibly naturally backfilled with accumulated silt [189] which contained occasional fragments of late 15th-century pottery.

#### Trench A2 (Fig. 27)

- 7.8.5 All earlier medieval features were sealed by a 0.38m thick dump layer of firm clay-silt [538]. This covered the entire trench and contained flecks of mortar, CBM, oyster shell and pottery with a 1550 to 1580 date range. Truncating this, and bisecting the trench along an east-west alignment was ditch [536]. The cut exhibited straight sides and an undulating base, and extended over 5.4m in length by 2.56m width and 0.39m depth from 2.16m OD. The ditch is just off the former alignment of a medieval ditch, and may represent a slight change in property boundaries or a change in environmental conditions. It is likely that an accumulation of domestic debris backfilled the ditch, and fill [535] comprised a firm blue-grey silty-clay with frequent inclusions of building material, oyster shell, sub-rounded flints and occasional fragments of late 16th-century pottery.
- 7.8.6 Sub-squared and rounded postholes [527] and [529] were identified along the northern edge of ditch [536]. These extended up to 0.34m in diameter by 0.20m depth, and may relate to a former fence line. Backfills [526] and [528] comprised sandy-silt with brick rubble and crushed mortar respectively. Pottery recovered from the latter was largely dated to the 16th century with a few residual fragments of Roman pottery.

#### Trench B2

- 7.8.7 The southern limits of the trench were occupied by a series of alluvial dump and levelling layers, [71], [59], [57] and [33] in turn. These were identified from 2.81m OD with the combined depth of 1.30m, and largely comprised silty-clays with oyster shell, charcoal, an iron tool (sf 7), animal bone (including the remains of an adult dog, Appendix 12) and pot inclusions. A number of small metal objects were also retained from [59] and included copper alloy pins (sf 4 and sf 5) and a possible purse ring (sf 6). Uppermost deposit [33] may have been utilised as levelling material and comprised silty-sand with a mixed assemblage of chalk, mortar, iron, charcoal and pottery. Pottery retained from alluvial deposits [71], [59] and [57] was all roughly contemporary, dating between 1480 and 1580, whereas upper deposit [33] was slightly later in date, containing pottery with a 1580 to 1700 date range. A noteworthy find within [59] comprised a single fragment of *vetro a reticella* glass (Appendix 7).

#### Trench B3 (Fig. 28)

- 7.8.8 The only evidence pertaining to the early post-medieval period within Trench B3 comprised pitting and a dump layer. The earliest of these features was refuse pit [98]. This feature was too heavily truncated to be able to determine the original shape or dimensions however. The pit extended to at least 0.30m in depth from 2.54m OD and had been backfilled sequentially with deposits of sandy and silty-clays [97] and [96]. These contained inclusions of sub-rounded flints, chalk, oyster shell and CBM. The only dateable material derived from primary fill [97] and comprised pottery sherds with a date range of 1480 to 1700.
- 7.8.9 Dump layer [92] was heavily truncated, but could be assumed to have extended across the base of the trench from 2.81m OD. This 0.10m thick deposit of silty clay contained oyster shell, pottery dated between 1480 and 1600, and flecks of mortar and CBM. Sub-circular cess pit [95] truncated the dump layer in the north-east of the trench. The pit extended c. 0.84m in diameter, with vertical sides to a depth of 0.25m, with a flat base at 2.43m OD. This contained a single fill of greenish-brown silty-clay [94], with occasional inclusions of mortar flecks, oyster shell, chalk and pottery contemporary to that retained from dump layer [92].

#### Trench E1

#### ***Phase 5ai: (Fig. 29)***

- 7.8.10 Features relating to this phase were primarily located in the southern limits of the trench, and comprised a large number of timber piles, representing both localised revetting and the remnants of an early post-medieval building. A group of timbers were located in the south-west of the trench within a sub-rounded construction cut [1417]. The cut was identified at 1.98m OD and extended over 1.10m by 0.60m on a north-west south-east alignment. Into this cut was a small revetment covering a 0.80m by 0.60m area. This was formed by the initial placement of a horizontally lain oak lock bar [1418], which ran perpendicular to the construction cut. This was overlain by land-tie beam [1415] formed from a boxed heart log

0.22m by 0.22m by 0.73m in length, which was supported to the north and south by oak piles [1413] and [1414] respectively. Each of the piles measured up to a maximum of 155mm in diameter, and the form of the structure inferred the presence of a north-south aligned revetment to the west of this. A date range of the 12th to 16th centuries was suggested for the beam [1415] based upon technological grounds (Appendix 16). The clay-silt backfill [1416] surrounding the structure contained pottery with a 1500 to 1550 date range, including a noteworthy bowl in Spanish Isabela plichrome tin-glazed ware.

- 7.8.11 Post-dating the revetment, although likely to be roughly contemporary, were a series of refuse pits. Truncated, rounded pits [1426] and [1429] were both identified at c.1.95m OD, and bore no direct relationship with the revetment. Both features extended up to c. 0.50m in diameter and had been backfilled with deposits of largely sterile sandy-mortar and clay [1425] and [1428]. Only two small fragments of early post-medieval peg tile were recovered from [1428], dated between 1480 and 1700. Southernmost pit [1426] and the southern edges of the backfill around the revetment were then truncated by sub-circular cut [1402]. The latter continued beyond both eastern and southern limits of excavation, and measured an approximate diameter of c. 2m by 0.64m in depth. This had been backfilled with compacted mortar [988] to form a surface extending 1m by 1.97m by 0.68m thickness from 2m OD. Small fragments of pottery recovered from this were dated between 1580 and 1600, and the animal bones recovered were predominantly of sheep/goat (Appendix 12). A 0.15m thick ash layer [987] sealed the southern limits of [988], and was, in turn overlain by a clay floor slab [1408].

***Phase 5a:ii: (Fig. 30)***

- 7.8.12 Floor slab [1408] covered a 1.6m by 2.10m area and extended 0.13m in thickness from 2.10m OD. This comprised, clean, compacted, yellow-brown clay and demarcated the first phase of construction for a timber framed building. This deposit capped the construction cut backfill of the revetment/tie back in the south-west of the trench, but did not encroach upon any of the timbers, which might suggest that the both structures were in use simultaneously. The footprint of the building was demarcated by a north-south aligned line of timber piles [1458], [1459], [1421], [1420], [1419], [1422] and [1431] from north to south respectively. An east-west return to the south of this alignment was defined by additional timber piles [1430] and [1427] that defined an internal area of 1.7m<sup>2</sup>. The majority of these piles were derived from boxed heart, or boxed quartered oak logs, sized between 135mm by 135mm and 220mm by 220mm. Exceptions were elm piles [1458] and [1459], halved pole [1420] and pile [1430] which was formed from the waste corner of a pit sawn slab. All piles, barring [1419] had been driven into construction cuts ([1023], [1024], [1021], [1020], [1022], [964], [1019] and [1018]). Pile [1461] was the only example to have been overlain by a small amount of silty-clay packing material [963]. A single fragment of early post-medieval brick dated between 1450 and 1700 was recovered from the latter.

7.8.13 A series of rounded/sub-rounded postholes were identified which followed the alignment of the east-west return of the property boundary. These may illustrate localised repairs/modifications or demarcate additional timber supports that fell out of use or were removed at a later date. These were identified as cuts [989], [992], [968], [966], [990], and [993] from west to east respectively and extended between 0.13m and 0.24m in diameter. Postholes [989], [992], [990] and [993] remained filled by deposits of heavily degraded timber [994], [997], [995] and [998]. The removal of the timbers from cuts [968] and [966] was indicated by the presence of deliberate backfills of clay and mortar [967] and [965]. An additional posthole [991] was identified at a comparable elevation, but was located within the interior of the structure rather than along the boundary. This may relate to a localised reinforcement or represent part of a completely different installation or boundary. The cut measured 0.16m in diameter and remained filled by heavily degraded timber [996].

***Phase 5a:iii: (Fig. 31)***

7.8.14 The latter posthole and a large proportion of the internal area of the timber framed building were truncated by a sub-circular pit [1400]. The pit extended up to c. 1.10m in diameter by 0.40m in depth and had been backfilled sequentially by fills [1401] and [999]. Primary fill [1401] comprised soft clay containing pottery with a 1480 to 1600 date range, and capping fill [999] was a 0.36m thick deposit of mixed organic clay containing contemporary pottery sherds and animal bone. Sealing the upper pit fill, and covering the footprint of earlier surface [1408] was a 50mm thick deposit of alluvial clay [982] utilised as levelling. This was clean of cultural material, and may represent the remnants of a secondary surface.

7.8.15 Extending across the entire northern half of the trench, and truncating surface [982], was a large east-west aligned cut [1433]. This was first identified at 1.97m OD and extended beyond 0.5m in depth, and 2.16m in width with steeply sloping sides. The alignment of the cut, perpendicular to the north-south aligned channel previously inferred by tie back [1415] (see Figs. 29 & 98), may suggest this to be a channel diversion, or tributary. Backfills of brown-grey silty-clay [1444] and [1441] were found to contain large quantities of animal bone (including a concentration of cattle skulls indicative of butchery), part of a dip pen of goose radius (sf 79), shell, copper alloy wire (sf 78), burnt flint and pottery with a 1480 to 1550 date range. Two small squared timber posts [1479] and [1482] sub-divided the fills and were seen in section only. It is unclear whether these relate to a structure, or were loose fragments within the backfills.

7.8.16 In the southern limit of excavation, the possible northern limits of a tanning pit were identified. The north-east corner of this was defined by driven, rectangular oak pile [1483], identified at 1.92m OD. The northern and western sides were formed by horizontal oak planks [1484] and [1485]/[1486]/[1487] respectively. These planks were largely interpreted as shipyard waste (Appendix 15), and measured between 22mm and 50mm in thickness by c.0.30m width. The largest example [1484], with a thickness of 50mm, was considered to represent shipyard

waste. Loose oak plank [1488] was identified to the west of the structure, laying flat, and was interpreted as being a disturbed/removed timber fragment from the tanning pit. A small oak pile [1490] was also identified in section, in close proximity and may relate to this structure.

#### Trench E2 (Figs. 32, 90 & 91)

- 7.8.17 Activity relating to the mid/late 16th century was exclusively located within the southern half of this trench. The earliest indications of development within the trench were identified in the form of roughly east-west aligned brick and ragstone wall [759], which had been constructed using bricks dated between 1450 and 1650. The wall extended to a maximum observed length of 1.7m with a 0.68m north-south return at the east, and measured 0.30m in width and depth. The wall had been founded at c. 2.23m OD and trench built within construction cut [761]. This appeared to define an internal area to the north, of uncertain function and dimensions. The lack of evidence for this feature within the northern half of the trench, may infer this to be a small structure attached to a larger complex.
- 7.8.18 The external area to the south of wall [759] then underwent a series of modifications. Initially a 0.25m dump layer of silty-clay [760] was lain against the external faces of the wall. This contained fragments of late 15th-century pottery and peg tile dated between 1600 and 1800. Steep-sided north-south aligned linear cut [754] subsequently truncated the upper horizons of [760] and extended along the eastern limits of the trench, respecting earlier wall [759]. This was tentatively interpreted as a gully, and had been deliberately backfilled with silty-mortar [753] containing ragstone and Reigate stone rubble, early post-medieval brick and peg tile, and late 15th to late 16th-century pottery. These inclusions may indicate demolition works in the near vicinity. The backfill was truncated in turn by a second linear cut [757] which extended 0.64m in length, along a comparable alignment to [754] by 0.16m width and 60mm depth. The function of this steep sided cut remains unclear, but was thought to represent a construction cut for a short-lived partition. This was recorded from 2.51m OD and had been backfilled with soft, silty-clay [756] containing peg tile dated between 1300 and 1700, late 16th-century pottery fragments, Kentish ragstone rubble and flecks of charcoal.
- 7.8.19 Levelling layer [749] subsequently sealed all previously described cut features to a maximum depth of 0.12m from 2.66m OD. This continued to respect earlier wall [759] and may indicate that this property remained in use at this time. Deposit [749] comprised a mixed layer of grey-green silty-clay, containing mid to late 16th-century pottery sherds, red brick and tile (dated between 1480 and 1700) and occasional fragments of animal bone.

### **7.9 Phase 5b: Early Post-medieval (16th to 17th Century)**

#### Trench A3

- 7.9.1 Trench A3 exhibited a dense concentration of activity dating from the late 16th (post 1580) to 17th centuries. Three distinct spaces were represented across the trench and indicate

repeated re-surfacing and modifications within the central areas, with later modifications noted to the north and significantly less activity taking place to the south. These may relate to workshop areas and rough working surfaces. As such, within the timeframe, at least three broad phases of activity could be established.

***Phase 5bi (Figs. 33 & 88)***

- 7.9.2 Activity in the south of the trench comprised an initial dump layer of silty clay [506]. This was identified at 2.07m OD, with a consistent thickness of 0.20m, and contained animal bone fragments, building material, mortar, chalk, charcoal, oyster shell and pottery dated from 1580. Sub-rectangular refuse pit [508] truncated the western limits of this, and had been deliberately backfilled with mixed clay-silt [507] containing a comparable assemblage to that of dump layer [506] and roughly contemporary pottery. A 90mm thick accumulation of garden soil [505] capped the pit, and extended across the southern limits of the trench from 2.13m OD. Pottery fragments retained from this layer dated between 1600 and 1650, in addition to a small unfinished bone handle (sf 109). A second sub-rectangular pit [483] truncated the eastern limit of the garden soil. This appeared to have been a refuse pit, and had been backfilled with silty-sand [482] containing building rubble, mortar, degraded wood fragments, iron nails, pottery (dated 1580 to 1630) and fragments of animal bone. A 0.11m thick mortar surface [481] capped the pit at 2.16m OD, extending 1.94m north-west south-east, and continuing beyond both eastern and southern limits of excavation. Within the surface were frequent flecks of chalk, mortar, clinker and CBM.
- 7.9.3 The central part of the trench was occupied by a former space, or industrial workshop area, indicated by repeated re-surfacing and minor alterations to the northern and southern boundaries. This area extended beyond both eastern and western limits of excavation, by 1.45m in width and followed a north-west south-east alignment. The northern and southern limits of this space were defined by timber partitions [502] and [503], which had been inserted into construction cuts [533] and [546]. Only the very heavily degraded remnants of the timbers remained, which suggested that the planks would have been 40mm thick by 0.16m wide. The earliest deposits relating to this phase of use included 50mm and 70mm thick make up deposits [549] and [504], overlain by surface [500] at 1.98m OD. These make-up layers of mortar and sandy-silt contained charcoal, chalk, stone fragments and pottery dated between 1550 and 1580, and a surface of indurated sandy-gravel with flecks of animal bone, oyster shell and chalk. Noteworthy finds recovered from [504] included two pinner's bones of cattle metacarpus (sf 107, sf 108).
- 7.9.4 Features relating to the use of the space comprised a 0.26m wide, 0.12m deep gully [510] which followed the alignment of southern timber partition [503]. The concave base of this feature dropped slightly to the east and may suggest a direction of drainage. The gully had been backfilled with silty-clay [509] containing flint, gravel and mid 16th century pottery fragments. The position of semi-circular posthole [498] within the footprint of the gully, may

suggest this to have been a construction cut for a removed superstructure rather than a drainage feature. The posthole extended to a maximum diameter of 0.36m by 0.17m depth, and had backfilled with accumulated sandy-silt [497] which contained occasional flecks of pottery, bone and CBM, but nothing dateable.

- 7.9.5 Repairs to surface [500] were visible in section, and comprised compacted white chalk [551], which covered a 0.60m wide extent by 30mm thickness. This was overlain by dump layers of clay-silt [501]/[552] which contained fragments of animal bone, charcoal and sub-rounded flints and measured up to 60mm in thickness. These deposits, and the entire central space, were overlain sequentially by occupation horizon [499], gravel surface [494], localised repair [493] and industrial waste deposits [492] and [491]. These were identified from 2.10m OD with the combined thickness of 100mm, and contained roughly contemporary pottery dated between 1550 and 1600, a small copper alloy strap (sf 12 from [494]) and foundry slag (from [491], Appendix 9). The deposits of industrial waste comprised an initial dump of friable red-black silt containing frequent inclusions of charcoal, overlain by indurated slag with inclusions of tile and mortar. The industrial nature of these deposits was reinforced by the discovery of copper residue on some of the bricks from [492], and unusual dome, circular, angled and voussoir shaped bricks (from [492] and [494]) potentially representing kiln furniture (Appendix 10). These deposits were sealed by an 80mm thick surface [487] of compacted mortar.
- 7.9.6 Activity in the north of trench was separated stratigraphically by later robbing events and therefore interpretations regarding which sub-phase features are associated with, may be assumed to be extremely tentative. Features pertaining to an earlier phase of use comprised a series of intercutting pits, overlain by dumped debris and surfaces. Sub-rectangular pits [474] and [477] were located in the western and eastern limits of the trench, identified at c. 2m OD. Refuse pit [477] extended up to 0.36m in depth to a flat base, and had been deliberately backfilled with sandy-silt [475] with inclusions of slag, and clinker indicative of industrial waste, plus mortar, animal bone, seeds from potentially imported foodstuffs (Appendix 19), oyster shell and late 16th-century pottery sherds. Significant quantities of microslags were recovered from [475] including iron shavings, flakes and spheres (Appendix 9). Adjacent refuse pit [474] had been backfilled with sandy-silt [473], which contained a similar assemblage of material and contemporary pottery.
- 7.9.7 Modifications to this northern area were suggested by the installation of 0.13m thick silty-clay bedding layer [472] in preparation for mortar surface [469]=[468]. The compacted surface extended across the trench from 2.03m OD. The few fragments of pottery retained from deposit [472] and surface [469] inferred a roughly contemporary date range of 1580 to 1600/1650. Structural modifications between the laying down of the bedding layer and prior to the installation of the mortar surface were indicated by circular posthole [441] set within the compacted clay backfill [470] of a small rounded pit [471] along the south-western limits of the space. The posthole appeared square in plan with near vertical sides to a tapered base



indicative of a driven stake 0.22m<sup>2</sup>. Following the removal of the post, the cut had been backfilled with silt and lime mortar [440] that contained slag, two smithing hearth bottoms and charcoal inclusions. It is possible that the hearth bottoms may have been used to prevent the post from sitting in water that might seep in (Appendix 9). The remainder of the area was subsequently overlain by a 0.11m thick spread of silty-sand occupational debris [461]. Similarly to other deposits in the immediate vicinity, this contained moderate amounts of slag and charcoal perhaps indicative of industrial processes. Medieval peg tile with a 1400 to 1700 date range was also recovered from this deposit with slag adhering to the surface.

***Phase 5bii (Figs. 34 & 88)***

- 7.9.8 A series of linear cuts were identified which respected the northern and southern alignments of the central 'workshop' space. These extended with concave sides to flat/gently sloping bases and may either represent gullies of uncertain function, or construction cuts for a removed superstructure. These were separated by numerous working surfaces and occupation horizons indicating that the re-instatement of these boundaries was a continuous process. The linear cuts at the north of the space were recorded as [490] and [697] from elevations of 2.10m OD and 2.19m OD respectively. Those to the south were identified as features [699] and [496] and were observed from 2.12m OD and 2.02m OD. It is noteworthy that all linear features respected the bounding timber partitions, as described within Phase 5bi. Backfills [489], [488], [550] and [495] comprised black-grey sandy silt with inclusions of chalk, mortar, slag, copper and burnt flint. Pottery recovered from fills [489] and [495] was dated between 900 and 1480 and between 1550 and 1580 respectively. The slag recovered from [489] contained a large number of iron flakes from the shaping of iron, hammerscale spheres from high temperature welding and hammerscale flakes from ordinary smithing (Appendix 9). This may therefore suggest the nature of the space/workshop within this trench.
- 7.9.9 The excavation of northern gullies/construction cuts [490] and [697] were stratigraphically separated by the installation of numerous surfaces and an occupation layer, with the combined depth of 0.18m, each surface extending c. 30mm to 40mm in thickness. Primary surface [486] covered a 1.42m by 1.92m area, lensing out towards the east, and comprised red-grey domed crinkley tiles (dated between 1480 and 1600) set into lime mortar with small rounded pebbles. This packing material also contained small fragments of pottery, iron wire (sf 11), burnt flint, slag and animal bone. The northern extent of the surface was truncated by a single rounded posthole [485], backfilled with clinker and lime mortar [484]. This extended 0.30m in diameter and served an uncertain function. These features were then overlain by mortar surfaces [480] and [478] in turn, followed by a 40mm thick occupation layer [476] of sandy-silt containing inclusions of oyster and mussel shell, CBM, pottery and animal bone. Pottery recovered from these deposits appeared to be roughly contemporary with a 1580 to 1600/1700 date range. A small copper alloy thimble (sf 10), and 5.75kg of slag including ten smithing hearth bottoms were also recovered from surface [480]. It is possible that this

represented a metallised surface utilising slag from a nearby smithy or forge, or alternatively waste from activities carried within the immediate vicinity (Appendix 9).

- 7.9.10 Post-dating the excavation of northern cut [697] was a 0.17m thick sequence of levelling deposits overlain by compacted surfaces. Compacted silt surface [459] contained inclusions of slag, animal bone, seeds from potentially imported foodstuffs (S18, Appendix 20) and mortar, and sealed 50mm thick levelling layer [462] of friable sandy-silt that contained a similar assemblage of cultural material. Pottery from both deposits dated between 1580 and 1630. These were overlain by a dumped layer of compacted clay [455], which was capped by compacted silty mortar surface [449] from 2.33m OD.
- 7.9.11 Activity during this phase, within the northern limits of the trench was exclusively located in the eastern half of the trench. Features assigned to this phase comprised a series of intercutting pits and postholes. Sub-rounded pit/posthole [465] extended to a diameter of 0.78m by 0.22m in depth, and exhibited near vertical sides to a flat base. This had been backfilled with silty-sand [464] containing metal working detritus (a smithing hearth bottom and undiagnostic slag, Appendix 9), mid 16th-century pottery, slag and charcoal. Squared postholes [467] and [457] respected the alignment of the timber partition directly to the south and may relate to this internal sub-division. Western posthole [467] contained upright post [524] formed of a boxed heart, and organic-rich clay backfill [466]. Within the backfill was 3.1kg of slag, including four smithing hearth bottoms, spheres and iron flakes from shaving or shaping iron, and some hammerscale flakes (Appendix 9). The full depth of this posthole was not established due to project depth, but was over 0.85m by 0.24m<sup>2</sup>. Eastern posthole [457] was slightly larger by comparison, extending 0.34m by 0.18m by 0.19m depth, and was backfilled with soft, sandy-silt [456] with fragments of mortar, peg tile dated from 1240 to 1450, and late 16th-century pottery inclusions.
- 7.9.12 The installation of a 0.14m thick compacted mortar surface [460] from 2.24m OD and mortar packing material [458] appeared to have been truncated by [457] but respected [467]. It is, however, possible that both postholes functioned together. A later modification was inferred by later post-pad [451] that truncated [457]. This extended 0.44m by 0.66m by 0.23m depth and had been backfilled with loose silty-sand [450]. Within the backfill was a mixed assemblage of slag, bone, CBM, chalk, an iron strap mount (sf 394), charcoal and pottery with a 1580 to 1650 date range.

#### ***Phase 5biii (Figs. 35 & 88)***

- 7.9.13 Activity relating to this later phase of use was concentrated within the northern limits of the trench. An additional north-west south-east aligned gully [698] was excavated along the northern limits of the central workshop space from 2.33m OD. This extended up to 0.50m in width with concave sides and base, 0.20m in depth. Deposits of friable, sandy silt [463] and compacted sandy-silt [448] backfilled the cut in turn, and contained fragments of pottery with a

1580 to 1630 date range. A small copper alloy lace-chape (sf 9) was also recovered from primary fill [463].

- 7.9.14 In the north of the trench two circular postholes extending c. 0.30m in diameter, [446] and [444] were recorded from 2.21m OD. These had been backfilled with grey-brown sandy silts [445] and [443] respectively which contained flecks of lime mortar, chalk, slag, bone and late 16th-century pottery. These were overlain by a 20mm thick occupation layer [447] and the remnants of a hearth base [442]. The latter comprised reddish-yellow silty-sand with burnt bricks and flecks of charcoal. This covered a 0.50m<sup>2</sup> area by 30mm thickness, and may have been associated with adjacent north-east south-west aligned brick wall [437]. The wall was constructed in light red, unfrogged bricks bonded with a grey-white mortar and is likely to represent an internal subdivision. The installation of the hearth base was followed by the use of sandy-clay packing material [439] to the west of the feature. Within the packing material were very occasional fragments of pottery with a 1480 to 1600 date range and clay tobacco pipe dated from 1660. This was overlain by hearth infill [438] of reddish-black silty-sand containing clinker, iron fragments and flecks of mortar.
- 7.9.15 The disuse of the hearth was indicated by dump layer [435], which covered the entirety of the 0.50m by 0.78m area defined to the east of internal wall [437]. This 70mm thick clay-silt deposit contained frequent mortar flecks but very little dateable material. Further changes to the layout of the complex represented within the trench were apparent in the form of a north-west south-east aligned robbing cut [453] which appeared to target the northern timber partition. Loose, sandy-silt backfill [452] filled the cut, and contained inclusions of clinker and mortar.

#### Trench C (Fig. 36)

- 7.9.16 Early post-medieval features dating to the 17th century were the first indications of activity since the 15th century (Phase 4a) within this trench. The earliest features comprised two rounded pits [213] and [215] in the north-west and south of the trench. These pits both exhibited gently sloping sides to a relatively shallow concave base, which may indicate significant horizontal truncation. The larger of the two [213] extended up to 2.5m in diameter by 0.33m depth whereas southern pit [215] covered a 1.4m diameter by 0.17m depth, from 1.44m OD. Larger pit [213] had been backfilled with organic-rich silty-clay, containing gravel, shell and pottery with a 1480 to 1600 date range. Backfill [214] of the smaller pit contained a greater concentration of clay, with few cultural inclusions. Two small sherds of medieval peg tile dated from the mid 13th century and copper alloy wire for a hook (sf 121) were recovered from the latter.
- 7.9.17 A linear north-east south-west aligned cut [212] was identified along the north-western limit of excavation and served an uncertain function. This continued beyond the northern limit of excavation, to a maximum observed length of 2.52m by 0.60m in width and 0.25m in depth. A

natural accumulation of sterile sandy-silt [211] backfilled the feature. Dump layer [208] covered a 4.9m by 2.78m area, sealing all previously discussed cut features. The 0.45m thick deposit of sandy-clay contained very occasional late 16th-century pottery sherds and inclusions of shell. A squared posthole [207] truncated the upper horizons of the latter and was located in the south of the trench. This isolated 0.50m<sup>2</sup> cut extended with vertical sides to a sloped base, and had been backfilled with silty-clay [209] containing small fragments of coal and pottery with a 1550 to 1650 date range. The precise function of this feature remains unclear.

#### Trench D1 (Fig. 37)

- 7.9.18 Evidence of activity relating to the early post-medieval period within this trench was limited. This was due to later post-medieval intrusions, and perhaps due to the continued functioning of the north-south aligned channel identified during Phase 4b, which bisected the trench. A 0.19m thick dumped deposit of compacted grey-brown clay-silt [1320] was identified along the eastern bank of the channel from 1.86m OD. This contained frequent fragments of CBM, too badly eroded to be dateable. Overlying and driven into the latter consolidation layer were a set of three timbers which formed a tie back (Appendix 15). Horizontal timbers [1315], [1316], and vertical driven retaining stake [1317] would have lain along the eastern bank of the former channel from c. 2.09m OD. The northern and southern horizontal posts [1316] and [1315] were formed from the landward end of a roughly hewn boxed heart and whole oak log respectively, with diameters of 200mm and 160mm. Retaining stake [1317] was also oak in origin, and was slightly smaller in size with a diameter of 100mm; this lay between the horizontal posts.
- 7.9.19 It is possible that either the tie back was only in use for a short period of time, or that the structure should be assigned to an earlier phase of use. A 0.65m thick deposit of made-ground, sealed the entirety of the structure, and comprised compact clay-silt containing pottery with a 1480 to 1600 date range. This covered the same area as earlier dump layer [1320] and therefore would have lain along the eastern bank of the former channel. Sandy-silt alluvium [1382] was recorded from 0.90m OD and extended up to 0.20m in thickness. This would have lain along the western bank of the channel, and its lower elevation might suggest that the western side of the channel was subject to natural deviations or a meander, thereby truncating deposits on this side to a lower level. Pottery recovered from [1382] was consistently dated from 1630 to 1680.

#### Trench D2

##### ***Phase 5bi: (Fig. 38)***

- 7.9.20 Features assigned to this phase were exclusively dated to the 17th century, and presumably post-date the final silting-up/abandonment of the former channel identified as part of Phase

4b/4a. Structure [373] was a timber-lined pit, located along the northern limit of excavation. As seen this comprised an initial sub-squared construction cut [371], which covered an approximate area of 2.10m<sup>2</sup>, with vertical sides, 0.89m in depth, to a flat base at 0.38m OD. The timber-lining was formed by the insertion of timber posts [369] and [372] at the south-eastern and south-western corners, followed by elm planking [367] and [368] to line the western and southern faces. The pit-sawn elm planks were re-used articulated fragments of a clinker built barge hull (Appendix 15), dated on technological grounds to the 16th to 17th century (the initial boat construction) and a number of iron fittings including nails and clench bolts (sf 376) were recovered in association with plank [368]. Tarred animal hair had also been used as waterproofing (Appendix 15), and the size of the pieces suggest this to have derived from one of the local London river barges. The timbers from [367], [368] and [369] were all thought to have derived from the same vessel (Appendix 16). Oak post [372] differed slightly from these, but was still considered to be contemporary and extended 100mm<sup>2</sup> being formed from a boxed quartered log. Clean, blue-grey clay [370] was utilised to backfill the construction cut, and the interior of the pit had been backfilled with silty-clay [366]. The latter contained a mixed assemblage of cultural material, including an iron auger bit for drilling holes in wood (sf 37), production related iron wire (sf 59), iron nails, pottery dated between 1480 and 1600, and a wooden post thought to represent a structural element from a building or revetment, which displayed wood-working techniques consistent with 'bulwark construction', documented in London from the 11th to late 12th centuries (Appendix 15).

- 7.9.21 Evidence of a multi-phase building was encountered in the east of the trench. Primary red-brick floor [318] was identified at 2.46m OD. This was aligned west-north-west east-south-east and was formed of dark red, unfrogged bricks, set into silty-sand bonding material and laid in irregular courses within a squared construction cut [320]. A second north-west south-east aligned construction cut [319] demarcated slight changes to the property/boundary. This was recorded from 2.47m OD, and contained a second dark red unfrogged brick floor [317]. As seen the floor covered a c. 0.63m<sup>2</sup> area, but extended beyond the eastern and southern limits of excavation. The northern and western limits of both floors appeared to represent the true limits of the feature/property boundary, as suggested by the fragmentary remains of cellar wall [316] to the north of [317]. This was similarly constructed with red, unfrogged bricks, bonded with a white-grey mortar containing flecks of charcoal. The internal area of the basement was subsequently overlain by a 0.10m thick mortar and oyster-rich deposit of make-up material [315]. An isolated, squared posthole [311] was recorded to the west of this structure and may be related. This was identified at 2.68m OD, extended 0.30m<sup>2</sup> by 90mm depth and had been deliberately backfilled with loose black-brown sandy-silt [310]. The posthole had been cut into a 0.30m thick dump layer of silty-clay [303], clean of anthropogenic material.

***Phase 5bii: (Fig. 39)***

7.9.22 Linear north-east south-west aligned cut [314] truncated the earlier masonry, and extended with vertical sides to a flat base, 0.20m in depth. This ran across the full width of the trench and extended beyond the eastern limit of excavation, over 1.24m in width. Backfill [313] contained large quantities of mortar and CBM indicative of demolition material, and the cut may therefore represent a robbing event. Further evidence of robbing was encountered in the form of a rounded cut [351]=[323] in the north of the trench, which targeted earlier timber-lined pit [373]. The rounded cut continued beyond the northern limit of excavation with a diameter of c.2.10m by 0.97m in depth. This had been backfilled sequentially with deposits of soft, silty-clay [353], [322] and [350]. Pottery sherds recovered from fills [353] and [350] consistently dated between 1480 and 1600, and fragments of degraded wood and a lava quern fragment (sf 161) were also recovered from upper fill [350]. A small amount of residual Roman pottery was recovered from primary fill [353]. The entirety of the trench was overlain by a 0.30m thick black dump layer, which contained a particular concentration of ash and clinker. Glass fragments retained from [309] inferred a mid 17th-century date for these deposits.

#### Trench E1

#### ***Phase 5bi: (Figs. 40 & 41)***

7.9.23 East-west aligned channel [1433] (Phase 5a) remained in use into the later 16th and 17th centuries. A wattle and post revetment was constructed along the southern bank of this feature, into silty-clay fill [1409]. The revetment (structure [1445]) was constructed from at least two different phases of wattle, woven around a series of posts that followed the alignment of the channel. The southern, landside, boundary of the structure was defined by two lines of parallel stakes. The stakes immediately adjacent to the planking of the structure were identified as [1447], [1448], [1449], [1476], [1451], [1452] and [1477] from west to east respectively. These were largely formed of rounded oak stakes, measuring between 90mm and 120mm in diameter. The only exception to this being the boxed heart elm post [1452]. To the south of these was a second line formed by stakes [1464], [1465], [1466], [1450], [1463] and [1453] from west to east respectively, all of which were oak and of comparable diameter to the former line. The latter row may represent an earlier phase of use, or a separate line of reinforcement. A slightly larger oak stake [1467], with a diameter of 188mm was identified to the east of the structure and may represent localised support, associated with either phase of use.

7.9.24 Westernmost stakes [1447] and [1448] supported 50mm thick horizontal plank [1446], around which wattle [1454] was woven. The wattle was comprised of a series of tightly woven rods around the upright stakes, with this western section being the better preserved of two panels of wattle work. This ran for an observed length of 0.65m by 0.45m in depth from an uppermost elevation of 1.24m OD. Given the level of preservation, it is likely that this post-dated central and eastern wattle panels or 'hurdles' [1455]/[1456] which extended a further

1.77m in length by 0.55m depth from 1.40m OD. The similarity in construction however, may suggest that these were roughly contemporary.

- 7.9.25 To the north of structure [1445] was a further group of timbers which may represent the northern extent of the revetted channel. If this interpretation is correct, the channel would have been c. 1.90m in width. This second grouping was formed by a series of oak piles [1491], [1492] and [1493] which covered a 1.07m length. These extended between 50mm and 110mm in diameter by up to 0.88m in length from 1.69m OD, and supported a 20mm wide horizontally lain, cleft cut oak plank [1494], which rested along the northern edges of the posts. The workmanship and species of [1494] would suggest a late 14th or 15th-century date (Appendix 16).

***Phase 5bii: (Fig. 42)***

- 7.9.25 To the immediate north of the wattle revetment [1445] were a number of disarticulated timber beams and posts. These may represent collapse, or part of a stack of timbers for a pad footing, or duck boarding to aid in the construction of the revetment (Appendix 15). Beams [1436], [1437] and [1438] overlay one another and were identified as elm and oak tang-faced timbers ([1437] only was oak). Timber [1436] was reused building wall cladding with several taper burns from its phase of use in a building (Appendix 15). These burns were made by rush lights or candles set too close to the wall and are commonly found in early standing buildings (Appendix 15). Further debris in the form of oak pile [1442] and a sawn off-cut plank (also oak) [1443] were recorded in the northern limits of the channel and is also likely to represent collapse. Channel [1433] into which the revetting had been constructed, was then filled by deposits of silty clay [1440] and [1439] in turn. Both fills contained pottery consistently dated between 1480 and 1550, and earlier fill [1440] contained fragments of copper alloy wire (sf 77), leather working waste (from shoemaking, plus a near fragment of a square toed vamp shoe, Appendix 14), and a pewter spoon (sf 76) with a diamond-section stem. A maker's mark in the form of a crowned pewterer's hammer was identified inside the bowl of the latter spoon, and believed to date from the mid to late 16th century (Appendix 8). A small piece of antler working waste (sf 377) was also recovered from [1439] and may suggest bone working within the vicinity. Blue-grey clay-silt [1434] capped the channel from 1.71m OD and contained mid 16th-century pottery fragments, and a near complete turn-welted shoe of 16th to 17th-century date (Appendix 14).
- 7.9.26 The abandonment of the channel was indicated by the construction of north-east south-west aligned wall [1407] which spanned the width of the channel. This was constructed with shallow frogged bricks bonded with an earthy mortar, dated to the early 17th century. At least five courses of brickwork were observed from 1.87m OD, lain in irregular courses. The trench built wall foundation was constructed within linear cut [1412] and then overlain by backfill [1411] of sterile grey clay. It is likely that clay floor slab [1410], identified at 1.74m OD was associated with this feature.

7.9.27 A second property was identified in the south of the trench. The northern limits of this were defined by beamslot [952], which followed a north-west south-east alignment, parallel to the earlier channel and wattle revetment [1445]. The beamslot ran for an observed length of 2.06m by 0.45m in width and 0.30m depth from 2.32m OD. The slot had been backfilled with silty-clay [951] containing frequent inclusions of Flemish floor tile and peg tile dated from the late 15th to 17th centuries, iron nails, and a piece of iron chainlink (sf 284). An internal floor surface [976] comprised of burnt medieval and early post-medieval peg tiles, overlying a silty-clay and mortar bedding layer [981] lay to the south of the beamslot. Pottery recovered from [981] dated from the late 15th to 16th centuries, and the tile incorporated in floor surface [976] appeared to be roughly contemporary. The surface was identified at 2.37m OD and covered a 1.80m by 0.40m area.

***Phase 5biii (Fig. 43)***

7.9.28 Despite the abandonment of the channel in the north of the trench, the property boundary this represented continued to be respected. This was indicated by a series of silty-clay dump layers that sealed wall [1407], yet respected the southern limits of the channel and wattle revetting. Layers [1406] and [1405] comprised a combined thickness of 0.34m of levelling material, and contained pottery fragments dated between 1480 and 1550, contemporary peg tile, and a lathe-turned bone gaming counter (sf 75). A piece of a 16th/17th-century leather shoe was also recovered from [1406] (Appendix 14). The upper horizons of [1405] were subsequently truncated by sub-circular pit [1404]. The 1.10m by 1.60m pit exhibited gradually sloping sides with a flat base, and had been backfilled by organic-rich clay-silt [1403] which contained degraded timber fragments, oyster and mussel shells and late 16th-century pottery fragments. The pit fill also contained a noteworthy, large assemblage of animal bone indicative of cattle butchers waste, as well as a few sheep/goat metapodials and phalanges which may indicate tawyers waste in the vicinity (Appendix 12). These features were then sealed by a 50mm thick deposit of alluvial clay [986] within which were early 17th-century pottery fragments and peg tile.

7.9.29 A linear deposit of silty-clay [985] with heavily degraded remnants of timber towards the edges was identified in the northern limits of the trench. This followed a north-west south-east alignment for an observed length of 2.30m by 0.20m width and 70mm thickness. Initially interpreted to be the remnants of a drain, this may alternatively represent a heavily truncated beamslot, as this runs directly perpendicular to earlier wall [1407]. No cultural inclusions were recovered from this feature with which to establish date or function with any further certainty. Along the northern limits of the trench, yet still respecting the southern boundary of the earlier channel, was a 0.10m thick layer of redeposited alluvium [1423], presumably utilised as levelling material. This was clean of cultural inclusions.

7.9.30 Circular and rectangular pits [980] and [975] were located within the internal area to the south of the southern beamslot, and post-dated tile surface [976]. Both had been backfilled with fills,



[979] and [974] respectively, particularly rich in mortar, and contained peg tile and pottery roughly dated between 1500 and 1800. Fragments of clay tobacco pipe stems were also recovered from fill [974] in addition to a French chaffing dish (Appendix 4).

***Phase 5biv: (Fig. 44)***

- 7.9.31 A compacted layer of blue-grey mortar [973] sealed the pits and covered the 1.86m by 0.97m area defined by earlier beamslot [952]. This deposit was identified at 2.46m OD and tentatively interpreted as a bedding layer for a removed surface. Continuity of occupation and use for this space was inferred by overlying occupation layers [972] and [962] which comprised grey and brown-yellow silty-mortar with chalk. These deposits had the combined thickness of 0.13m and contained early post-medieval peg tile. Later modifications to the space were represented by heavily truncated masonry stub [938]. This surface lain 0.44m<sup>2</sup> stub was constructed with unfrogged red bricks, of which only one course remained. The fabric type of these bricks dated between 1664 and 1800. The precise function and dimensions of this feature remain unknown. Pottery sherds recovered from the mortar dated between the mid 16th and late 17th century. A small 0.37m by 0.59m deposit of compacted mortar [946] is likely to have been associated with this and represents the heavily eroded remnants of a floor surface at 2.38m OD.
- 7.9.32 The function of the c. 0.58m wide strip of land between the two property boundaries represented by the beamslot to the south and wattle revetting/channel to the north is unclear. A group of three piles [1460], [1461] (both oak) and [1462] (elm; Appendix 16) were found in close proximity to one another within this space. These had been driven into tapered construction cuts [1025], [1026] and [1027] respectively and may have functioned together to provide structural support for one of the adjacent properties. To the immediate east of this group was a small deposit of collapsed masonry [950] comprised of early post-medieval brick and tile dated between 1600 and 1750.
- 7.9.33 A series of squared and rounded voids were also identified at this horizon, and are likely to indicate the locations of removed timber posts or piles. These were recorded as cuts [1014], [1016], [1015], [1013] and [1012]. These followed a north-east south-west alignment, perpendicular to the previously discussed property boundaries, and may represent structural elements relating to either northern or southern property.

Trench E2 (Figs. 45, 90, 91 & 92)

- 7.9.34 Earlier wall/property boundary [759] (Phase 5a) remained in use into the late 16th and early 17th centuries. Numerous dump and levelling deposits were recorded to the south of this feature. These comprised an initial dump of mortar-rich silty-sand [747] and demolition rubble [748] in the west and east of the trench respectively. The pottery recovered from both layers was dated between the mid to late 16th century, whereas the stone rubble, glazed floor tile

and peg tile recovered from [748] inferred a slightly earlier date range of the materials from 1000 to 1600. This may suggest the demolition of older buildings in the vicinity at this time.

- 7.9.35 The latter dump layers were overlain by a series of compacted mortar horizons which may indicate former surfaces. These were identified as layers [746]/[740] and [745]/[744]/[743] and [736] to the west and east respectively. Each deposit was generally comprised of white/green-white compacted tuffaceous mortar with occasional inclusions of pottery fragments. The mortar type was dated between 1300 and 1600, and the majority of the pottery sherds dated between 1550 and 1600. Each layer extended between 40mm and 0.12m in thickness and covered a maximum combined thickness of 0.26m from 2.86m OD. Later truncations separated the eastern and western deposits from one another, yet it is likely these originally formed one homogenous spread of material over the entire southern limits of the trench.
- 7.9.36 Uppermost mortar deposit [736] was underlain and overlain by occupation layers [737] and [735] respectively. These sandy-silt layers contained contemporary pottery fragments and may therefore have been utilised as bedding material. Deposit [735] was sealed by an additional layer of compacted mortar with chalk [734] in the south-eastern limits of the trench. No dating was recovered from the latter, which may represent a localised repair/consolidation. Further modifications at this horizon were evident in the form of squared pit [742] and isolated posthole [733]. These extended 0.54m<sup>2</sup> and 0.15m diameter respectively, and had been deliberately backfilled with mixed sandy-clay [741] with crushed mortar, clay tobacco pipe stems (dated from 1580 to 1910) and peg tile, and sterile crushed mortar [732].
- 7.9.37 A further series of fine occupation layers, interspersed with compacted mortar deposits sealed the cut features with a combined depth of 0.10m. Occupation horizons [739]=[731], [729] and [727] were identified from 2.93m OD. These deposits comprised compacted red-brown fine silts, c. 20mm in thickness, with few inclusions, and could represent beaten earth floors. The few pottery fragments recovered (from [729] and [727]) dated between 1480 and 1650, and a small brick fragment retrieved from [731] appeared to be roughly contemporary. The occupation deposits were sub-divided from one another by tuffaceous mortar layers [738]=[730] and [728], which similarly to earlier mortar spreads may represent rough surfaces.
- 7.9.38 A further 0.15m thickness of dumped clay-silt [726]/[720] and charcoal [725] were identified in the south-east of the trench. The concentration of material within this 1.5m by 0.90m area may be significant. Pottery recovered from [726] inferred a mid to late 16th-century date range, roughly contemporary to the clay tobacco pipe retrieved from [725].
- 7.9.39 Activity in the northern half of the trench was of a slightly different nature, and largely comprised multiple phases of construction and modification. The earliest of these features consisted of north-east south-west aligned brick and stone wall [1103]. This appeared to represent a continuation of southern Phase 5a wall [759] and utilised contemporary bricks, which had been bonded with a mortar with a slightly later date range. These walls would have

effectively bound a western internal area of 2.80m by 1.40m. The far northern limits of the space were demarcated by north-west south-east return [1104], also constructed with re-used half bricks. Both walls survived to a maximum of two courses from 2.59m OD. Eastern wall [1103] had been trench built within linear construction cut [1109], whereas [1104] was surface-lain and again may infer multiple phases of construction. The internal space was subsequently backfilled by a 50mm thick dump layer of sandy-silty-clay [299]. This contained no cultural material with which to establish date or function.

- 7.9.40 The northern extent of dump [299] was truncated from 2.71m OD by sub-circular pit [1102]. The pit covered an estimated diameter of 0.62m by 0.40m in depth, and had been backfilled sequentially with dumps of sandy-silt [1101] and [1100], both of which were clean of cultural material. Tiled floor surface [293] was installed within construction cut [298] directly over the pit, and appeared to continue to respect eastern boundary wall [1103]. The surface incorporated whole medieval Westminster patterned floor tiles dated to the 13th century and covered a 0.40m<sup>2</sup> area, and clearly continued beyond the western limit of excavation. One piece of tile was decorated with a design of four small fleur-de-lys (Appendix 10). The tiles had been laid into a bedding layer of friable silty-sand [297], clean of any dateable material.

#### Trench F (Figs. 46 & 93)

- 7.9.41 Activity during the later 16th and 17th centuries within this trench was generally limited to a series of dumped deposits and pitting across both halves of the excavation area. The earliest identified dump layer [824]=[867] extended across the trench from 2.50m OD and comprised silty-clay with mixed inclusions of oyster shell, peg tile, and pottery (dated between 1550 and 1600). This extended to a maximum thickness of 0.78m in the south of the trench. The southern limits of the deposit were then truncated by circular refuse pit [823], which measured 0.66m in diameter by 0.15m depth. Within the backfill [822] were pottery sherds dating between the late 16th century and 1700, contemporary clay tobacco pipe and peg tile fragments and animal bone. In turn, this was truncated by a second refuse pit [821], which extended 0.98m in diameter. The latter was identified from 2.50m OD and had also been deliberately backfilled with refuse material [820] containing a mixed assemblage of oyster shell, charcoal, mortar lenses, gravel, animal bone, late 16th-century pottery sherds, including part of a carinated colander (Appendix 4) and tile (peg and pan tile).
- 7.9.42 Earlier dumping and pitting were overlain by a series of fine layers of friable, reddish-brown/black sandy-silt with clinker [866], [865], [863] and [817] in turn. These each measured between 20mm and 80mm in thickness from 2.59m OD and covered a maximum extent of 4m by 0.90m, across the western limit of excavation. These layers of possible industrial waste contained a mixed assemblage of charcoal, mortar, oyster shell, pottery, animal bone, peg tile and occasional small iron objects (nails, a tenter hook (sf 280) and iron strap or hinge (sf 281)). The pottery and peg tile inclusions suggested a 1550 to 1650 date range. Deposit

[865] furthermore, contained a noteworthy number of hammerscale flake and spheres (Appendix 9).

- 7.9.43 Potential mortar surface [864] was identified in the south-west of the trench and covered a 0.84m by 0.54m area at 2.54m OD. This deposit of firm grey-brown mortar was clean of cultural material, and may represent either a rough surface or material utilised as capping for the industrial deposits below. The latter surface was overlain by occupation debris [862] and mortar surface [859] in turn from 2.72m OD. Similarly to [864], mortar layer [859] was relatively clean of cultural material, and contained occasional fragments of animal bone (horn core) and charcoal only. Clay-silt occupation layer [862], however, had inclusions of peg tile, brick and pottery dated between 1480 and 1600, in addition to small fragments of metal and animal bone. This may be roughly contemporary to a small burnt deposit of sandy-silt [818] recorded in the north of the trench. Pottery recovered from [818] was similarly dated between 1480 and 1600.
- 7.9.44 A possible property/land boundary ran across the trench, indicated by truncated linear cuts [815] and [861] in the north and south of the trench respectively. These followed a north-south alignment in the north of the trench with an east-west return in the south. The cuts exhibited steeply sloping sides to a flat base, and extended to a maximum width of 0.90m by 0.17m in depth. If both cuts did function together, they would have bound an internal area of at least 3.15m north-south by 0.98m east-west and continued beyond the western limit of excavation. Backfills of sandy-silt and clay [814]/[860] had been dumped within the cuts, and contained a mixed assemblage of pottery, oyster shell, mortar, animal bone and peg tile. The pottery recovered from the fills differed slightly in terms of date with that from the north of the trench dated between 1480 and 1650, and that from south dating between 1580 and 1700.
- 7.9.45 It is possible that the boundary was relatively short-lived, as this was sealed by compacted mortar floor [853] from 2.80m OD. This covered a 1.42m by 1m extent to a maximum thickness of 30mm. A number of broken brick and tile fragments were recovered from the surface that dated between 1500 and 1700. The surface was underlain and overlain by occupation deposits [858] and [852]. These comprised black-grey and red-brown sandy-silt layers with inclusions of charcoal, mortar, chalk, brick and pottery sherds. The pottery and brick fragments dated between 1480 and 1650, and 1500 to 1700 respectively. An additional 20mm thick dump layer of sandy-silt and mortar [851] with broken peg tiles sealed this sequence from 2.86m OD.

#### Trench G (Fig. 47)

- 7.9.46 Ground raising/dump layers [1652] and [1651] comprised the earliest evidence of activity relating to the later 16th and 17th centuries within Trench G. These layers of green-grey silty sand and gravel covered the base of the trench with a combined thickness of 0.27m from 2.52m OD. Pottery recovered from the deposits dated respectively between 1550 and 1580,

and 1580 and 1600. The upper horizons of [1651] were subsequently truncated by sub-rounded pit [1639]. The 0.50m by 0.30m feature extended to a maximum depth of 0.19m and had been backfilled with sandy-gravel [1638] devoid of cultural material. The precise function or date of this feature therefore remains unknown.

- 7.9.47 The presence of a former structure within the south-western limits of the trench were indicated by 'L' shaped construction cut [1635]. This extended 2.90m north-east south-west with an north-west south-east return of 1.70m to the north, by c. 0.50m width and 0.15m in depth from 2.80m OD. The cut had been backfilled with grey-brown silty-sand [1636], clean of anthropogenic material barring occasional fragments of Reigate stone. The cut defined an internal area of 2.17m north-south by 1.40m and continued beyond both western and southern limits of excavation. The installation of a mortar surface [1647]=[1648]=[1649]=[1646] at 2.58m OD over a 100mm thick sand-rich bedding layer [1650] suggests this to have been an internal space. Pottery sherds were recovered from [1650] and [1646] with a 1580 to 1650 date range.
- 7.9.48 Later modifications to the internal area were identified in the form of circular postholes [1645] and [1642] in the south of the space. Both cuts extended c. 0.30m in diameter by 90mm depth and exhibited steep/tapered sides indicative of removed driven posts. Backfills [1644] and [1641] comprised loose silty-sand, clean of any cultural material.

#### Trench H3 (Fig. 95)

- 7.9.49 Dumping during the 16th century represents the first traces of activity since the abandonment of an earlier medieval building dated to 14th to 15th centuries. It is possible that horizontal truncation/terracing and robbing events, however, have removed traces of intermediate activity. Dumped clay [1728] sealed the majority of the trench at 1.68m OD. This contained a number of fragments of reused medieval peg tile dated between 1480 and 1900. This layer has therefore been attributed to Phase 5b on the basis of elevation and the re-use of materials, but may equally be attributable to Phase 5a.

#### E122

- 7.9.50 Levelling deposits of sandy-silt and ash [1511]=[1534] were the only features attributed to this phase of activity during the ground reduction works within arch E122. These contained inclusions of charcoal, ash and late 16th to late 17th-century pottery fragments. The dump layers were identified at c. 2.80m OD and had been clearly subjected to high heat from later industrial features attributed to Phase 6b.

### **7.10 Phase 6a: Post-medieval (17th to 18th Century)**

#### Trench A1 (Fig. 48)

- 7.10.1 The earliest feature attributable to this phase of activity comprised north-east south-west aligned linear cut [188]. This was located in the south-western corner of the trench and extended to a maximum observed length of 2.24m by 0.78m width and 0.50m in depth from 1.42m OD. The vertical sided cut was truncated to the north and had been backfilled with silty-clay [187] containing pottery sherds, clay tobacco pipe fragments, medieval peg tile, ragstone fragments and animal bone. The material culture suggested a date range of c. 1700 to 1740, and also included a few residual Roman pottery sherds dated to the 3rd century AD. The cut was overlain by silt-clay dump layer [183] in the south of the trench and extended up to 0.23m in thickness. The latter was clean of dateable material.
- 7.10.2 Rectangular pit [166] truncated dump layer [183] and was located in the south-western corner of the trench, roughly within the footprint of earlier linear cut [188]. The pit had been excavated with vertical sides to a flat base and had been backfilled with silty-clinker refuse material [165] which contained frequent inclusions of pottery (dated between 1680 and 1710), clay tobacco pipe (with a 1700 to 1740 date range, one bowl fragment of which had moulded crowns in relief on each side) and flecks of charcoal. The position of the pit within the alignment of the linear cut may suggest that whatever property boundary this related to was being roughly maintained.
- 7.10.3 The southern limits of the trench were sealed by a 0.44m combined thickness of red-brown silty sand [172] and clay-silt [164]/[161] dumped debris. Pottery sherds recovered from [172] dated between 1480 and 1610, and were found in association with peg tile dated between the early 18th century and 1900. Material culture retrieved from upper deposit [161] was roughly contemporary, and contained clay tobacco pipe dated between 1700 and 1740 and pottery sherds dated from the late 16th century to 1700. Refuse pit [157] was located to the north of this sequence of dumping and extended to a diameter of c. 0.90m by 0.45m in depth. This had been backfilled sequentially by deposits of clean clay-silt [156] and mortar-rich clay-silt [158] in turn. Fragments of clay tobacco pipe recovered from the latter were dated to the first half of the 18th century. A second sub-rounded pit [160] was recorded to the south-east of the latter and may be roughly contemporary. The sandy-silt backfill [159] contained frequent lenses/flecks of mortar, charcoal and brick fragments, but none were sufficiently intact with which to establish a date.
- 7.10.4 Circular pit [178]=[405] was identified at 1.16m OD and exhibited concave sides and base. This extended to a maximum diameter of 0.53m and had been backfilled with a 0.25m thick primary fill of black silty-clay [181]=[404] containing flecks of charcoal. Secondary fill [177] sealed the upper limits of the cut and comprised brown-black clay-silt [177] with inclusions of early 18th-century clay tobacco pipe, pottery sherds dated between 1580 and 1700 and late 17th-century glass. A copper alloy pin (sf 12) and a few fragments of abraded medieval peg tile were also contained within the latter. Overlying the secondary fill, was a small raised clay and re-used brick structure [180]. This served an unknown function and appeared to respect

the limits of the pit, extending around the western half of the circumference of the feature. The structure extended to a maximum width of 0.20m by 100mm thickness.

#### Trench A3 (Figs. 49 & 88)

- 7.10.5 Activity relating to the later 17th and 18th centuries was confined to the northern limits of this trench. An initial compacted mortar surface [433] was laid at 2.24m OD and covered a 2.24m by 0.80m area. Occasional fragments of pottery dating between 1580 and 1900 were recovered from this. Surface lain brick and stone wall [416] was constructed directly onto [433] and extended across the trench along a north-west south-east alignment. The 0.40m wide wall had been constructed using early post-medieval bricks with granite cobbles, Purbeck limestone, Kentish ragstone and York stone fragments utilised as foundation material. A maximum of three regular courses survived. The combination of building materials inferred a 1700 to 1900 date range.
- 7.10.6 Surfaces identified to both the north and south of [416] might suggest this to have been an internal wall, rather than a property boundary. Mortar surface [427] was located to the north of the wall at 2.54m OD. This contained small fragments of clay tobacco pipe dated between 1660 and 1680, and peg and pan tile with a 1630 to 1850 date range. This was underlain by a combined 100mm thickness of black sandy-silt occupation debris [429] and [430]. These were generally clean of cultural material, but a few fragments of pottery retained from [429] dated to the 16th century.
- 7.10.7 A greater amount of activity was evident to the south of wall [416]. Primary 'working' surface [426] was recorded at 2.40m OD and comprised compacted black-grey silty sand with frequent inclusions of slag, hammer scale flakes and spheres (Appendix 9) and occasional copper flakes with animal bone, a copper alloy object (sf 8) pottery and burnt tile fragments. The pottery dated between 1550 and 1600 and the surface covered a 2.56m by 0.64m area, lensing out to the south, with a maximum thickness of 0.45m. The latter was overlain by compacted mortar surfaces [425] and [424] in turn from 2.46m OD. These contained occasional fragments of animal bone and pottery (also dated between 1550 and 1700), and moderate amounts of peg tile. A thin, 30mm thick occupation deposit [423] of compacted silt sealed the sequence. Within the occupation debris were fragments of early medieval pottery dated between 1080 and 1200, frequent hammer scale flakes and spheres (Appendix 9) and burnt peg tile dating between the late 15th century and 1800.
- 7.10.8 Working surface [422] was located to the immediate south of deposit [423] at a comparable elevation of 2.54m OD. The 100mm thick layer of sandy-silt contained frequent inclusions of slag, iron flakes and iron, coal and brick with lesser amounts of animal bone, oyster shell, pottery (dated 1630 to 1680), and 18th-century fragments of clay tobacco pipe. It is noteworthy that many of the bricks recovered from the deposit had slag adhering to their faces, which may offer further support for industrial activities taking place within the immediate

vicinity. The precise relationship between [422] and [423] was obscured by drainage gully [428] which extended across the entire width of the trench by 0.48m width, aligned north-west south-east. The cut exhibited steep sides, and an uneven, undulating base at 2.36m OD. No significant differences in elevation were noted between the east and west limits of the cut with which to establish direction of fall. The cut had been deliberately backfilled with compacted, blue-black sandy-silt [421] containing pottery and clay tobacco pipe fragment dated between 1580 and 1610, peg tile and animal bone.

#### Trench A4

- 7.10.9 Due to the method of excavating the slit trenches all features were recorded in section only. The only evidence pertaining to the 17th and early 18th centuries comprised dump layers [543] and [542] identified in ST2. These comprised an initial 0.20m thick dump layer of grey-brown clay and no cultural inclusions, overlain by a 0.85m thick made ground deposit of mortar crush with silt lenses. The latter was identified at 2.82m OD and contained occasional fragments of clay tobacco pipe, dated from 1680 to 1710. Disarticulated human remains were recovered from [543] representing at least two adults and one juvenile (Appendix 11), and suggest that cemetery ground (possibly medieval) was disturbed during the redevelopment of the area.

#### Trench B1 (Fig. 50)

- 7.10.10 Features relating to this phase of activity were related to ground consolidation, drainage, and subsequent robbing. Clay-silt and organic deposits [13] and [17] were identified at 2.48m OD and contained no dating evidence. These were therefore ascribed to this phase based upon their relative elevations, and as such considered too high to represent the wider spread alluvial flood and consolidation layers of medieval date. One of the more noteworthy finds from [17] was the recovery of a reused oak beam which had been reused for at least two building carpentry purposes prior to further reuse in the 18th century (Appendix 15). These were overlain by dump layer [12] which was identified in section at 3.37m OD and comprised a 0.18m thick deposit of silty-sand and mortar. This was truncated by a large, linear, north-west south-east aligned construction cut [8]. The cut extended 1.46m in width, and exhibited vertical sides cut from 3.38m OD and continued beyond the project depth of 1.45m OD in depth. Within the cut was red brick culvert [10] constructed using post Great Fire bricks dated between 1664 and 1800. The upper arch of the culvert was recorded at 2.67m OD, and this was subsequently overlain by silty-clay and crushed mortar backfills [14] and [7] in turn. Fragments of pottery recovered from [14] dated between 1612 and 1800. Fragments of post-medieval floor tile retained from [7] may infer that demolition material was re-used as backfill.

#### Trench C (Fig. 51)



7.10.11 The remnants of a 17th/18th-century property were revealed in the south-western limits of the trench. Walls [204] and [203] were recorded in the west and east of the trench and were both constructed with unfrogged post Great Fire bricks bonded with a soft sandy mortar dated between 1664 and 1750. These were aligned north-east south-west and extended to a maximum length of 1.38m into the trench by 0.78m width, and 0.26m depth (approximately two courses). Eastern wall [203] had been trench built within construction cut [206], backfilled with lime mortar [205] within which were thick peg tiles of a contemporary date to the brickwork. Within the 0.82m space between the walls brick floor [202] had been laid at 2.39m OD. This comprised a single course of unfrogged orange bricks also considered to date between 1664 and 1750. These remains were too fragmentary to be able to determine whether both walls belonged to the same structure or represented two neighbouring structures.

#### Trench D1 (Fig. 52)

7.10.12 Features relating to water management continued to predominate the trench into the 17th and 18th centuries. Structure [1370] was located in the south-west of the trench and formed the revetted edge of a channel running north-east south-west, with the landward side appearing to lay to the east. As seen, the structure revetted a 3.18m length of the eastern channel edge. This had been constructed using a series of driven piles, identified as [1373], [1374], [1365], [1375], [1376], [1377], [1381], [1378] and [1383] from south to north respectively to the west of the channel. Those timbers retrieved were predominantly oak piles with a diameter between 80mm ([1374]) and 150mm ([1365]). Exceptions to these were squared piles [1373], [1381] and poorly preserved/exposed collapsed pile [1383]. These piles were sealed along their eastern faces by groups of tangentially faced oak planks [1371]/[1372]/[1389], [1364]/[1363] and [1391]/[1384]/[1379]/[1380]. The majority of the planks measured 20-25mm in thickness, with the largest example [1371] extending to 1.71m in length by 0.11m width. Additional piles [1390] and [1393] were driven to the east and within the central area of the structure, presumably to offer additional support. Only [1393] was recovered during the excavations and represented a rounded oak pile, 100mm in diameter. An unexcavated alluvial layer [1399] identified in the north of the trench may relate to the backfilling/use of the channel defined by [1370]. However, no finds were recovered with which to establish date and the two features were stratigraphically separated from one another by the construction of later revetment [390].

7.10.13 Structure [390] was constructed 0.50m east of structure [1370] along the same alignment. This was initially defined by a levelling deposit of compacted clay-silt [1303] into which a series of piles were driven, onto which planks were set along the eastern faces. Levelling deposit [1303] effectively capped earlier structure [1370] and contained late 18th-century pottery, late 17th/early 18th-century clay tobacco pipe, numerous microslags from smithing (Appendix 9) and an assortment of small objects, including a copper alloy lace-chape (sf 82), iron scissors (sf 83), copper alloy wire (sf 85), stone alleys (sf 116) with traces of red paint, an iron

bar/handle (sf 147), numerous copper-alloy pins (sf 138, sf 399), lead sheet waste (sf 139), lead ally button with floral decoration (sf 137) and a glass pharmaceutical bottle or phial (Appendix 7).

7.10.14 The western piles were identified as [1318], [1368], [1300], [1367]/[398], [397]/[1311], [1338], [396]/[395], [394], [1337], [1336]/[1312], [1313], [1335], [1314] and [1334] from south to north. The majority of those identified were derived from oak and comprised either edges of sawn slabs/boxed heart or whole log piles. Exceptions to this were unidentified pieces [1312] and [398] and softwood pile [1300]. The edge of the revetment was subsequently faced by a series of horizontally lain planks ([391], [392], [1301], [1326], [1327], [1328], [1329]) and squared timber beams/blocks ([393], [1325], [1332] and [1330]/[1362], [1361]). A number of these ([1332], [1328], [1362], [1333] and [1361]) were lain perpendicular to the main alignment of the structure, which may have provided additional support. Similarly to the piles the majority of these were derived from oak but also included some softwood ([1301], [1326], [1327], [1325]) and Elm ([1330]). Additional oak piles [1333] and [1366] were incorporated into the construction of the planking.

7.10.15 It is noteworthy that a number of the timber pieces utilised in the construction of [390] had been re-used. Pine sill beam [1325] was made of a box halved beam sawn out of a hewn imported baulk and was found to have a race knife cut, often indicative of timber destined for naval use (Appendix 15). Oak piles [1367], [1368], [1337] and [1366] were all considered to have been examples of shipyard waste and oak pile [397] was interpreted as the re-sawn fragment of ship's timber. Planks [391], [392], [393] and [1329] were examples of re-used carvel ship planks and example [1330] was formed of a large clinker built barge keel. Plank [393] was particularly noteworthy for evidence of an infestation by torado ship worm, and its form being a vessel's keel resawn for use as a morticed plate timber for a framed structure, most likely a building. The infestation would have occurred during its use as a larger vessel in warmer water to the south. Sawing to re-use the timber would have exposed the borer holes but did not prevent its reuse within a building, and then again within the revetment (Appendix 15). Oak chock [1362] was also derived from a carvel built ship plank and exhibited evidence of 'stoving', a method employed to bend planks with the use of heat. The structure in its entirety extended to a maximum observed length of 4.57m by 1.20m depth from 2.07m OD. A 0.40m thick dumped deposit of coarse sandy-silt [1302] was identified in the north of the trench along the internal face of [1370] and may relate to the gradual abandonment/in-filling of the channel. This contained pottery dated between 1630 and 1700 and a pewter 'chocolate' trefid spoon (sf 80). The spoon is of particular note and is also known as a 'pied-de-biche' which came into fashion after the restoration. The spoon recovered from this trench has a rare bust of William III (1694-1702) embossed on the finial and was probably made to commemorate his accession to the throne (Appendix 8).

7.10.16 A series of features associated with drainage were overlain by structure [1340]. These were defined by an initial linear construction cut [1308] which extended east of the revetment along a perpendicular alignment. These would have carried water or 'waste' into the north-south channel lined by revetments [390] and [1370]. Within the cut were two pipes formed of whole hollowed logs. An initial pipe of elm [1340] was laid at 0.98m OD and measured 260mm in diameter. This was overlain by timber plank [1339] which had been worked to form a groove along the base to secure the pipe in place. The latter was overlain in turn by a second pipe [1310] with a 400mm diameter, formed from a timber of indeterminate species. Oak pile [1324] was identified in section along the southern boundary of the cut and may suggest that sections of the cut were reinforced or revetted. Following the installation of the timber pipes backfills [1307] and [1306] in turn filled the remainder of the cut from 2.17m OD. These comprised soft silty-clays clean of cultural material.

7.10.17 Seen in section only were additional oak stakes [1304] and [1305]. These had been set horizontally into dumped clay-silt [1395], and appeared to pre-date the excavation of construction cut [1308]. These lay at the same horizon of 2.24m OD as dump layers of organic-rich clays with river pebbles [1309]/[1323]. However, no stratigraphic links remained due to a series of modern intrusions with which to establish this with any certainty. Similarly, dump layers [385]/[386]/[387] identified within north and west facing sections were also tentatively attributed to this phase. These layers of silty clay were recorded from 3.28m OD with a combined thickness of 0.73m and the only deposit to yield dateable material being lower dump [387] with pottery and clay tobacco pipe dating from the late 17th century. It is possible, based on relative elevations, that these represent ground consolidation layers following the abandonment of the revetments.

#### Trench E1

#### ***Phase 6ai (Fig. 53)***

7.10.18 Significant re-developments in the vicinity of Trench E1 occurred during this phase, with previously maintained property boundaries (as suggested by Phase 5b wattle revetting) being initially respected and then removed. An initial phase of pitting associated with refuse disposal was evident in the north of the trench. Intercutting rounded pits [984], [978] and [971] were identified from 2.35m OD and had been backfilled with silty-clays containing pottery, animal bone and building debris [983], [977] and [970]. The pottery and peg tile dated between 1480 and 1700, and a notable concentration of animal bone by comparison to other features of this phase was recovered from pit [978] (Appendix 12). A dump layer of silty-clay [961] was also identified in this area at a comparable elevation of 2.37m OD and contained contemporary pottery. Sealed by the latter was a small 1.04m by 0.10m section of heavily degraded timber drain [969]. The drain was aligned north-west south-east, therefore respecting the former alignment of Phase 5b wattle revetting.

### ***Phase 6aII (Fig. 54)***

7.10.19 A number of structural elements were then constructed, initially within the southern half of the trench, and then expanded into the former property boundary to the north. The north-west south-east alignments, however, from earlier phases were maintained. Primary construction cut [942] respected the central property boundary and extended 1.04m south by 0.26m depth from 2.61m OD. It may be considered more of a terracing cut rather than a formal trench for masonry. Compacted chalk debris [945] and timber plank [944] were then installed to support wall foundation [911]. Prior to the construction of [911] however the southern area was subjected to a series of ground raising deposits of crushed ash and mortar [936]=[937], [939] and compacted sand/mortar with brick rubble [929]/[943]/[941]. All deposits except [941] were clean of dateable material and were all identified at an average elevation of 2.45m OD. It is possible given the high quantities of mortar that these were either capping deposits for cessy material below or provided a construction horizon for overlying surfaces. Construction cut backfill [941] contained quantities of pottery, brick and peg tile with a 1580 to 1650 date range.

7.10.20 Cobbled surface [930] covered a 0.76m by 0.58m area at 2.48m OD. This was located in the central eastern part of the trench and comprised sub-rounded river cobbles and broken bricks set into ashy-silt. The types of bricks utilised could be dated between 1600 and 1700, but had clearly been re-used. The surface lay to the immediate east of foundation [911], with no firm Stratigraphic connection between the two. Foundation [911] defined a north-west south-east aligned boundary which extended to a maximum observed length of 1.65m by 0.58m width. The red brick wall was recorded from 3.19m OD with an approximate founding level of 2.95m OD, and incorporated early post-medieval bricks bonded with lime mortar giving a 1550 to 1700 date range. Similarly physically separated but considered to be associated with [911], was red brick surface [932]. This covered a 1m by 1.80m area and comprised a single course of red unfrogged bricks bonded in regular courses with sandy mortar. The bricks were stained black by overlying coal deposit [931].

7.10.21 Development within the northern limits of the trench was inferred by squared cuts [954] and [958], each measuring c.0.50m<sup>2</sup>. Eastern construction cut [954] had been lined with timber [960] with chalk pier [953] installed at 2.44m OD. This truncated a small dump layer of clay-silt [955] containing late 15th to early 17th century pottery sherds. The latter cut respected the pre-existing property boundary, whereas western cut [958] was aligned east-west. This had been backfilled with rubble and silty-clay [957]/[956] which contained occasional fragments of pottery dated between 1480 and 1600. The function of either cut remains unclear.

### ***Phase 6aIII (Fig. 55)***

7.10.22 Further activity within the northern limits of the trench were indicated by levelling deposits of organic-rich clay [959] which was clean of cultural material. This was entirely confined to the northern extent, i.e. to the north of the property boundary. This was overlain by other levelling

deposits which extended across both sides of the trench, and could have functioned with [911]. These included an extensive 2.24m by 1.30m spread of ashy-silt [927] with lenses of dumped sandy-silt [940]/[935]. The levelling deposits were relatively clean of cultural material, containing occasional fragments of peg tile and brick only, dated between 1664 and 1900. Following these deposits a beamslot [928] was excavated against the northern face of [911] running at a perpendicular angle to the boundary wall. The beamslot was initially recorded from 2.69m OD and extended 1.02m in length by 0.35m. No traces were preserved of any structural material within the slot, which had been backfilled with black ash and clinker [922]. Pottery within the fill dated from the mid 16th century to 1700.

7.10.23 Brick floors [925]=[926] extended across the northern limits of the trench, respecting the alignment of beamslot [928]. These were recorded at a regular elevation of 2.70m OD and were formed of a single, regular course of early post-medieval and post Great Fire bricks dated between 1450 and 1800. The surfaces were set onto levelling/bedding layers of silty-clay and compacted mortar [947]/[948]/[949]. Layer [947] was the only one to yield dateable material and contained pottery sherds with a 1480 to 1650 date range. It is likely that these surfaces were associated with eastern boundary wall [912]. The latter was identified primarily in section from a founding level of 2.75m OD and lay perpendicular to [911]. The wall had been constructed in regular, even courses of red brick and would have, with [911] bound an observed area of c. 6.22m<sup>2</sup>. The full limits of this space remain unknown and clearly extended beyond both northern and western limits of excavation.

7.10.24 A further series of modifications were evident in the southern limits of the trench which subdivided the internal area south of wall [911]. The very fragmentary remnants of a red brick wall [933] was constructed at a founding level of 2.51m OD. This ran roughly parallel to [911] and was tentatively interpreted as related to a former coal chute, explaining the extensive deposits of coal and stained brick floor. However, as this was constructed over the floor, this must relate to a later addition or re-build. A series of masonry blocks were subsequently constructed against the southern face of [911] extending 1.35m to the south by 0.87m width. These comprised east-west aligned blocks [918]/[934] abutting [911], north-south aligned foundation blocks [919]/[920] and 'L' shaped foundation block [917]. The masonry blocks were recorded from 3.06m OD with a maximum thickness of 0.40m. The materials utilised in their construction varied between irregularly coursed post Great Fire bricks, with some inclusions of Reigate stone ashlar and moulding ([920]/[917]) and suggested that these constructions incorporated a large proportion of re-used materials. This may explain the slightly earlier date range of 1450 to 1700 proposed for features [917] and [919]. It is likely that a small red brick construction [921] which capped the northern face of [911] was installed at the same time as these modifications. The feature was initially thought to represent a red brick foundation for an overlying structure and may therefore have provided additional support to [911]. The brick and mortar types utilised in the construction were dated between 1600 and 1750.

7.10.25 Dump layer [924] of ashy-silt and crushed mortar lay to the east of the sub-divisions described above, covering a 1.84m by 1.10m area. This was relatively clean of cultural material barring a small iron hasp (sf 145), and may have been utilised as a construction horizon for compacted mortar surface [923]. The latter was recorded from 2.66m OD and contained late 17th to early 18th-century clay tobacco pipe fragments. It is also noteworthy that underlying deposit [924] contained fragments of Reigate stone ashlar blocks, comparable to elements utilised within the construction of the numerous blocks that formed the eastern sub-division. This may indicate the demolition of earlier structures within the immediate vicinity at the time.

Trench E2 (Figs. 56 & 91)

7.10.26 An increase in construction was evident particularly within the southern half of the trench during the 17th to 18th centuries. An isolated circular posthole [724] with a c. 0.50m diameter was identified at 3.01m OD. This had been backfilled with loose sandy-mortar [723] to a depth of 0.33m. The backfill was clean of dateable material and the posthole may relate to an earlier construction phase or property boundary. The eastern limits of this were subsequently truncated during the construction of brick foundation [751] which had been trench built within construction cut [721]. Foundation [751] incorporated Tudor red and Stuart red bricks dated between 1450 and 1700 and extended to a length of 0.40m by 0.30m width, and founded at 2.82m OD. This was overlain in turn by red-brick wall [719], which measured 0.40m in height and utilised early post-medieval bricks laid in four regular courses, bonded with a hard, gravelly mortar. Pottery fragments recovered from mortar and chalk construction cut backfill [722] dated between 1480 and 1650.

7.10.27 Brick floor [706] was associated with boundary wall [719] and lay along the wall's southern face at 3.07m OD. The single course of red Tudor bricks were laid in regular even courses, and covered a 1.50m by 0.96m area, extending beyond the western limit of excavation. A second brick floor [750] was identified in the south-eastern corner of the trench at 2.58m OD. This may be related to this phase of construction and used post Great Fire bricks dating between 1664 and 1800. Due to truncations, its physical and stratigraphic relationships to the remainder of the trench were removed. It is therefore attributed to this phase on the basis of its relative elevation and brick type.

7.10.28 A c. 0.20m combined thickness of levelling material [1119] and [1120] was identified in the east of the northern half of the trench from 2.15m OD. These contained fragments of animal bone (sawn cattle and sheep bones), clay tobacco pipe dating between the late 18th and early 20th century, a small tapered bone strip, possibly a fan blade (sf 74) (a luxurious item for the time, Appendix 8) and pottery sherds dating between the late 17th and early 19th centuries. A large dump of freshly broken pan tile and pan tile soot were also recovered from these layers. These were overlain by a large fragment of collapsed wall [1118] which measured 1.20m by 0.60m and comprised a red-brick header bonded wall, 0.25m thick. The wall fragment is likely

to represent demolition material utilised as ground raising, rather than an *in situ* collapse. This was overlain by a further 100mm thickness of sandy-clay ground raising [1114].

- 7.10.29 A small section of a possible internal wall [1116] was identified along the northern limit of excavation along an east-west alignment. The single course of narrow Stuart bricks extended 0.18m by 0.22m, and had been founded at 1.80m OD within a linear construction cut [1117]. The silty construction cut backfill [1115] was clean of any cultural material. The bricks were considered to date between 1600 and 1700, but may represent re-used materials.

#### Trench F (Figs. 57 & 93)

- 7.10.30 Activity during the 17th and 18th centuries within this trench was exclusively associated with occupation of a more domestic nature by comparison to the industry encountered during earlier Phase 5b. In the south of the trench levelling layers of sandy-silt and mortar [850]/[849] were recorded at 2.95m OD with the combined thickness of c.100mm. These contained only a few fragments of brick and tile dated between 1450 and 1700 in addition to very fragmentary and undateable pieces of metal and charcoal. These were overlain by a 60mm thick layer of occupation debris [848] comprising friable sandy-silt with sherds of 18th-century pottery, post-medieval clay tobacco pipe and peg tile. This in turn was overlain by red/orange brick floor [854], observed in section at 3.05m OD. The elevation of this may infer it to have been part of an internal or external floor rather than a basement level of a former property.

- 7.10.31 A similar sequence was observed in the northern half of the trench. A red brick floor [810] was identified at the slightly lower elevation of 2.67m OD. This was similarly formed of unfrogged red/orange bricks to [854] lain in a single course over a bedding layer of mortar [812]=[811]=[813]. The bricks utilised were early post Great Fire in use between 1664 and 1800. An 80mm thick occupation layer of compacted ashy burnt sand and clinker [808]. Fragments of oyster shell, an iron fitting (sf 268) and post-medieval clay tobacco pipe were recovered from this.

#### Trench G (Fig. 58)

- 7.10.32 The structure previously identified within the south-western corner of the trench (Phase 5b), as defined by construction cut [1635], remained in use into the 18th century. Modifications included the construction of a new eastern boundary wall [1620] and installation of compacted beaten earth floor [1633] at 2.63m OD. The wall extended to 2.50m in length by 0.38m width and 0.30m depth from 2.80m OD. This had been constructed with unfrogged red bricks lain in English bond. Floor [1633] covered the full internal area of the space and measured 40mm in thickness. The surface of silty-clay and ash was clean of cultural material from which to establish date with any certainty.

- 7.10.33 Further modifications were evident along the northern boundary of the space. Red brick 'L' shaped wall [1619] extended 0.94m in length along this boundary with a 0.80m return into the

internal area. This was bonded into the fragmentary remnants of brick floor [1634] which lay at 2.68m OD. The use of proto and early post-medieval brick and mortar types inferred a 1664 to 1700 date range for these additions. A compacted mortar spread [1629]=[1630] within the internal space of the latter structure was identified at 2.77m OD and suggests a continuity of use for this space. Both deposits were however clean of cultural material.

#### Trench H1 (Fig. 59)

- 7.10.34 A north-east south-west aligned linear cut [2013] along the western limit of excavation and an alluvial dump layer [2020] in the east of the trench were the only features attributed to this phase. The linear cut extended 3.24m by 0.88m and 0.20m in depth with concave sides and base at 0.69m OD. This had been backfilled with sandy gravel [2012] containing early 18th-century clay tobacco pipe and peg tile. Alluvial clay [2020] comprised firm, blue-grey clay-silt, clean of cultural material. The layer was considered to represent ground consolidation and assigned to this phase based upon its relative stratigraphic location and elevation. This was located along the eastern limit of excavation at 1.88m OD.

#### Trench H3 (Figs. 60 & 95)

- 7.10.35 The only feature attributable to this phase comprised irregularly shaped refuse pit [1738]. This extended 2m north-south by 1.80m east-west by 0.16m in depth and was identified at 1.68m OD. The pit had been deliberately backfilled with clay-silt [1732] containing pottery sherds dated between 1670 and 1690, medieval and post-medieval brick and peg tile dated between 1450 and 1700, animal bone, and occasional flints and fragments of metal.

### **7.11 Phase 6b: Post-medieval (18th to 19th Century)**

#### Trench A1 (Figs. 61 & 86)

- 7.11.1 Vertical sided, rectangular pit [167] was located within the southern half of the trench. This 1.12m by 1.48m feature had been excavated to a maximum observed depth of 0.85m from 1.98m OD and had been backfilled with silty-clays [155], [175] and [174]. Primary fill [155] was clean of any dateable material. Secondary and tertiary fills however contained pottery dated to the 16th to 17th centuries and from the later 17th to early 18th centuries respectively. Clay tobacco pipe recovered from both upper fills was consistently dated between 1700 and 1740, and the corroded parts of an iron horseshoe (sf 272) were also recovered from [175]. The pit appears to have been re-cut at least once by sub-squared cut [154] which was located entirely within the footprint of [167]. This extended to a depth of 0.40m and had been backfilled with clay-silt [153] containing frequent mortar lenses and small fragments of animal bone. No dateable material was recovered from the latter.
- 7.11.2 Adjacent to pits [154]/[167] were the fragmentary remnants of fine sandy-silt levelling material [163] overlain by crushed chalk and mortar [162]. These may suggest the presence of a rough



surface at 1.99m OD. Among the material culture recovered from [163] were pottery sherds dated to the end of the 17th to early 18th century, clay tobacco pipe in use between 1580 and 1910, peg tile and post-medieval glass.

- 7.11.3 A 0.75m thick sequence of dumped deposits were identified from 2.36m OD within the south and east facing sections. These comprised mixed deposits of sandy-clay and silts [171], [170], [147], [146], [145] and [144] in turn. Each deposit contained variable concentrations of animal bone, shell, clinker, pottery, crushed mortar and brick debris. Dateable material was recovered from deposits [170], [145] and [144] and included pottery dated to the mid to late 17th century, late 17th to early 18th-century clay tobacco pipe and sooted pan tile dating from the mid 18th century. A piece of Bargate stone, typically associated with Roman masonry structures from Southwark, recovered from [170] is clearly residual (Appendix 10). The upper horizons were truncated by intercutting pits [201] and [152], the former also identified in section only. Pit [201] extended to an approximate diameter of 1.37m OD and had been backfilled with compacted silty-sand [148]. Later sub-rectangular pit [152] followed a north-west south-east alignment and extended 0.80m by 0.36m by 0.20m in depth. This was backfilled with compacted crushed mortar [151] within which were inclusions of clay tobacco pipe dated between 1680 and 1710, and slightly earlier pottery sherds dated 1630 to 1680. The northern limits of the trench were then overlain by a 0.22m thick spread of sandy-clayey-silt levelling material [143] from 2.49m OD.
- 7.11.4 A second sequence of dumped debris was encountered in the south of the trench. Sandy and clay-silts [142] and [141] covered the majority of the southern half of the trench to a maximum combined depth of 1.01m from 2.59m OD. Pottery, clay tobacco pipe and glass recovered from [142] consistently dated to the late 17th and early 18th centuries. A further dump of mortar [136] sealed the sequence of dumping from 2.70m OD and may have been utilised to cap the underlying refuse. This contained a mixed assemblage of pottery dating from 1630 up to the 18th century, clay tobacco pipe with a similar date range of 1580 to 1910 and glass dated from the late 17th century. A 100mm thick deposit of burnt debris [135] sealed [136] and contained contemporary pottery and clay tobacco pipe.
- 7.11.5 A phase of activity relating to the later 19th century was indicated by the construction of a large, 1.5m wide brick culvert [434] which bisected the trench following a north-west south-east alignment. The culvert had been constructed using yellow frogged bricks in the form of an arch, the uppermost elevation of which was recorded at 1.47m OD with internal base at 1.12m OD. The culvert had been constructed within a linear, vertical sided cut [137] first identified at 2.58m OD and continued beyond the limit of excavation in depth. Following the construction of [434] the cut was backfilled with an initial deposit of compacted silty-clay [173], clean of cultural inclusions, followed by a 1.10m thickness of silty-clay [105] which contained 19th-century pottery fragments and post-medieval peg tile and glass.

7.11.6 Two linear cuts were identified across the northern and eastern limits of the trench. Cut [140] followed a north-west south-east alignment and ran perpendicular to north-east south-west aligned cut [118]. The latter extended to a maximum observed length of 1.50m by 0.28m width and 0.34m in depth, and the former extended across the width of the trench by 0.40m width and 0.19m in depth. Differences in elevation, with [140] being identified at 2.51m OD and [118] recorded at 2.82m OD might argue against these cuts being contemporary with one another. The material culture recovered from the respective backfills of silty-clay sand [139] and reddish-brown clay-silt [119] included clay tobacco pipe, peg and pan tile, part of a sink, glass production waste (a syringe plunger of clear soda glass, Appendix 7) and pottery sherds. Material derived from [139] was consistent with an early to mid 19th-century date range, whereas that from [119] dated between the late 16th and 19th centuries. A single fragment of a sanitary ware toilet fitting also recovered from [119] however dated between 1880 and 1950. It is unclear what the cuts delineated or what their function was.

7.11.7 A series of dumped deposits were identified along the northern limit of excavation from 2.94m OD. Dump layers [132], [131] and [130] in turn extended to a combined depth of c. 0.40m and comprised deposits of clay-silt containing a mixed assemblage of pottery, clay tobacco pipe (production waste including kiln roof fragments and slag material, and kiln furniture), glass and building material indicative of demolition debris. The pottery and clay tobacco pipe were generally dated from the early to mid 19th century, and included two bowls of a Masonic type (Appendix 6). Building material recovered included peg tile, white wall plaster and fragments of purbeck limestone paving, which gave a combined date range of 1600 to 1900. Of uncertain relationship to these deposits was garden soil [113] identified in section to the east of the trench at 3.05m OD. No dateable material was recovered from this 0.87m thick horizon. A similarly sterile dump of crushed chalk [112] sealed the garden soils with a maximum thickness of 0.21m.

#### Trench A2 (Fig. 61)

7.11.8 The western half of the trench was occupied by a north-east south-west aligned structure during the later 18th and 19th centuries. A construction horizon of compacted clay-silt [522] was initially lain at 2.26m OD. The 40mm thick levelling deposit contained sherds of 19th-century pottery in association with clay tobacco pipe with a 1580 to 1910 date range and mid 18th to 19th-century peg tile and Flemish floor tile. Linear construction cut [523] was then excavated to a width of 1.08m by 0.28m depth for the installation of a single course of Kentish ragstone [525] foundation material and overlying red-brick wall [511]. The ragstone foundation may represent an isolated block for additional support and covered a 0.54m by 0.36m area to the immediate west of wall [511]. Within the stone rubble was a single fragment of a Reigate stone door. Boundary wall [511] extended across the entire width of the trench, and measured 0.80m in width by 0.45m in height. The wall utilised red frogged post Great Fire bricks (dated 1850-1900) and had been founded at 2.18m OD. This defined an internal area of 2.80m by

1.15m to the east and continued beyond both northern and southern limits of excavation. The complete floor slabs recovered from both [525] and [511] may represent recycled material from St Thomas's Hospital Precinct (Appendix 10).

7.11.9 A single course of red frogged bricks demarcated a second wall [512] constructed within the internal area defined by [511]. This ran parallel to the bounding wall to a length of 1.54m by 0.50m width. This was tentatively interpreted as a pad or base for a removed structure or internal installation. The open areas to the west and east of this base were then overlain by sandy-silt and mortar make-up layers [513] and [514] respectively. These sealed the area to an uppermost elevation of 2.31m OD and may infer the basement level for the former property. Pottery sherds, clay tobacco pipe fragments and glass recovered from [513] inferred an early 19th century to 1900 date range.

7.11.10 No evidence relating to activity to the east of the structure with the exception of three isolated postholes survived. Postholes [516], [518] and [531] respected the boundary wall and were identified at 2.08m OD. Each appeared sub-rounded in plan with steep/near vertical sides to a flat base, with an average diameter of 0.20m by 0.12m in depth. These had been backfilled with deposits of brown-yellow crushed mortar with brick fragments [515]/[517]/[530].

7.11.11 To the immediate south of the group of postholes, along the southern limit of excavation, and running perpendicular to boundary wall [511] was potential buttress/pier [532]. This comprised three courses of red bricks bonded with a cemented mortar, which ran for an observed length of 1.34m, and extended beyond the southern and eastern limits of excavation. It is unclear what purpose this served or whether this related to an adjacent property to that defined by [511] or was part of the same complex.

#### Trench A3 (Figs. 62 & 88)

7.11.12 By the later 18th to 19th centuries the land use of the area occupied by this trench had changed and industrial processes appeared to have ceased. The first evidence of activity attributed to this phase comprised north-west south-east aligned linear cut [419] interpreted as a potential garden feature. This extended across the trench with a maximum width of 0.80m by 0.18m in depth from 2.41m OD. Backfill [420] comprised friable blue-grey sandy-silt, containing a mixed assemblage of clay tobacco pipe (dated 1680 to 1710), animal bone, slag, peg tile and pottery dated between 1770 and 1820. A later re-cut to this along the same alignment [418] was identified at 2.41m OD and extended beyond the southern limit of excavation. Compacted clay [417] had been utilised as backfill, and contained fragments of mortar and pottery dating between the mid 16th and mid 17th centuries, and struck flint. Linear features [419]/[418] both follow the same alignment as earlier Phase 6a wall [416] and drainage gully [428], which may suggest that despite a change of land use, pre-existing property boundaries continued to be respected at this time.

7.11.13 The entire area south of wall [416] was overlain by a 0.21m thick levelling deposit [415] of silty-sand. Fragments of pottery, clay tobacco pipe, animal bone, oyster shell, metal, glass and tile were recovered from [415]. The pottery and tile dated to the late 18th century, whereas the clay pipe dated between 1820 and 1860. A few fragments of residual Roman pottery (AD 50 to AD 200) were also recovered from the layer. The upper horizons of [415] were truncated by a series of north-west south-east aligned 'lazy beds'. These were identified as cut features [408], [410], [412] and [414] from south to north respectively. Each 'bed' had been excavated with steep sides and rounded bases with an average width of 0.20m by 0.20m depth. These were backfilled with sandy-silt deposits [407], [409], [411] and [413] respectively. Fragments of animal bone, slag, clay tobacco pipe and pottery were recovered from all except [409] which was largely comprised of the heavily degraded remnants of a timber beam. All fragments of clay tobacco pipe dated between 1580 and 1910, and the pottery varied between mid to late 18th century with a few late medieval/early post-medieval fragments dated between 1480 and 1700. These features were overlain from 2.82m OD by a 0.14m thick layer of garden soil [406], seen only in section. Pottery recovered from the layer dated to the mid/late 18th century. Other finds included a copper alloy strip (sf 128), and a bone handle of sheep tibia (sf 106).

#### Trench A4/E39 (Fig. 62)

7.11.14 As stated previously, due to the method of excavating the slit trenches (A4) all features barring large masonry obstructions were recorded in section only. A larger area to the immediate north of Trench A3 was monitored under watching brief conditions during later ground reduction works. A large concrete slab [1001] was identified at 2.96m OD. This had been poured in a square extending along a north-west south-east alignment 5.75m by 6.74m. This was then used as a foundation for the construction of north-west south-east walls [1000] and [1005] to the south and north, with north-east south-west return [1004] to the east. It is likely that all walls were constructed at the same time, and enclosed an internal area 4.66m by 2.66m. All walls had been constructed with red frogged bricks, laid in English bond and exhibited stepped, corbelled footings. Red brick footings recorded as [575] within ST4 and can be equated with the southern face of wall [1005], and appeared to have been constructed within linear cut [574] which had been backfilled with clean clay-silt [573]. Concrete slab [1002] had been poured against wall [1001] at 3.19m OD and may indicate a former floor level.

7.11.15 Within the internal area defined by the above walls, was a large red-brick culvert. This ran parallel to eastern wall [1004] and is therefore likely to be contemporary. The culvert was identified as [1006] (not illustrated) during the open area excavation and is likely to be part of the same drainage system as north-west south-east culvert [570] as recorded within ST3 to the north. Red brick floor [568] (not illustrated) had been constructed against the southern face of the latter at 2.12m OD and may represent a former basement level or roughly lain working surface, as the culvert extended another 1.30m above this level.

#### Trench B1 (Fig. 63)

- 7.11.16 A potential robber cut [11] truncated the southern limits of Phase 6a culvert [10] and extended along a comparable alignment, continuing beyond the southern limit of excavation in width. The cut was identified from 3.58m OD and similarly continued beyond project level in depth. This had been backfilled sequentially with deposits of silty-sand with mortar and timber inclusions [16], [15], overlain by silty-clay and mortar-rich backfills [6] and [9]. Upper fill [6] contained a mixed assemblage of pottery dated between 1790 and 1830, clay tobacco pipe dated from the late 16th century to 1910, peg and pan tile and a few fragments of purbeck limestone paving slabs. This also contained a complete ceramic haircurler (sf 103).
- 7.11.17 Roughly contemporary to the infilling of the latter feature was the installation of a red brick wall [2] in the north of the trench. The wall was identified at 3.63m OD and had been constructed with red frogged, post Great Fire bricks dated between 1800 and 1900. The wall followed an east-west alignment but due to a very partial exposure, it remains unclear whether this represented a property boundary, garden wall, or part of another structure/foundation entirely.
- 7.11.18 Demolition layer [3] sealed wall [2] from 3.78m OD and contained early 19th-century pottery fragments, brick rubble and large fragments of mortar. This was truncated in the south of the trench by linear cut [4]. The cut exhibited concave sides and flat shallow base, 0.25m in depth. This had been backfilled by sandy-silt and mortar [5] containing late 19th-century bricks. The precise function of the cut remains unclear. All features were then overlain by a 0.33m thick layer of made ground [1] comprised of clay-silt with inclusions of clay tobacco pipe and pottery with a date range of 1760 to 1830.

#### Trench B2

##### ***Phase 6bi (Figs. 64 & 89)***

- 7.11.19 The majority of Trench B2 was occupied by 18th/19th-century masonry structure [68] initially associated with drainage, but with numerous episodes of re-builds and repairs over a relatively short time period. The initial construction comprised a north-west-west south-east-east aligned southern boundary wall [49] for a culvert that terminated in the east of the trench with north-north-east south-south-west aligned orange brick wall [41]. Both features were bonded together via a small square buttress [47]. All of these elements had been constructed using re-used materials dated between 1664 and 1750, and lay within linear construction cut [48]. The cut was initially identified at 2.80m OD and extended to an uncertain depth beyond the project level. Grey-brown silty-sand [65] had been utilised as construction cut backfill and contained a few fragments of pottery dated between 1550 and 1700. Also thought to be associated with the construction of these features were three pit-sawn box quartered timber piles [60], [66] and [67] which had been driven into the footprint of the cut to the immediate north of wall [49]. The vaulted arch [37] of the culvert was constructed directly over these

elements and extended to a maximum width of 0.60m, with the peak of the arch recorded at 2.81m OD.

7.11.20 A number of features lay outside the immediate footprint of the structure but have been tentatively attributed to this phase of activity. These comprised dump layers of organic/cessy sandy-silts [72] and [56] recorded from 2.70m OD and located in the far western limits of the trench. Pottery recovered from these inferred an early 19th-century date range, and a number of incomplete copper alloy pins (sf 119), including a hairpin, were found within [56]. Refuse pit [51] truncated the upper horizon of these deposits and had been backfilled with clay-silt [50] containing mixed debris including oyster shells, early/mid 19th-century pottery and glass (including a cylindrical wine bottle), and peg tile. Two isolated postholes [53] and [55] were located in the south of the trench and had been backfilled by clay [52] and [54] clean of anthropogenic material. The function of these remain uncertain, and they may be related to the construction of the culvert.

#### ***Phase 6bii (Figs. 65 & 89)***

7.11.21 The first phase of modification was indicated by the construction of rebuilds [38]/[45] over the footprint of primary wall [49]. These were recorded from 3.05m OD, and were associated with brick floor surface [36] which lay against the northern face of wall [38] at 2.45m OD. Also associated with this phase of works was masonry stub [27], recorded in section only at 3.27m OD. The bricks utilised in the construction of [27] were comparable to the other elements of the structure, being reused materials dated between 1664 and 1800, and it is therefore likely that this functioned as a localised repair or small buttress. An additional repair was made to western wall [41] by the construction of [42] within construction cut [62] and backfilled with silty-sand [64]. The repair was constructed using frogged yellow bricks dated between 1850 and 1900 and followed the full length of [41] by 0.42m width.

7.11.22 Between these builds were a series of backfills and levelling deposits ([58], [30], [29]) largely comprised of silty-clays with inclusions of pottery, brick, clay tobacco pipe and fragments of wood. The pottery recovered dated between 1760 and 1830 and all clay tobacco pipe fragments were dated between 1580 and 1910. A thin 80mm thick spread of compacted mortar [35] was also identified directly over culvert arch [37]. This may represent a sealant/waterproofing or a discrete dump of demolition material. The latter interpretation may be supported by the retrieval of early post-medieval pottery dated between 1662 and 1692 and contemporary brick. A single Roman imbrex was also recovered from [35]. The final abandonment/disuse of culvert [37] was indicated by silty-clay infill [28].

#### ***Phase 6biii (Fig. 66)***

7.11.23 A third phase of modification and alterations to the surviving masonry elements of structure [68] were represented by rebuilds [21] and [40]. These were installed within construction cuts

[23] and [43] which truncated a 1.10m thick dump/ground consolidation layer [18]. The latter deposit of clayey-sandy-silt contained a mixed assemblage of early/mid 19th-century pottery and glass, late 17th/early 18th-century clay tobacco pipe, a stone hone for sharpening blades (sf 2), mortar fragments, building rubble and charcoal. Part of a cylindrical mug in imported Chinese porcelain, made specifically for the European market, was also recovered from [18]. The first rebuild [21] was associated with earlier southern walls [39] and [48] and extended to a maximum elevation of 3.39m OD. The bricks utilised in the construction appeared contemporary to those employed in the earlier walls and were overlain by construction cut backfill [22] of silty sand containing numerous oyster shells. Also within this were copper alloy curtain rings (sf 1), and late 18th/early 19th-century pottery sherds. This was preceded by the construction of red/purple brick buttress [39] along the southern face of [21], and overlain by a 0.40m<sup>2</sup> brick wall/support [40].

***Phase 6biv (Figs. 67 & 89)***

7.11.24 A series of dump layers and pits post-dated the abandonment of structure [68]. Irregularly shaped pits [26] (not illustrated), [63] and [61] were identified between 3.57m OD and 2.99m OD and had been backfilled with silty-clinker with charcoal [25], silt with flint and building rubble [44] and silty-sand with mortar [31] respectively. Dateable pottery and clay tobacco pipe were recovered from fill [44] only and dated between 1830 and 1900. Pit [61] truncated a 0.16m thick dump/levelling layer of clay-silt, clean of cultural material. All pits were subsequently overlain by a 0.58m thickness of dumped clay with mortar and silty-sand [34]/[24]. Pottery recovered from uppermost layer [24] dated between 1825 and 1840.

Trench B3 (Fig. 68)

7.11.25 A series of intercutting refuse pits comprised the first indications of activity in this trench since the early post-medieval period (Phase 5a). Sub-rectangular and kidney shaped pits [603] and [601] extended 1.5m by 1m and 2.10m by 0.90m respectively, cut from 2.41m OD. Both pits extended to a maximum depth of 0.50m and had been backfilled with firm silty-clays [602]/[600] containing oyster shell, pottery, animal bone, brick and tile. It is noteworthy that a single fragment of decorative Medieval Caen stone was recovered from fill [600], and the pottery recovered was also earlier in date (1580 to 1600). It is possible that the carved stone derived from St Thomas's Hospital (Appendix 10).

7.11.26 The refuse pits were truncated by a large linear feature, interpreted as the remnants of a construction cut for a since demolished culvert. Linear cut [87] followed a west-north-west east-south-east alignment, and extended to a width of 1.80m by 0.40m observed depth from 2.81m OD. This had been backfilled by sandy-silt with river cobbles, 19th-century pottery, pan tile and clay tobacco pipe [86]. These features were truncated in turn by additional refuse pits [89] and [91], backfilled by deposits of silty-clays [88] and [90]. These contained oyster shell, and very fragmentary sherds of pottery and clay tobacco pipe.

## Trench D1

### ***Phase 6bi: (Fig. 69)***

7.11.27 All earlier features relating to water management and drainage were superseded in the 18th/19th centuries by the construction of a large brick culvert [383]. The construction cut for this [384] ran roughly north-east south-west and extended 2.26m in width and depth. This effectively truncated a large area of the trench between 3.28m OD and 1.02m OD. The arched red brick culvert [383] was first identified at 3.36m OD and had been constructed using frogged bricks in use between 1850 and 1900. The interior of the culvert appeared sub-rounded in profile, and two secondary channels had been constructed to the east and west of the larger 1.46m wide north-east south-west section. The interior of the culvert had backfilled with accumulated sandy-silt [388] which contained mid 19th-century pottery and clay tobacco pipe, wire for a hook and eye fastener (sf 123), stone alley (sf 105), glass bead (sf 104), copper alloy button (sf 126), copper alloy pins (sf 124), a near complete iron hob nailed sole (Appendix 14) and copper lace-chape (sf 125). Contemporary material was recovered from construction cut backfill [382]. One noteworthy find within [382] included a 'Worcestershire Sauce' bottle dated from 1830+, and possible leather working waste recovered from backfill [388] may indicate the destruction of industrial premises in close proximity.

### ***Phase 6bii: (Fig. 70)***

7.11.28 Following the backfilling of the construction cut the area was subjected to episodes of ground raising and the installation of rough surfaces. Cemented surface [379] was identified across the trench at 3.81m OD and was both underlain and overlain by made ground deposits of loose coarse sandy-silt and rubble [380]/[381] and [378]. These were sealed by a second surface [377] from 4.05m OD comprised of granite setts and basalt cobbles randomly coursed. A pipe bowl decorated with the Prince of Wales's feathers was recovered from [378] (SF292), and the use of large pink granite setts and Basalt cobbles in [377] are typical for mid to late 19th-century yard or road material (Appendix 10).

## Trench D2 (Fig. 71)

7.11.29 The south-eastern corner of Trench D2 was occupied by at least one property during the later 18th and 19th centuries. Boundary wall [301] appeared 'L' shaped in plan and formed the north-western corner of a property or basement aligned north-west south-east. The space defined extended 0.88m by 1.75m as seen, extending beyond both southern and eastern limits of excavation. The red brick wall measured 0.34m in width and was recorded from 2.96m OD. This had been trench built within irregularly shaped construction cut [302], which was backfilled with silty-sand and gravel [308]. Brick surface [307] was subsequently lain within the internal area at an elevation of 2.76m OD and may represent the former basement level of the property. The bricks utilised in the surface were re-used and lain in even courses.



7.11.30 Associated with this property was north-west south-east aligned drain [305], located to the immediate north of [301]. This extended beyond the northern limit of excavation by 0.45m width and had been constructed using unfrogged red bricks. The surface level of this dropped slightly from 2.78m in the south of the feature to 2.71m OD in the north, which may suggest the direction of run-off.

7.11.31 Later repairs/modifications to the structure were represented by the installation of a secondary surface [306] over primary brick floor [307]. It is noteworthy that this was localised to the eastern limits only and followed a slightly different alignment. The 0.15m thick surface was formed of roughly hewn small and medium fragments of ragstone at 2.77m OD.

#### Trench E1 (Fig. 72)

7.11.32 The disuse and abandonment of the structures previously identified during Phase 6a was inferred by deposits of demolition debris. Layers of ashy-clinker with masonry rubble and crushed masonry [915] and [916] were identified in the south and north of the trench from 3.16m OD. These layers extended up to 0.54m in thickness and contained late 17th-century pottery and clay tobacco pipe fragments and a variety of building material including peg tile, pan tile, post Great Fire bricks, and Flemish floor tile. An overlying deposit of 0.34m thick ashy clinker made ground sealed the trench from 3.19m OD. This contained pottery and clay tobacco pipe of a contemporary date to the underlying demolition debris.

7.11.33 It is possible that the demolition debris provided a construction horizon for a new structure. This was suggested by north-south aligned brick wall [913] identified at 3.32m OD. The differing alignment of this feature and founding level would support this feature post-dating masonry attributed to Phase 6a. The full limits or function of this feature could not be established.

#### Trench E2

#### ***Phase 6bi (Figs. 73, 90 & 92)***

7.11.34 Activity during the earlier 18th to 19th centuries appeared to be particularly focussed within the northern half of the trench. There also appeared to be very little correlation at this time between the two halves of the trench, which may suggest a former property boundary bisected the area. Initial construction within the northern half of the trench comprised features relating to drainage. A dump of sandy-clay [1113] sealed the trench from 2.32m OD and contained pottery and glass dating to the later 18th and 19th centuries. This was truncated in the east of the trench by rounded construction cut [1112] for a squared soakaway (just seen in section), and backfilled by loose sandy-silt [1111]. The latter construction cut backfill contained pottery, clay tobacco pipe and glass consistently dated to the late 18th to early 19th century. The cut was identified at 2.32m with an approximate diameter of 1.10m.

- 7.11.35 Structure [285] was located in the north of the trench and comprised a bounding wall [294] and brick floor [295] for a drain within a linear construction cut [296]. The structure in its entirety extended 0.84m by 0.60m and was aligned north-west south-east. The single course brick floor [295] utilised unfrogged, narrow early post Great Fire bricks dated between 1780 and 1850, and was overlain by the 0.16m wide southern boundary wall [294]. Sub-circular pit [290]=[292] truncated the western limits of the drain and had been backfilled with sandy-clays [291] and [289] in turn which contained pottery dating to the late 16th to 18th century and late 17th to 19th century respectively, and a piece of an iron staple (sf 273).
- 7.11.36 The upper limits of the pit fills were truncated in turn by the construction of curvilinear wall [283]. This had been trench built within construction cut [287] and ran for an observed length of 2m by 0.22m width and 0.34m in depth. Reused Stuart red bricks dating between c. 1600 and 1700 were used to construct the wall, and silty-clay rubble [286] used as backfill within the construction cut. The latter deposit contained late 18th-century pottery sherds and clay tobacco pipe. Compacted mortar floor [272] was recorded to the west of wall [283] at 2.78m OD and may therefore have been associated with this phase of construction. The 30mm thick floor was underlain by sandy-clay make-up layer [274] which was clean of cultural material. The precise function of the wall however remains unknown, and it may be associated with a wider scheme of drainage works in the immediate vicinity.
- 7.11.37 A series of pits [288]/[279] and dump layers [282]/[281]/[280] were subsequently recorded within the internal area west of curvilinear wall [283]. The sub-circular and squared pits served uncertain functions, and had been backfilled with sandy-clay [284] and [278], relatively clean of cultural material. The pits were separated from one another by a combined 0.15m depth, of dumped sandy-clay which contained pottery sherds consistently dated from 1760 to 1830.
- 7.11.38 A second phase of construction, also to the east of curvilinear wall [283], truncated the earlier pits and dump layers. North-west south-east wall stub [276] was trench built within construction cut [277] and identified at 2.62m OD. The 0.90m long by 0.28m wide wall had been laid in English bond to a maximum observed height of 0.34m and overlain by construction cut backfill [275] of sandy-clay. The wall had been constructed with reused materials dating between 1450 and 1700, and the southern limits were sealed by a 0.11m thick levelling deposit [273] of compacted silt. Both [273] and construction cut backfill [275] contained late 18th/early 19th-century pottery. A second wall [258] was then constructed, perpendicular to [276]. This also utilised reused materials of a comparable date range to [276] and extended 1.22m in length by 0.22m width. The trench built wall had been constructed within cut [271] at a founding level of c. 2.45m OD. It is possible that the intersection between the two walls was a deliberate attempt to provide additional support for an overlying superstructure. The alignment of these features is also comparable to earlier construction identified within the southern half of the trench attributed to Phase 6a (wall [751]).

7.11.39 The only features attributed to this phase of activity within the southern half of the trench comprised brick surface [717], bound on either side by walls [714] and [711]. Red brick floor [717] comprised a single course of header laid reused early post-medieval bricks, set onto a 20mm thick bedding layer of sandy-silt [718] at 2.81m OD. The bricks were laid in a north-east south-west alignment, obliquely to the surrounding earlier masonry. Walls [714] and [711] bound the northern and southern limits of the surface in a comparable alignment. Both walls had been trench built within linear construction cuts [716] and [712] at a founding level of c. 2.80m OD over silty-clay backfills [715] and [713]. Material recovered from [713] dated between the mid to late 16th century. Whether these features represent a path bound by two different structures, a floor within a sub-divided basement of a culverted drain remains uncertain.

***Phase 6bii (Figs. 74, 90 & 92)***

7.11.40 The centre of both halves of the trench were redeveloped towards the later 18th/19th centuries by the construction of a clay tobacco pipe kiln. A small, sub-circular pit [710], backfilled by sterile clay-silt [709] and dump layers [267], [708] and [707] were the only features attributed to this phase which pre-dated the kiln. The dumped deposits contained a high proportion of ash and demolition debris, and may therefore relate to the destruction of earlier masonry structures, to level the area in advance of the new construction.

7.11.41 The pipe kiln covered a squared 2.43m by 2m area, on a slight north-west south-east alignment. The kiln was defined by the initial installation of cobbled floor surface [264]=[705] at 2.68m OD. The surface was made up of a mixed assemblage of reused post Great Fire bricks, unglazed Flemish floor tile, peg and pan tile, reused Reigate stone moulding, Kentish ragstone rubble, flint cobbles and chalk nodules. These materials inferred an 1800 to 1900 date range. It is noteworthy that [705] was made up of five different rock types (Appendix 10). The surface had been laid over bedding/levelling deposits of compacted sandy-silt [265]/[752]/[758] containing occasional inclusions of metal (a lead strip with traces of milling (sf 142)), animal bone, pottery and glass dated to the early/mid 19th century. Construction cut [266] was only clearly identified within the northern half of the trench at 2.80m OD and was assumed to have been a large squared feature.

7.11.42 A series of concentric, single-skin brick walls were constructed directly over the cobbled floor. The earlier of these [787] extended to a maximum height of 0.47m to 2.86m OD and had been constructed in narrow, post Great Fire bricks with a 1780 to 1900 date range. This defined a smaller internal area of c. 0.60m<sup>2</sup>. A second 'lining' [786]=[1106] was constructed 0.15m north of [787] and continued into the southern excavation area as [701]. Both features were constructed in unfrogged post Great Fire bricks with a 1780 to 1900 date range, and measured up to 0.52m in height. The southern boundary [701] was recorded as being constructed within cut [702] which respected floor surface [705]. It is possible that the floor

also lay within this cut and the relationships were obscured by project depths and shoring, or alternatively that [702] was a later build, but part of the same construction sequence.

7.11.43 A series of brick constructions were then installed along the northern boundary of the pipe kiln, as later additions. These included, in sequence, abutting wall [799], 0.24m<sup>2</sup> buttress [247], possible post-pad [249], and a second abutting wall [797] along the north-eastern limits of the northern boundary. Each of these constructions extended between two and three courses in depth and had been built within individual construction cuts [254], [1105], [250] and [796] respectively. Deposits of silty-sand, mortar and rubble [253], [248], [795] and [798] were utilised as backfill for the construction cuts and contained roughly contemporary pottery and clay tobacco sherds dating to the early/mid 19th century. A flower brick or vase, moulded in white stoneware was one of the more unusual finds recovered from [248]. A 0.30m thick dump layer [794] pre-dated the construction of [249] and post dated the construction of [247]. This similarly contained 17th and 18th-century pottery and clay tobacco pipe fragments, suggesting that the construction of these additional elements may have been a relatively quick process.

7.11.44 Further additions were identified along the south-western boundary of the pipe kiln, to the east and within the central internal area. Reused red Stuart bricks (1780 to 1900) were used to construct [704] against the south-western boundary of the kiln. The single skin, 0.34m high wall extended beyond the western limit of excavation. Randomly coursed red brick wall [788] lay c. 0.75m east of the eastern boundary of the kiln and followed a slightly different alignment. The wall was recorded at 2.80m OD and may have functioned with the kiln, or alternatively have been associated with a later phase of use or an entirely different structure. It is possible that this formed a northern counterpart to red brick wall [1107] as seen within the north facing section. By contrast to the other examples, wall [755] was constructed within the internal area of the kiln. This followed a comparable alignment to the previously described brick 'linings' and had been constructed with unfrogged post Great Fire bricks dating between 1750 and 1900. It is again unclear, whether this was a feature that post-dated the use of the kiln or represents a later modification to the functioning structure.

7.11.45 The disuse/abandonment of the pipe kiln was indicated by a series of demolition deposits [784], [781], [785] and [703] encountered within both sides of the trench. These layers of crushed mortar, clay tobacco pipe production waste (muffle kiln fragments), and silt largely backfilled the internal area of the kiln and contained clay tobacco pipe and pottery fragments dating from the late 18th and early 19th centuries. A large fragment of kiln wall was recovered from deposit [784], formed of horizontally laid pipe stems in pipe clay, and a further fragment of muffle kiln was recovered from [785] and comprised an internal cornice type ledge used to stack the bowls of the clay tobacco pipes (Appendix 6). A dumped deposit of silty-sand [789] against the eastern boundary wall of the kiln may also relate to this phase of activity. The

latter contained a mixed assemblage of oyster shell, glass, lead waste (sf 144), clay tobacco pipe, and pottery, both dated to the late 18th and early 19th centuries.

7.11.46 A series of intercutting sub-circular pits [269], [262], [252] and [257] (not illustrated) were identified to the north and east of the pipe kiln and may relate to the operation of the kiln rather than post date it. These were backfilled with deposits of sandy-clay and silt [261]/[260]/[259], [268], [255]/[251] and [256] respectively. These contained sooted peg tile, and early 19th century pottery and clay tobacco pipe. By contrast, sub-squared pits [793] and [791] clearly post-dated the kiln and appeared to target masonry. These were identified from 3.04m OD and were backfilled with mixed sandy-clay [792] and [790]. The pottery, glass and fragments of clay tobacco pipe recovered from these fills were consistently dated to the mid to late 19th century. Circular pit [783] also post-dated the disuse of the kiln and was located in the south-eastern corner of the northern half of the trench. The feature extended with near vertical sides to a depth of 0.60m and measured c. 1.30m in diameter. Coarse sandy-silt [782] backfilled the feature and contained a comparable assemblage to squared pits [793] and [791]. Other finds recovered from [782] included a large group of unglazed Flemish floor tiles dated between 1700 and 1900 and a lead window came (sf 143).

7.11.47 The entire northern half of the trench was subsequently overlain by a 0.20m thick dump layer of silty-clay [780]. Pottery, peg tile, glass and clay tobacco pipe dating to the 19th century were recovered from this.

### Trench E3

#### ***Phase 6bi (Fig. 75)***

7.11.48 The majority of the trench was truncated by the construction, during this phase, of a large circular brick structure [1219] interpreted as a storm drain. The very partially exposed remnants of a pit [1217] were identified to the west of this and had been backfilled by compacted silt [1216] containing occasional fragments of medieval and early post-medieval peg tile and a copper alloy lace-chape (sf 118).

7.11.49 The large circular construction cut [1215] associated with [1219] extended with vertical sides from 2.22m OD to a maximum observed depth of 1.41m by c. 3.6m in diameter (the feature could not be fully excavated). The drain was constructed with reused early post Great Fire bricks bonded with hard Portland mortar/cement. The brickwork was first recorded at 1.71m OD and formed a single skin of brickwork which bound an internal area of c. 3m diameter. This was overlain by construction cut backfill [1220] of loose grey mortar with occasional flecks of brick. The central shaft of the brick structure was filled sequentially by deposits of loose black ash and silty demolition material [1227], [1230] and [1214]. These contained sherds of pottery dating to the early 19th century, mid 19th-century peg and pan tile, glass (early cylindrical wine bottles, Appendix 7) and post-medieval clay tobacco pipe fragments. Other

finds retained from earlier fill [1227] included a bracelet (sf 86), a finely carved pewter spoon (sf 88), iron candle snuffer (sf 89), encaustic wall tile fragment, a copper alloy ring (sf 136), an iron tool (sf 270), leather pieces of clothing (including a strap adhering to a corroded belt buckle, Appendix 14) and a piece of Reigate stone ashlar. Three intact English stoneware bottles were also recovered from [1227], two for annatto and one for ginger beer (Appendix 4). Finds of note from upper deposit [1214] included an iron strap (sf 146) and a near complete copper alloy barrel tap (sf 135).

#### ***Phase 6bii (Fig. 76)***

7.11.50 A second phase of 19th-century drainage was evident by the construction of a large red brick culvert which followed a north-east south-west alignment across the trench. Brick culvert [1207] was recorded from 3.35m OD and extended to an observed width of 1.80m by 2.12m in depth with a sub-circular internal profile. The culvert utilised machine frogged bricks dating from 1850 to 1900. This had been trench built within linear construction cut [1209] which truncated underlying horizons to a depth of 1.17m OD and overlain by construction cut backfill of sandy-silt [1208]. The backfill contained a mixed assemblage of pottery (dated 1830 to 1850), chalk, slate, metal, pan tile, 19th-century clay tobacco pipe and glass and animal bone. Among the glass pieces recovered was a bottle embossed 'H.D. RAWLINGS Ltd/NASSAU STREET/PURE TABLE WATER/AS SUPPLIED/TO THE QUEEN' (Appendix 7). The silty debris accumulated within the interior of the culvert [1210] comprised an organic rich deposit containing fragments of coal, animal bone, glass, oyster and mussel shell, early/mid 19th-century pottery and leather. A glass ginger-beer-type bottle recovered from [1210] was found to have an internal screw fitting which dates the deposit to after c. 1872 (Appendix 7). Also within the backfill was a broken, but complete wooden scrubbing brush still retaining some horse/pig hair bristles set in drilled circular voids (Appendix 14).

#### Trench F (Figs.77 & 93)

7.11.51 Earlier occupation was replaced during the 18th and 19th centuries by features primarily associated with waste disposal. In the southern limits of the trench brick-lined cess pit [843] was constructed within squared construction cut [845]. The c. 1.5m<sup>2</sup> cut was identified at 3.02m OD and extended with vertical sides 1.73m in depth to a flat base. The brick-lining [843] was laid in a single skin with slightly curved corners and utilised narrow post Great Fire bricks bonded with a cemented mortar containing clinker. The bricks and mortar were dated between 1750 and 1900. Silty-clay and mortar [844] backfilled the construction cut and contained pottery dating between 1550 and 1700 and pan tile.

7.11.52 The 0.32m thick primary fill [868] was a soft, black organic-rich silt containing a mixed assemblage of oyster and mussel shells, flint, degraded wood fragments, rounded river cobbles, glass, animal bone, leather, clay tobacco pipe and pottery. The pottery and tobacco pipe were roughly contemporary dating between 1780 and 1810. Building material recovered

from the fill included burnt floor tile, Flemish and pan tile and fragments from a Purbeck limestone paver, with a combined date range of 1700 and 1850. Other finds of note from this deposit included three Pewter tankards (sf 56, sf 57, sf 58), a copper alloy button (sf 61), and plates inscribed 'S. Howard' and 'Dark-House-Lane' (Appendix 4). Two of the tankards were inscribed 'MARY JACKSON/KINGS HEAD/TOOLEY STRT' and the third inscribed 'J. MAINS/ST JOHNS COFFEE HOUSE/BERMONDSEY STRT' (Appendix 8). Secondary fill [869] was extremely rich in organic material and comprised a red-brown silt with gravels and occasional inclusions of late 18th-century pottery, copper alloy pins (sf 134), a copper alloy button (sf 133), glass beads (sf 115) and clay tobacco pipe. Seeds consumed to aid with digestive problems were recovered from [869] during environmental processing (S28). Tertiary fill [842] capped the upper 1.35m of the cess pit and is likely to represent a gradual accumulation of debris. This very mixed deposit of silty sand contained fragments of mortar and paving slabs, charcoal, oyster shell, degraded wood, leather strap fragments, glass (including one complete window glass pane, numerous wine bottles, a French wine bottle, and a goblet/wine glass, Appendix 7), metal, slag, animal bone, and mid 19th-century clay tobacco pipe and pottery. This also contained a variety of small finds, including copper objects (sf 39, sf 54, sf 132, sf 131, sf 130), a copper alloy plaque folded into a parcel and a mount (sf 52, sf 127), buttons of copper alloy and bone (sf 55, sf 51), a lead window came (sf 40), decorated clay tobacco pipe (sf 46, sf 53), a complete bone toothbrush (sf 50), a stone alley (sf 114) and a piece of a decorated bone cribbage board (sf 49). Among the more noteworthy finds was a blackware rounded bowl and jar in non local fabric types, a rare pedestal dish in Chinese blue and white porcelain, a piece of amphora in imported Spanish ware, and a plate inscribed 'Eating House' in factory made earthenware (Appendix 4) recovered from fill [842]. This fill also contained a large number of vessels associated with alcoholic consumption, which may indicate the presence of a drinking establishment within close proximity. This was supported by the glass assemblage which was also suggestive of waste from a tavern or ale house (Appendix 7). The contents of a chamber pot from this layer were found to contain large fruit stones and fish bones (Appendix 19).

- 7.11.53 To the immediate west of cess pit [843] and following the same north-east south-west alignment was brick drain [838]. The drain extended across the full length of the southern half of the trench, but either terminated or had been truncated before it reached the northern half. This measured 0.40m in width by 0.19m depth and was identified at 3m OD. The drain used narrow post Great Fire bricks in its construction, bonded with cemented mortar containing clinker. The trench built drain had been constructed within linear construction cut [841] and backfilled with silty-clay and mortar [840]. The central channel of the drain was in-filled soft clay-silt [839] containing very occasional inclusions of mortar and late 18th to early 19th-century pottery sherds, and [840] contained a heavily worn and corroded copper alloy coin (sf 38).

7.11.54 The construction of drain [838] truncated the remnants of a possible pit of uncertain function.

The cut [847] continued beyond the northern and western limits of excavation and had been deliberately backfilled with sandy-clay [846] containing mortar, charcoal, sub-angular and sub-rounded flints, oyster and mussel shells, degraded wood, glass, metal, animal bone, slag, clay tobacco pipe and pottery (including a tripod pipkin with a white exterior and red clay interior, Appendix 4). The assemblage was dated to the early/mid 19th century and appeared comparable to the fill [816] of adjacent linear cut [819] recorded within the northern half of the trench. Both features represented deep (2m to 2.60m deep) cuts, which truncated the western limits of the trench to c. 0.40m OD. It is possible that these represented earlier, abandoned sub-squared cess pits. The material culture recovered from northern fill [816] was of a similar nature and contemporary to that within [846]. A number of additional small objects however were recovered from [816] including a pewter button (sf 34), copper alloy strap (sf 35), numerous copper alloy pins (sf 42, sf 70), a near complete iron hob nailed sole (Appendix 14) and a copper alloy lace chape (sf 43).

7.11.55 Rounded and sub-squared refuse pits [807] and [805] were located in the eastern limits of the northern half of the trench. These contained oyster shells, animal bone, glass and mortar within a silty-sand matrix (fills [806] and [804]). The only dateable material recovered from either pit were tiles dated between 1700 and 1900. Identified at a comparable horizon of 2.69m OD was a small 0.11m thick deposit of demolition debris [809]. This was located to the west of the rubbish pits and contained pottery and clay tobacco pipe dating between 1580 and 1900, and brick rubble.

7.11.56 Truncating the upper horizons of the demolition debris and pit fills was shallow, linear north-south aligned cut [803]. This measured 0.80m in width by 70mm in depth and had been excavated with near vertical sides and a flat base at 2.61m OD. The cut had been backfilled with loose silty sand [802], with inclusions of late 18th-century pottery, mortar, clay tobacco pipe, oyster shell and charcoal. The function of this cut and how or if it functioned with the cess pit to the south remains unknown. The eastern limits of this half of the trench were subsequently overlain by a 0.35m thick dump layer of loose, grey-brown silty-sand. Late 18th-century pottery sherds and glass and mid 18th-century clay tobacco pipe were recovered from [801]. Also within this assemblage was a fragment of decorated tobacco pipe (sf 32).

#### Trench G (Fig. 78)

#### ***Phase 6bi***

7.11.57 The late 17th/18th centuries saw increasing development of the area encompassed by this trench. At least three spaces were identified, the first being within the south-western limits of the trench (the bounding structure identified first during Phase 5b), the second in the north-west, and a third within the entire eastern limits of the trench. Alterations to the south-western space comprised an initial robbing event concentrated along the internal face of the eastern



boundary wall. Irregular cut [1628] was identified from 2.77m OD, truncated underlying horizons to a depth of 0.17m, and had been backfilled with sandy rubble [1627]. A similar deposit of rubble [1631] was encountered within sub-circular pit [1632] to the north of this robber cut and may also relate to localised robbing or the disposal of demolition debris.

7.11.58 A single course of red bricks [1621] were identified at 2.82m and defined a 1.6m by 1.10m area against eastern boundary wall [1620] (Phase 6a). The latter surface was overlain by a secondary compacted earth floor [1616] from 2.86m OD which covered the entire internal space. Fragments of pottery and clay tobacco pipe were recovered from [1616] which suggested an 18th-century date range. Within this assemblage was an unusual salt in the form of two equal sized triangles separated by three scroll like legs (Appendix 4).

7.11.59 Development to the north of the latter space pre-dated the installation of surface [1616]. The south-eastern corner of a second structure or space was demarcated by red brick wall [1623]. This followed the alignment of earlier boundary wall [1620] to a length of 2.32m with a 1.50m return at the south, which respected the northern boundary of the south-western space. The 0.56m wide boundary wall extended to a depth of 0.48m from 3.08m OD and defined an internal area 1.44m by 0.76m as seen. The trench built wall lay within construction cut [1626] and was associated with red brick internal floor surface [1622]. The surface utilised red, unfrogged bricks, laid in a single regular course at 2.43m OD and was thought to represent the former basement level for an overlying building. The brick types varied between [1622] and [1623] with those incorporated in the surface dating between 1664 and 1750 and those utilised in the boundary wall dating between 1780 and 1900.

7.11.60 Two courses of stepped brickwork [1617] were built into a recess along the eastern face of boundary wall [1623]. This feature was identified at 2.62m OD and continued beyond the northern limit of excavation. The brickwork was initially interpreted as a 'step' into an adjacent property, but as no stratigraphic links were preserved with which to link this to development within the eastern limits of the trench this remains conjectural. Of uncertain relationship to this addition was the infilling of the internal space with a 0.50m thickness of firm silty-sand [1625]. No cultural material was recovered from [1625] with which to establish a date, the deposit may either relate to occupation debris or infer the abandonment and disuse of the space.

7.11.61 The encroachment of further development within the eastern half of the trench was initially demarcated by a 2.80m long construction cut [1611]. This lay within the south-west of the trench and respected the eastern boundary walls of both spaces previously mentioned. The cut was recorded from 2.63m OD and extended 0.80m in width by a depth of 0.27m. Boundary wall [1610] was identified from 3.42m OD and had been constructed with narrow post Great Fire bricks in use between 1780 and 1900. The wall exhibited a very partially exposed return to the east at the southern limits of the trench, and was overlain by construction cut backfill of sterile silty-sand [1624]. The eastern return was slightly narrower than the main boundary wall and may relate to an internal sub-division. Brick floor [1637]

overlay the northern and eastern faces of [1610] and presumably defines the internal area of a former basement at 2.48m OD. The single course of regular bricks defined a 1.50m by 1.40m area, and appeared to respect earlier 'step' [1617].

- 7.11.62 A combined 0.25m depth of made ground/occupation debris overlay the internal area defined by floor [1637]. Silty deposits [1615] and [1614] contained a mixed assemblage of late 18th-century pottery sherds, early to mid 18th-century clay tobacco pipe and contemporary glass fragments.

***Phase 6bii (Fig. 79)***

- 7.11.63 A series of made ground deposits of mixed clay-silt and sandy-ash deposits were recorded within each of the spaces previously identified. These were considered to demarcate the abandonment of the basement areas to provide ground raising/levelling material for a later phase of development. Within the eastern space these deposits were identified as [1609]=[1613]. These raised the ground level to 3.85m OD and contained pottery, glass and clay tobacco pipe consistently dated to the mid 18th to early 19th century. Dumped deposits [1606], [1605] and [1604] raised the ground level within the south-western space to a comparable level of 3.83m OD. Only primary infill [1606] contained cultural material, which included pottery and clay tobacco pipe dated from the mid to late 18th century. Also within this layer were roofing and peg tiles with a slightly later early 19th-century date range.

- 7.11.64 Further evidence of the abandonment of the earlier spaces was indicated by the construction of later wall [1600] along the former eastern boundary of south-western and north-western spaces from a founding level of c. 2.94m OD within linear construction cut [1602]. The cellar/property boundary wall was recorded from 4.04m OD and suggested that certain property boundaries were being maintained throughout the post-medieval period. The trench built wall was sealed by construction cut backfill [1601] of ashy clinker.

- 7.11.65 A sub-squared cut [1608] was identified at 3.80m OD and respected the boundaries of the former north-western internal space. The cut extended with steeply sloping sides to a depth of 0.86m and had been deliberately backfilled with sandy-silt and mortar [1607] containing mid to late 18th-century pottery sherds. The precise function of the cut remains unknown, it may represent a secondary robbing event or part of a large refuse pit which respected pre-existing property boundaries.

**Trench H1 (Fig. 80)**

- 7.11.66 The 18th/19th-century activity within this trench comprised redevelopment and construction. An initial linear construction cut [2010] extended across the entire length of the trench by 2.20m in width along a north-east south-west orientation. This was first identified at 1.44m OD and truncated underlying horizons to a depth of 0.83m OD. Within this construction or terracing cut, a series of brick constructions were installed. Yellow and red brick walls [2001]

and [2002] defined an internal area c. 1.5m by 3.5m. The earlier red brick wall [2002] defined a 0.47m length of the southern boundary and incorporated early post-medieval bricks dated between 1600 and 1700. This was abutted along its eastern face by yellow brick wall [2001] which defined the remaining southern and eastern limits of the structure. The use of frogged yellow, post Great Fire bricks suggested an 1850 to 1900 date range, and the wall may represent a rebuild of an earlier boundary. Both walls were identified from 2.59m OD, extended 1.68m in depth and were considered to represent former basement walls.

7.11.67 Against the internal western face of [2001] a buttress [2005] and north-south aligned footing [2006] were constructed. These were surface lain features built over a 0.61m thick bedding layer of compacted silt and mortar at 1.46m OD. Buttress [2005] was constructed in irregular courses of red brick and measured 0.60m<sup>2</sup>. This appeared to be associated with a 0.94m length of north-south aligned corbelled red brick footings [2006]. It is uncertain what these relate to and the differing alignment to the surrounding architecture might suggest it to have been a later addition. A 0.55m thick infill of crushed brick and mortar [2007] was used to cement both features from 1.45m OD.

7.11.68 North-south aligned drain [2004] extended throughout the internal area defined by [2001]/[2002]. At the southern extent of this the drain split into two distinct channels and utilised narrow frogged bricks in use between 1850 and 1900. It is unclear how this functioned with bounding wall [2001] and it is possible that at this point the drain was fed by a down pipe. The base of the feature exhibited a slight drop from 1.47m OD to 1.43m OD from south to north, which might suggest this drained away towards the river Thames. The internal area was subsequently overlain by a c. 0.70m thick concrete slab [2017]=[2018] at 1.55m OD.

7.11.69 Extension/development to the east of the latter structure was suggested by the construction of north-west south-east aligned red brick wall [2003]. The wall measured 0.54m in width by 0.56m depth from 2.44m OD. This was interpreted as a partition wall and appeared to have been constructed using re-used materials with a 1780 to 1900 date range. The wall had been trench built within linear cut [2015] over a 60mm thick bedding layer of firm clay [2014].

#### Trench H2 (Figs. 80 & 94)

7.11.70 The eastern property boundary [2001] as identified in Trench H1 appeared to continue into adjacent, northern Trench H2 as cellar wall [1901]. This similarly utilised frogged post Great Fire bricks in use between 1850 and 1900 and was identified at 2.64m OD. The wall was founded at a slightly higher elevation of 1.60m OD, however, which may suggest a variation in construction phase. To the immediate east of the latter boundary was a single flagstone [1911] which had been laid within a linear construction cut [1922] and overlain by sandy-clay backfill [1921]. The stone suggests that a former floor/basement level lay at 1.61m OD.

7.11.71 Approximately 0.50m west of boundary wall [1901], construction cut [1907] was identified relating to a brick culvert [1906]. The construction cut respected the alignment of [1901] and may represent a continuation of drainage features encountered within Trench H1 to the south. Within the irregularly shaped, linear construction cut were the red brick and stone culvert with an associated manhole to the north [1906]. The culvert ran for an observed length of 4.18m with a 1.5m long secondary channel feeding in from the west. The internal width of the culvert varied between 0.20m for the secondary channel and c. 0.30m for the main north-east south-west aligned channel with a base level of 1.97m OD. The original in-built manhole had an internal area of c. 1.5m<sup>2</sup> and had been backfilled with black-brown silty-clay and mortar [1905]. A later northern manhole [1914] was constructed against the northern boundary of [1906] and extended to 0.85m<sup>2</sup> with an internal area of c. 0.40m<sup>2</sup>. This was identified at 1.52m OD with base at 1.30m OD, and included a ceramic pipe within the internal area. A finely carved bone spoon (sf 92) was also retained from [1914].

7.11.72 Associated with the later manhole was a small 0.73m long by 0.26m wide fragment of an internal wall [1910]. The surface lain wall appears to be too narrow to represent part of a load bearing structure but is more likely either a support associated with an overlying feature, such as a floor level, or an internal sub-division of a larger cellar. The alignment of [1910] is mirrored by parallel wall [1903] which lay c. 0.80m to the south. The construction of this appeared to post-date the functioning of the primary northern manhole of [1906] and may demarcate the disuse of the culvert as a whole. The wall extended 1.60m in length by 0.24m and comprised a single course of brickwork at 1.67m OD. This internal division was associated with the installation of a 0.37m thick concrete floor [1902] at 1.65m OD. The floor extended throughout the 2.27m by 1.34m area as defined by wall [1903] to the north and culvert [1906] to the east and south. A small remnant of poured concrete [1904] was identified along the eastern face of [1906] and may relate to this phase of activity.

### Trench H3

#### ***Phase 6bi (Figs. 81 & 95)***

7.11.73 Similarly to Trenches H1 and H2, an increase in construction was noted during the 18th and 19th centuries. The masonry and concrete installations within Trench H3 also followed the same north-east south-west alignments of former structures evident within the northern trenches. Construction was initially defined by compacted mortar foundation [1729] from 1.71m OD. This 0.20m thick spread extended across the full length and width of the trench leaving a 2.10m<sup>2</sup> area in the north-east of the trench. The clear, squared boundaries at this point might suggest that shuttering was used to demarcate the boundaries of the former structure.

7.11.74 Development in the south of the trench comprised a poured concrete base [1737] at 1.34m OD, overlain by squared mortar footing [1734] and a secondary concrete surface [1731] at

1.45m OD. These features were constructed within a squared 0.59m deep construction cut [1735], and defined an internal area measuring 1.48m by 0.92m as seen. In the north of the trench a linear construction cut [1730] extended across the full width of the trench by 1.05m and 0.43m in depth. This feature was identified from 1.63m OD, truncated the northern limits of foundation [1729] and was filled by an initial bedding layer of coarse gravel [1736], overlain by mortar and concrete foundations [1733]. The latter foundations covered the same limits as earlier mortar foundation [1729] from 1.90m OD and extended to 0.49m in thickness. Within the make-up of the mortar were brick fragments dated between 1780 and 1940. The comparable limits of [1729] and [1733] might infer that these, and the foundations in the north and south of the trench, were part of the same construction sequence, or alternatively [1733] might represent a later reinforcement or repair to a pre-existing structure. This was overlain by the remnants of a potential compacted mortar surface [1726] at 1.92m OD.

***Phase 6bii (Figs. 82 & 95)***

7.11.75 The structure described above appears to have fallen out of use by the mid 19th century. Demolition and levelling material [1725] and [1722] sealed the entire trench with a 0.80m thickness of debris from 2.42m OD. Cultural material was only recovered from demolition debris [1725] and included late 17th-century pottery with a fragment of a ragstone paver and peg tiles dating from the 19th century. A possible robber cut [1727] was identified in the south of the trench and targeted the area defined by southern structure [1737]. The pit extended to a depth of 0.54m from 1.92m OD and had been backfilled with sandy mortar and brick rubble [1724]. Pottery and brick fragments recovered from [1724] inferred a mid 19th-century date range.

7.11.76 Pits [1720] and [1723] were identified in section only and exhibited concave profiles cut from an uppermost elevation of 2.85m OD. These were backfilled with deposits of silty-clay [1719]/[1721] and ash [1717]. These features were subsequently overlain by a series of levelling and demolition deposits [1716]/[1715]/[1714]/[1704] from 4m OD.

7.11.77 An additional phase of construction truncated the latter levelling layers. North-east south-west aligned brick culvert [1711] was only partially revealed along the western limit of excavation. This was first identified at 3.40m OD and had been trench built within construction cut [1712] and sealed by sandy-silt backfill [1710]/[1709]/[1708]. The feature truncated a possible pit [1718], identified in section only. This was backfilled by compacted demolition material [1713], clean of dateable material, and served an uncertain function.

**Attenuation Tank 1 (Fig. 83)**

7.11.78 A number of post-medieval walls were encountered during the attenuation tank ground reduction. These comprised a north-east-east south-west-west aligned red brick foundation [1800] that truncated earlier medieval masonry, and extended across the trench to a maximum

width of 1.08m. Three additional brick walls/footings [1870], [1871] and [1872] were identified during excavations for a sewer heading at a depth of c. 0.20m OD. Due to the nature of the excavations, these could not be monitored in plan. It is likely given the approximate 1.5m to 2m spacing of the walls that these represent internal walls as part of a post-medieval terrace.

#### E122

#### ***Phase 6bi (Fig. 84)***

7.11.79 A large irregular/cruciform shaped construction covered a c. 20m<sup>2</sup> area within arch E122. This was defined by boundary walls [1506]=[1504] within construction cut [1538]=[1537]. The structure encompassed at least three narrow 'channels' measuring c. 0.80m in width. These and the central area of the structure were overlain by a red brick floor [1509]. The floor utilised proto post Great Fire bricks dating between 1664 and 1800 laid in even courses. This was sealed by a fine, deposit of silty ash [1512] which was considered to relate to the use of the complex. The precise function of the structure remains unclear, however the evidence of heat damage to surrounding deposits and the fine ash within the internal areas would suggest some sort of industrial function.

7.11.80 Perhaps associated with the industrial complex described above was an extensive brick surface [1500] identified within the same arch. Red brick surface [1500] was recorded at 2.99m OD and covered a 6m by 1.42m area. Adjacent to this was brick soakaway [1501] within circular construction cut [1503] and backfilled with silty-sand [1502]. Pottery, clay tobacco pipe and glass recovered from [1502] all dated to the early 19th century. One bowl fragment from [1502] was decorated with a bunch of grapes design (sf 224), and a heavily corroded copper coin (sf 140) was also recovered.

7.11.81 Additional features attributed to this phase of construction were walls [1520] and [1521] in the north of the arch. These were overlain by levelling deposit [1522] of sandy-silt with clay tobacco pipe and building rubble.

#### ***Phase 6bii (Fig. 85)***

7.11.82 An additional phase of construction/modification post-dating the industrial complex described above was identified within the arch. A brick soakaway [1505] was recorded in the south and manhole [1508] located to the east of the complex. The soakaway had been constructed with proto post Great Fire bricks, with an internal diameter of c. 1.10m. This had been built within circular construction cut [1535] and backfilled with loose sandy silt and mortar [1510]. Glass, pottery and clay tobacco pipe were recovered from the latter with a date range of 1830 to 1900, including part of a sauceboat in Continental porcelain. Another noteworthy find was an octagonal pharmaceutical bottle for cough mixture with an embossed front panel displaying 'TRUE/DAFFY'S/ELIXIR' and embossed on the side panels '.../the medicine i[s]/counterfeit...unless the name [is]/of DICEY & CO' (Appendix 7). Manhole [1508] covered

an area of 1.10m<sup>2</sup> and had been constructed within sub-rounded cut [1536] and backfilled with mortar rich sandy silt [1519].

7.11.83 Pipe trenches [1518], [1516] and [1514] also identified within this arch were considered to be part of the wider scheme of drainage works as the soakaway and manhole described above. These ran in a north-west south-east alignment and had been backfilled with compacted silty clays [1517], [1515] and [1513]. These features remained unexcavated due to project depths.

#### E123

7.11.84 Wall [1531] was identified within this arch from 3.54m OD (not illustrated). This extended to a maximum observed length of 13.20m by 0.72m width along a roughly north-south alignment. To the west of this, and parallel to [1531] were additional red brick walls [1532]=[1533] which potentially demarcated the corner of a former structure. These delineated an internal area of c. 4.60m by c. 3.20m and may relate to the drainage features encountered within Trench B2 (see para 7.11.19, structure [68]).

7.11.85 The eastern limits of wall [1531] were overlain by a sequence of levelling ([1530], [1529]) and demolition debris ([1528]) from 3.64m OD with the combined thickness of 0.82m. These contained inclusions of charcoal and building rubble.

### **7.12 Phase 7: Modern**

#### Trench A1 (Fig. 86)

7.12.1 Numerous modern intrusions were recorded as truncating the upper archaeological horizons across the trench. The majority of these were recorded in section only. These included an east-west aligned brick culvert [125], constructed within linear cut [124] and backfilled with clay-sand [123] from 2.98m OD. Additional construction attributed to this phase of activity included yellow brick manhole [106], identified at 3.05m OD within squared construction cut [108] and backfilled with clay-sand [107].

7.12.2 Additional dumped levelling deposits [116], [104], [103], [101] and [102] comprised mixed rubble levelling material identified from 3.86m OD. Also recorded across the trench were multiple cut features including robber cuts [127]/[134]=[111] backfilled by [126]/[133]/[150]/[110], drainage cut [121] and pit [115] backfilled with rubble [120] and [114]. Within the modern rubble was a concentration of mid 17th-century pottery and clay tobacco pipe from fill [150]. The entire sequence was overlain by a 0.30m thick concrete slab [100] at a ground level of 4.11m OD.

#### Trenches A2, A3 and A4

- 7.12.3 Trench A4 was overlain by demolition rubble [567] and [571]/[572] from 2.32m OD. Similar made ground was observed over the other trenches, which were capped by concrete slabs from c. 4.20m OD.

#### Trench B2

- 7.12.4 Archaeological horizons were truncated by robber cut [20] from 2.80m OD. Within the rubble backfill were fragments of mid 19th-century pottery sherds, clay tobacco pipe and machine made flag stones which may represent lithograph plates associated with printing. This may suggest the function of properties within the immediate vicinity immediately prior to the redevelopment associated with the railways.

#### Trench D2

- 7.12.5 The trench was overlain from 4.25m OD by deposits of made ground [334]/[331] and demolition rubble [300]/[333]/[332]. These sealed the upper 1.30m of the trench and were considered to represent modern overburden and clearance associated with the arrival of the railways.

#### Trench E3

- 7.12.6 All archaeological features were overlain by a c. 0.50m thickness of made ground comprising sandy-silt with brick rubble ([1235]=[1203]/[1236]=[1204]/[1237]=[1205]/[1206]) from an uppermost elevation of 4.05m OD. These deposits were truncated by the construction of a north-south aligned drain [1200], within construction cut [1202] and backfilled by [1201]. All these features were considered to post date or be roughly contemporary with the construction of the arches/railway and therefore assigned to a modern phase of activity.

#### Trench F

- 7.12.7 Wall [800] was aligned north-east south-west and identified along eastern limit of excavation. Identified at 3.34m OD, this used early post Great Fire bricks and extended to maximum depth of 0.37m. The feature was considered to relate to the programme of rebuilding following the railways.

#### Trench G

- 7.12.8 An extensive made ground deposit of silty-clay [1603] sealed the entire trench from 4.11m OD. The 0.38m thick layer contained no dateable cultural material, but may relate to levelling and ground raising deposits as part of the modifications preceding the arrival of the railways.

#### Trench H1



- 7.12.9 The trench was overlain by a 1.10m layer of sandy-silt with rubble [2000] from 2.51m OD. This is likely to represent demolition rubble derived from the demolition of post-medieval properties during the redevelopment of the area associated with the arrival of the railways. This was overlain by a secondary levelling deposit of silty-rubble [2021] from 3.80m OD.

#### Trench H2

- 7.12.10 Modern overburden of demolition rubble [1900] sealed the trench from 3.88m OD and extended to a maximum depth of 1.27m in thickness. This was interpreted as relating to the wide scale clearance of the area in advance of the railways. Mid to late 19th-century pottery and clay tobacco pipe fragments were recovered from this.

#### Trench H3 (Fig. 95)

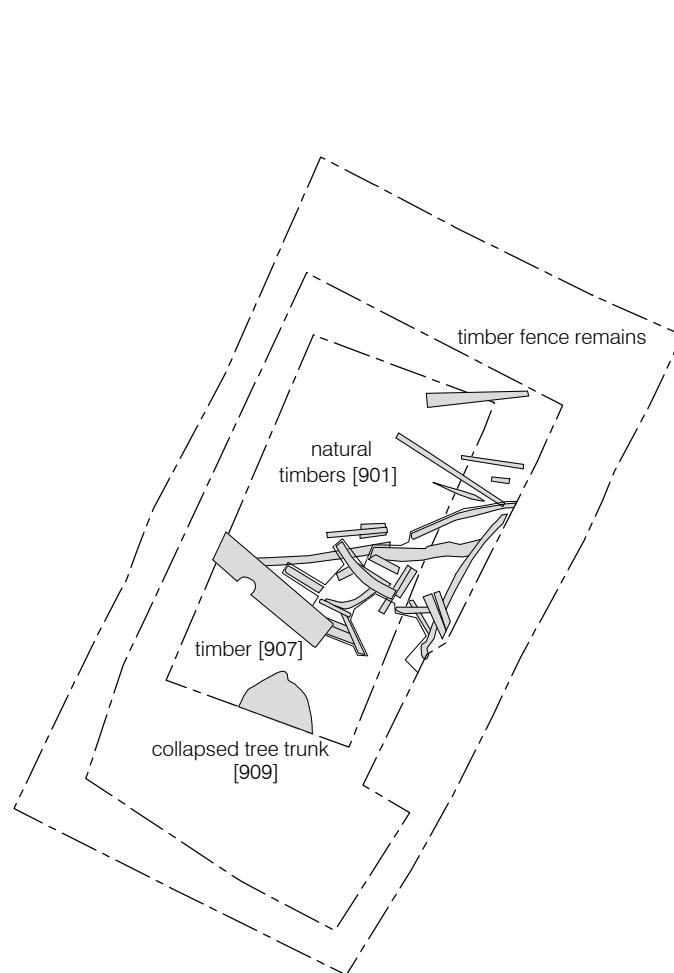
- 7.12.11 Modern features truncating underlying archaeological horizons comprised an east-west aligned pipe trench [1707], cut from 4m OD. This contained a ceramic pipe [1706] lain within a backfill of compacted sandy silt [1705] and subsequently sealed by a 0.12m thick levelling/made ground layer [1703]. A brick floor, also identified in section, was recorded from 3.94m OD, and comprised yellow bricks lain into a silt bonding material. This was laid over bedding layer of ash [1701] within construction cut [1702]. These features were considered to be contemporary to or post-date the redevelopment of the land for the railways and therefore assigned to this phase of activity.

#### Attenuation Tank 1

- 7.12.12 Modern overburden of rubble and concrete [1853] overlay the entire excavation area to a depth of 3m. This is likely to represent basement infill of demolition rubble dating to the redevelopment of the area for the extant railway and associated arches.

#### E123

- 7.12.13 The arch was overlain by a 0.55m thickness of demolition debris [1527], [1526], [1525], [1524] and [1523] from 4.09m OD.

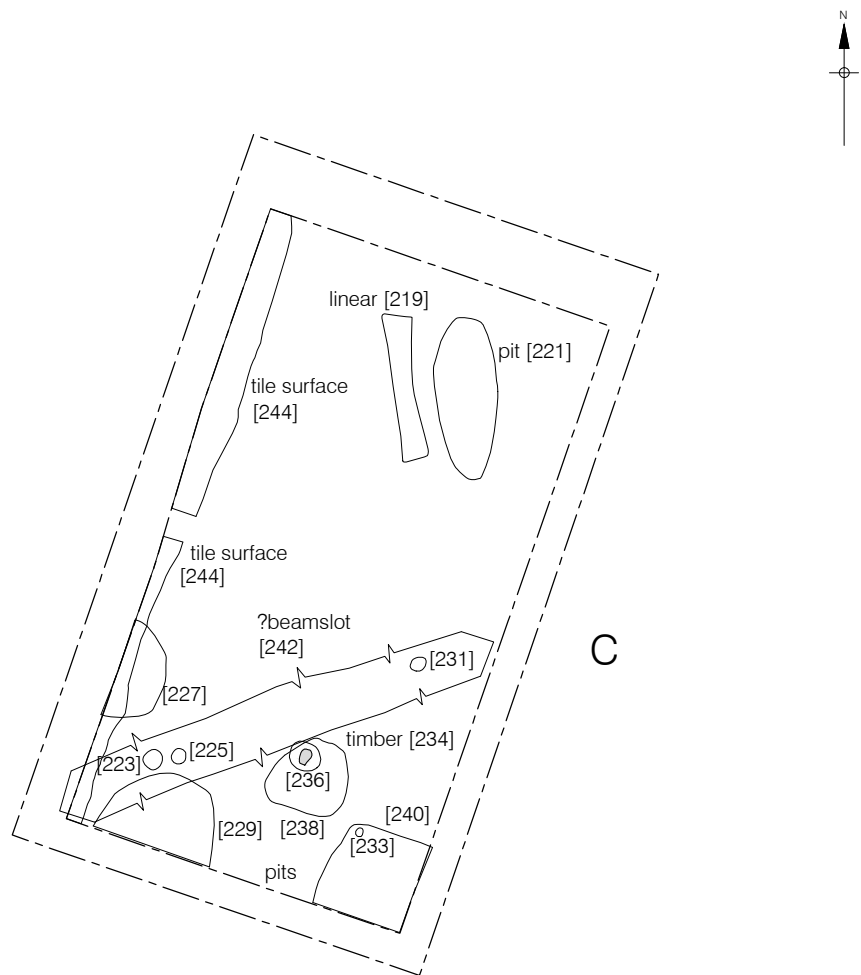


A5



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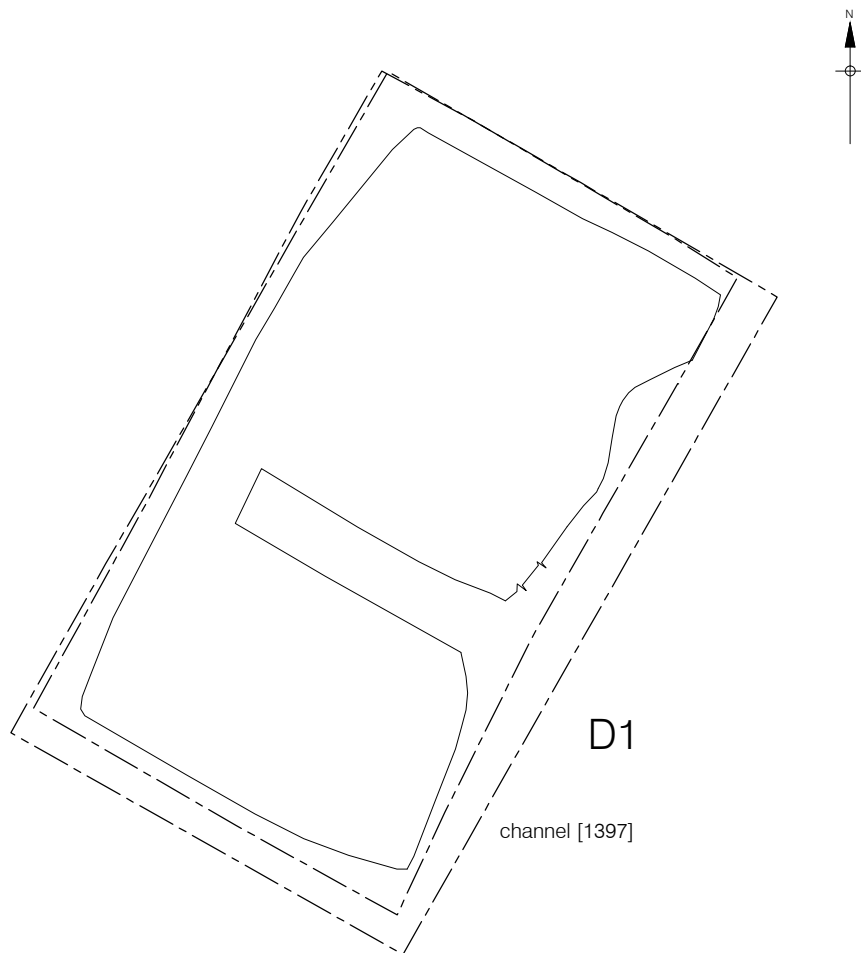
Figure 4  
Phase 3: Trench A5  
1:50 at A4



0 2.5m

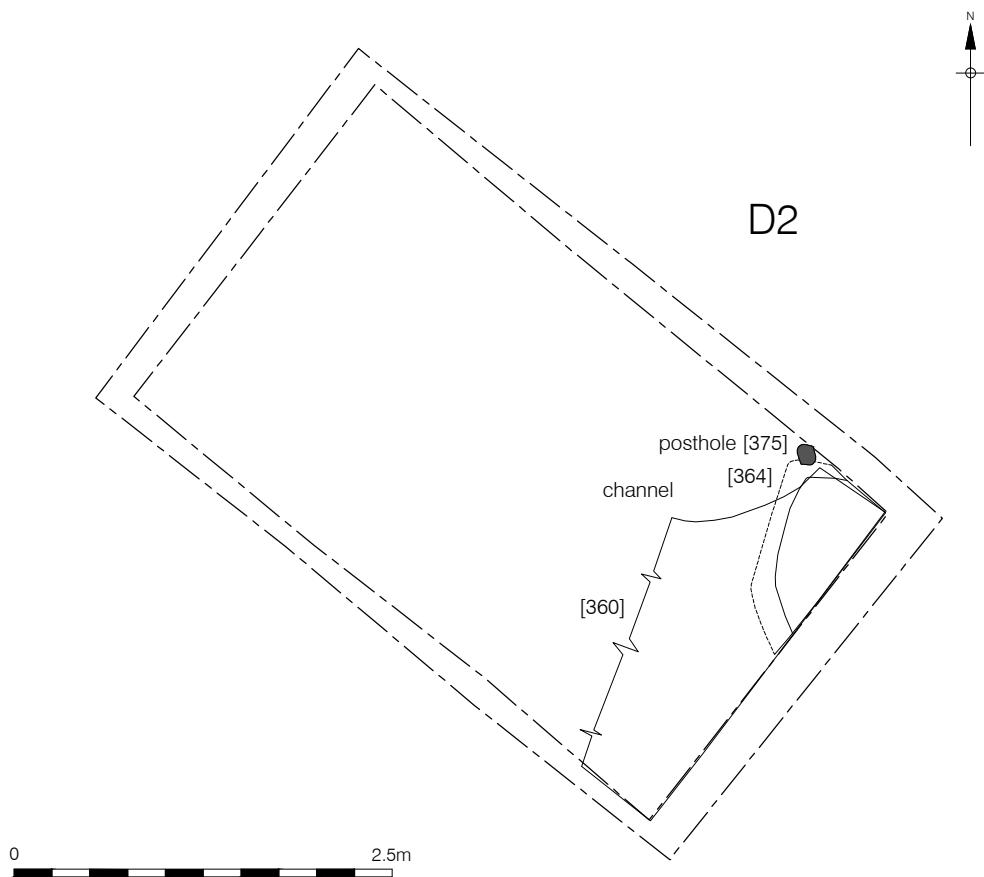
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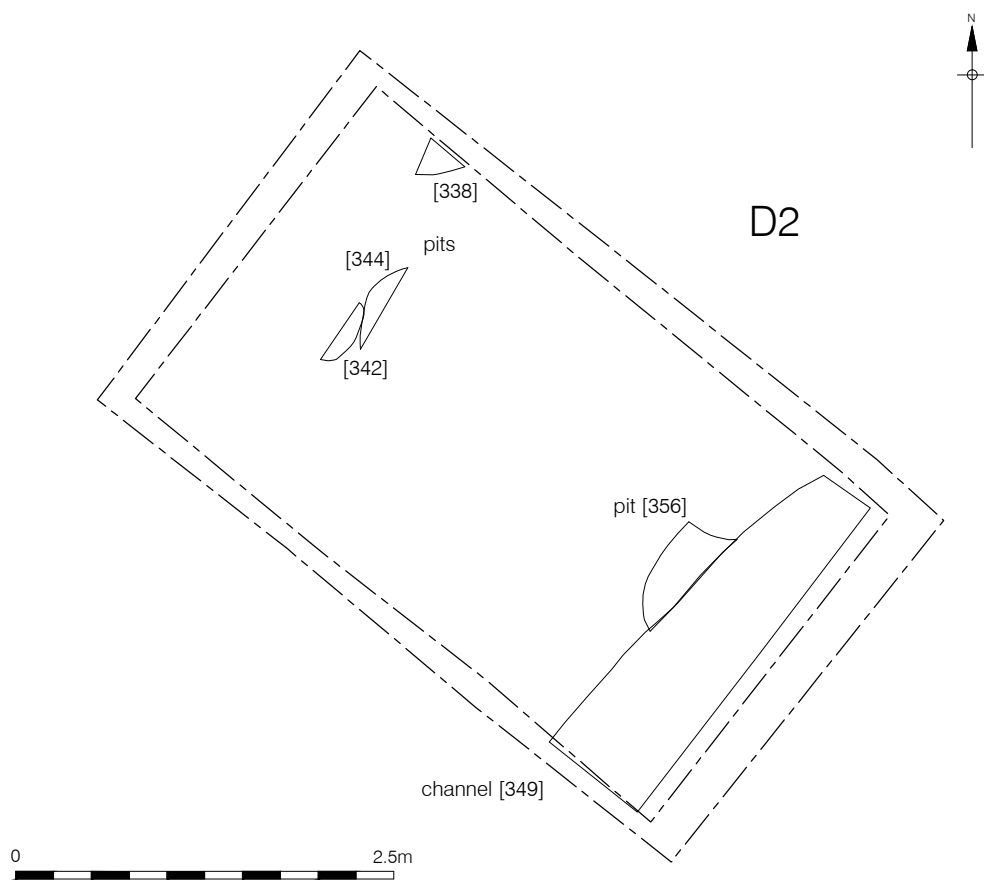
Figure 5  
Phase 4a: Trench C  
1:50 at A4



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Figure 6  
Phase 4a: Trench D1  
1:50 at A4





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Figure 8  
Phase 4a: Trench D2  
1:50 at A4

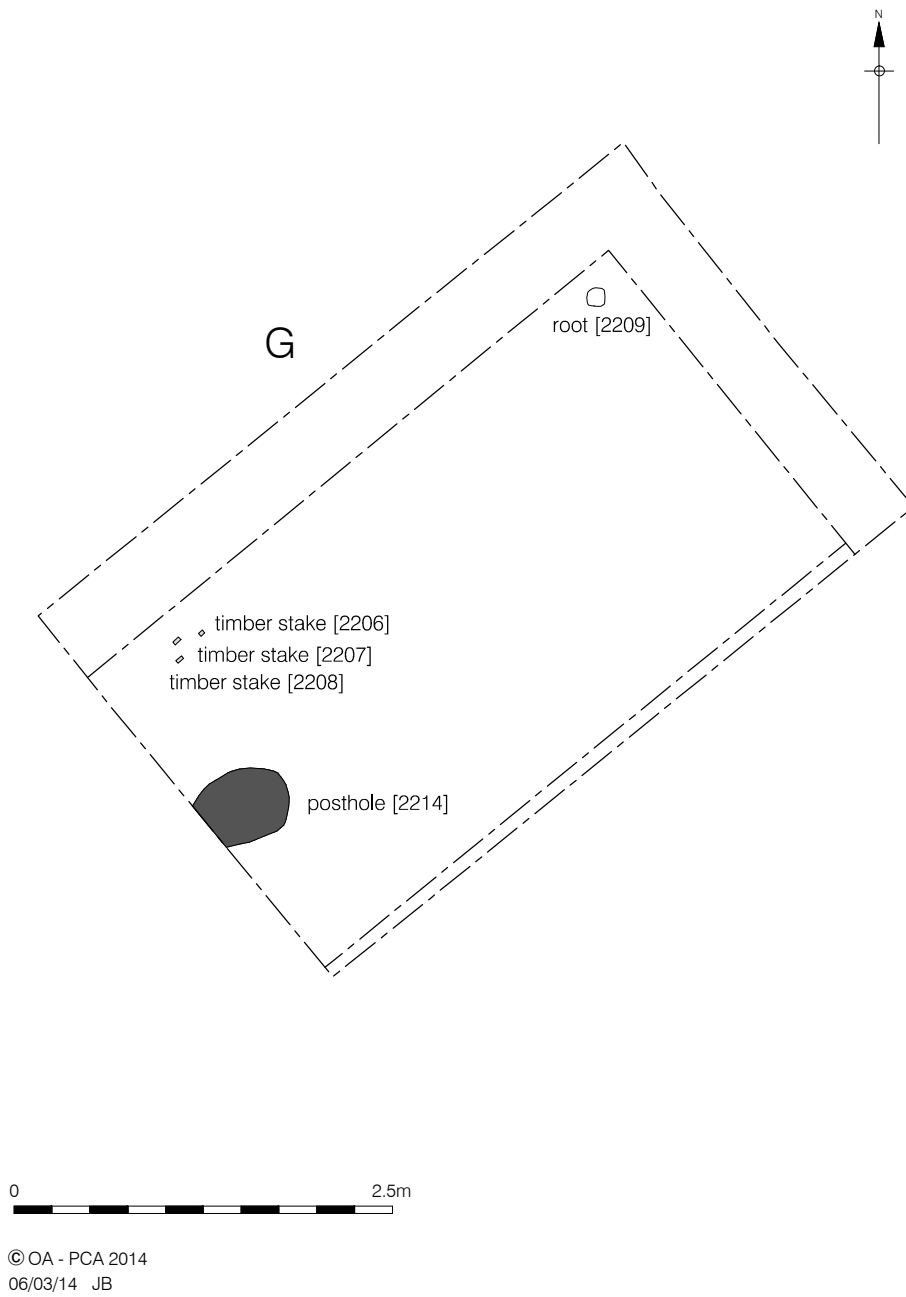


Figure 9  
Phase 4a: Trench G  
1:50 at A4

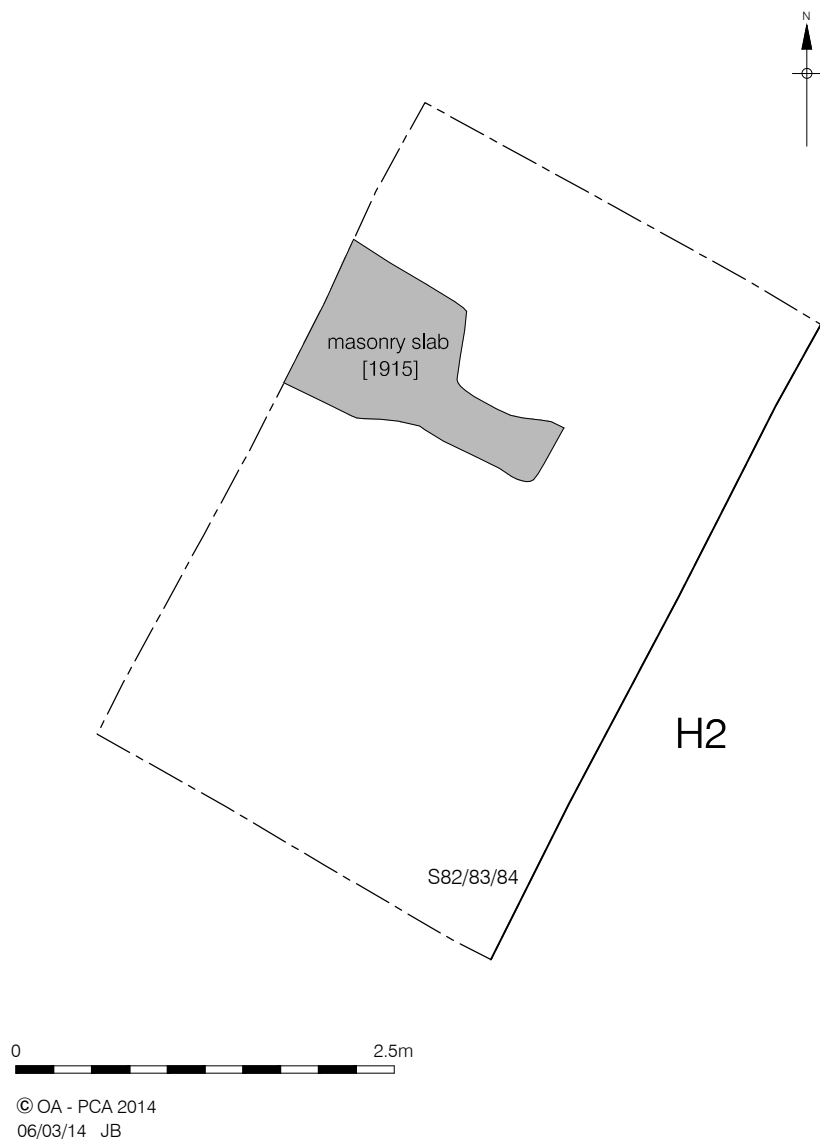
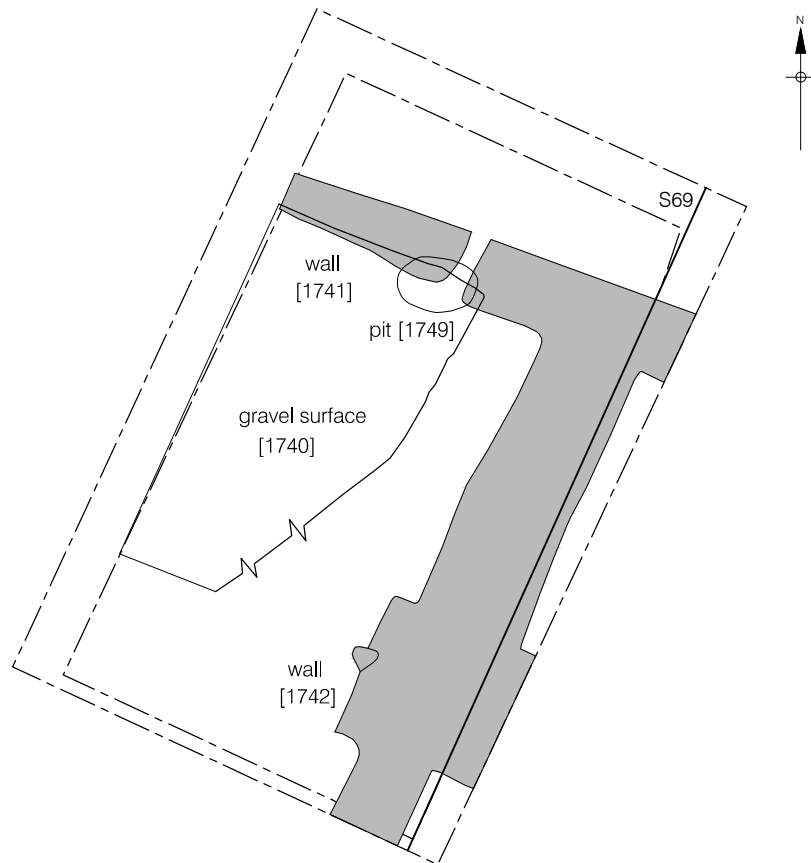


Figure 10  
Phase 4a: Trench H2  
1:50 at A4



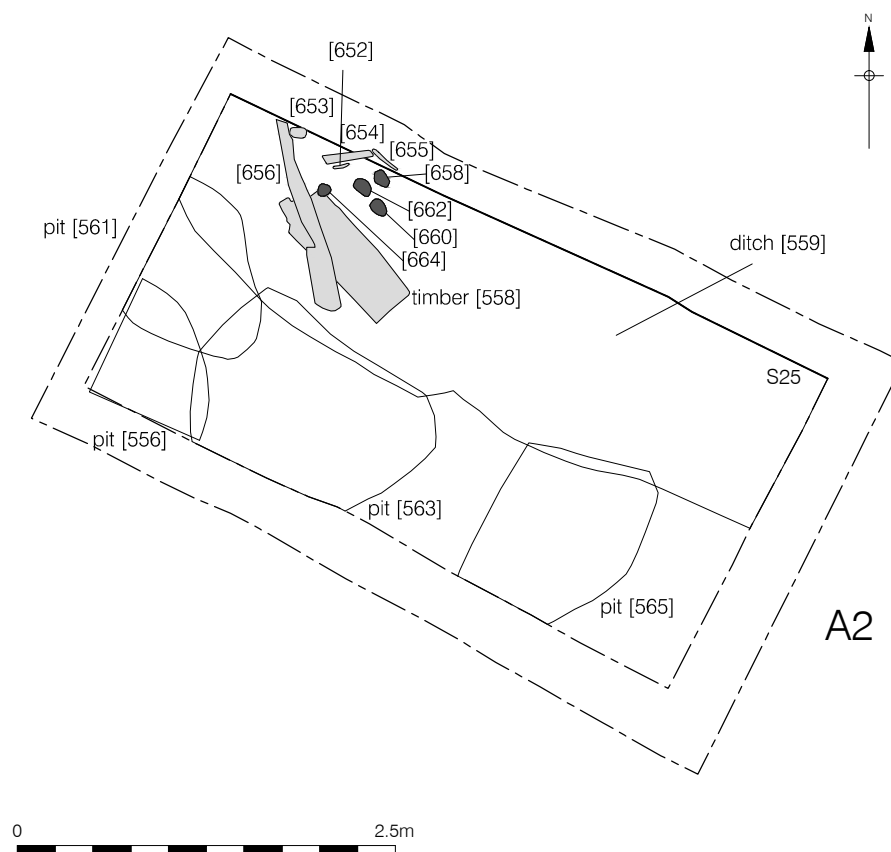


H3



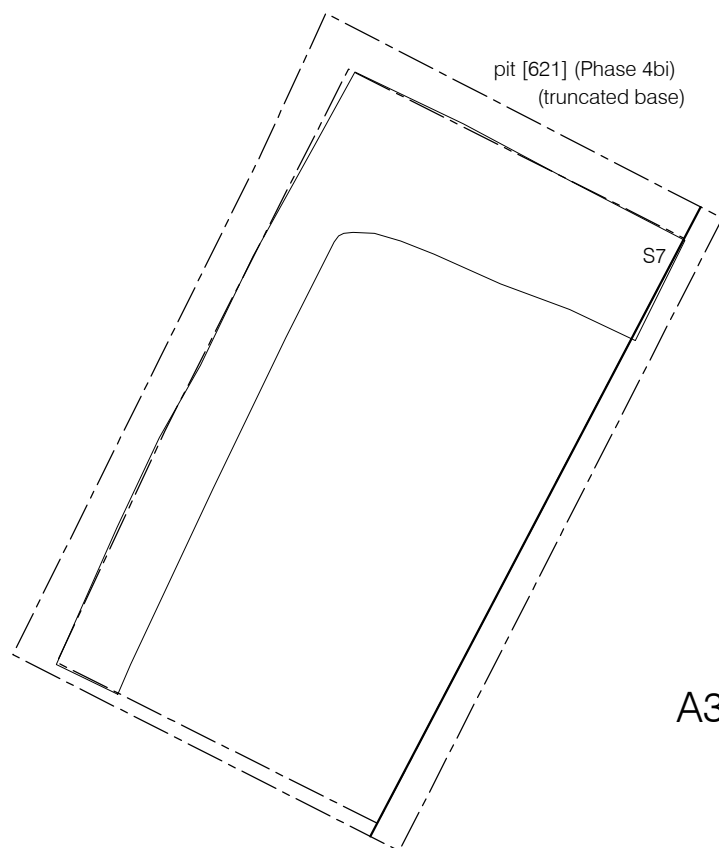
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Figure 11  
Phase 4a: Trench H3  
1:50 at A4



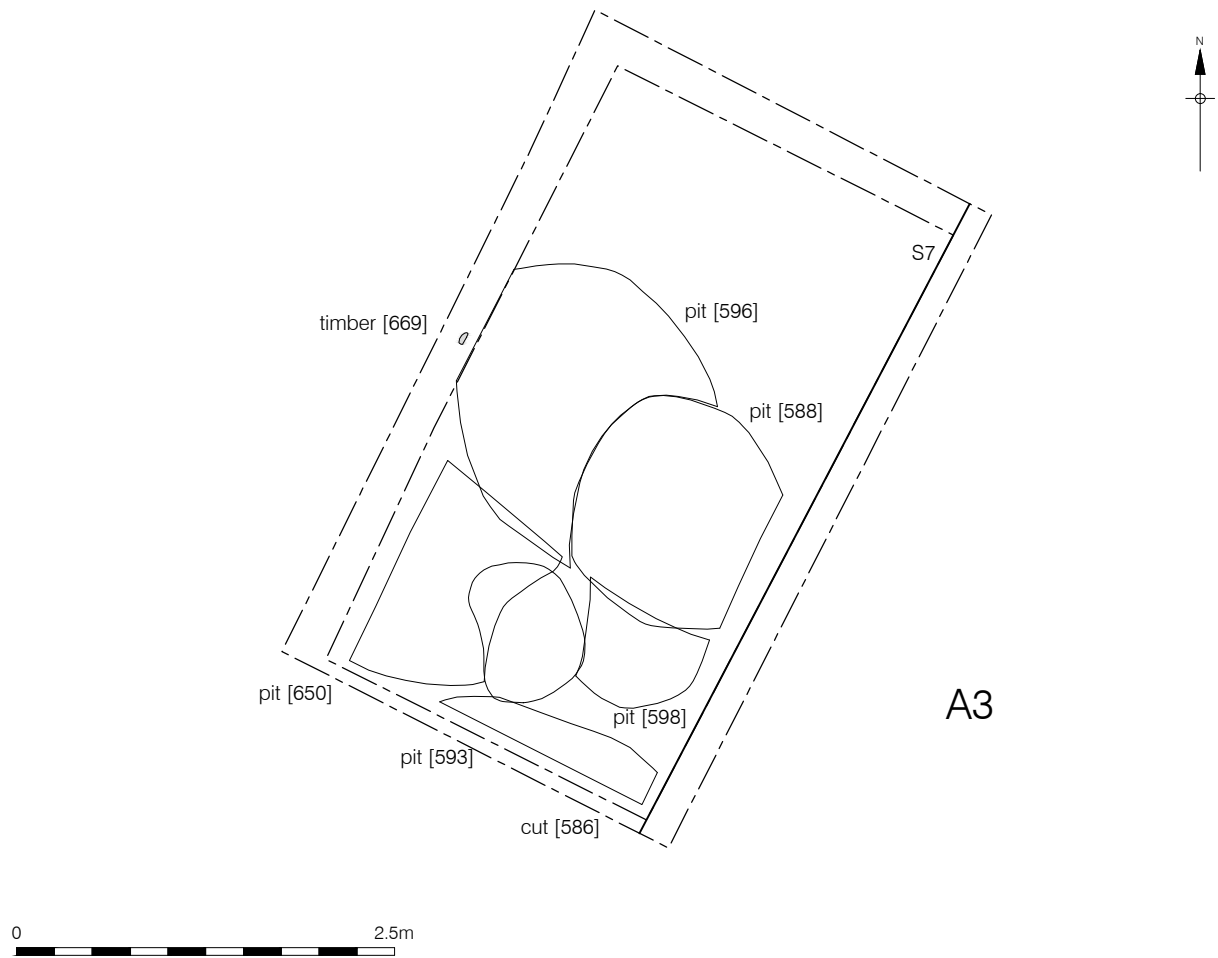
© OA - PCA 2014  
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Figure 12  
Phase 4b: Trench A2  
1:50 at A4



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Figure 13  
Phase 4bi : Trench A3  
1:50 at A4



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Figure 14  
Phase 4bii: Trench A3  
1:50 at A4

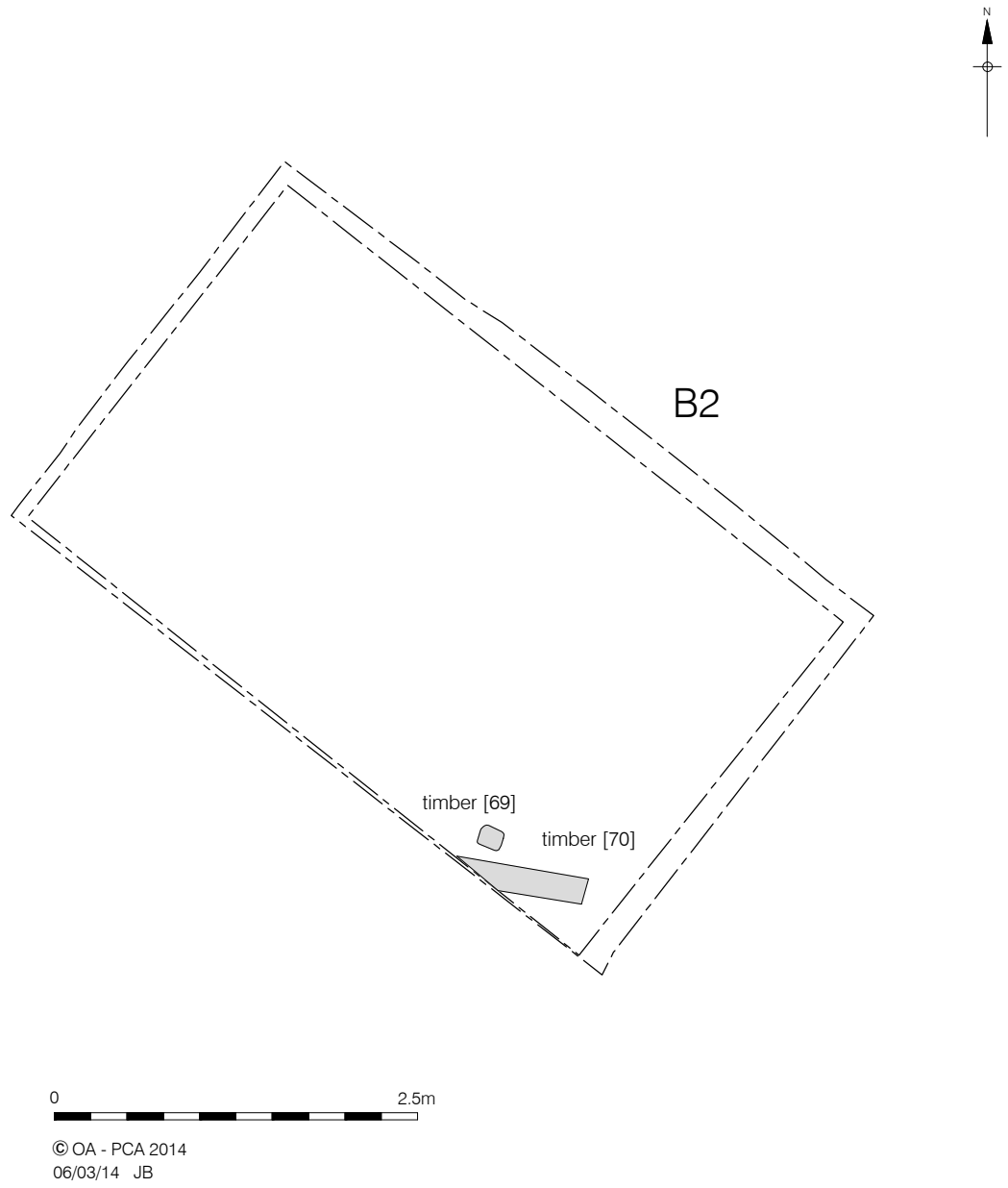


Figure 15  
Phase 4b: Trench B2  
1:50 at A4

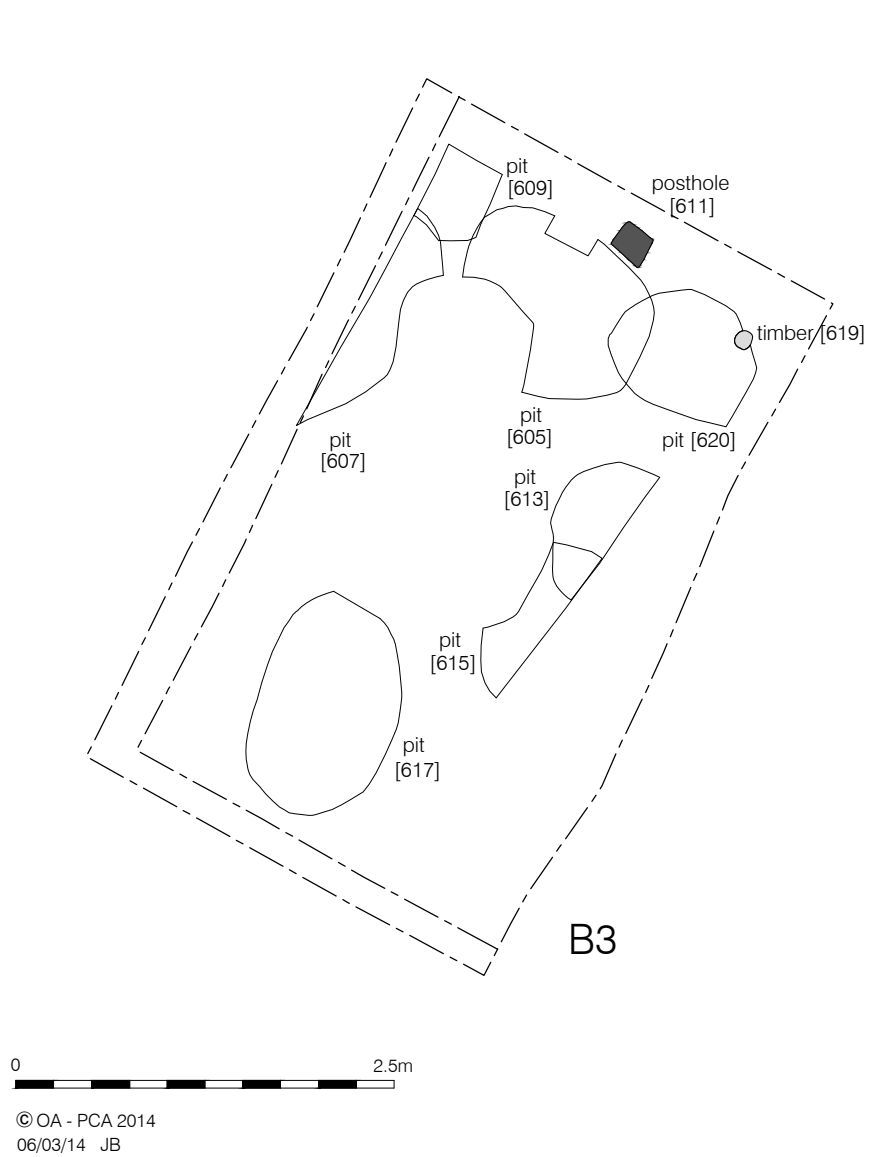


Figure 16  
Phase 4b: Trench B3  
1:50 at A4

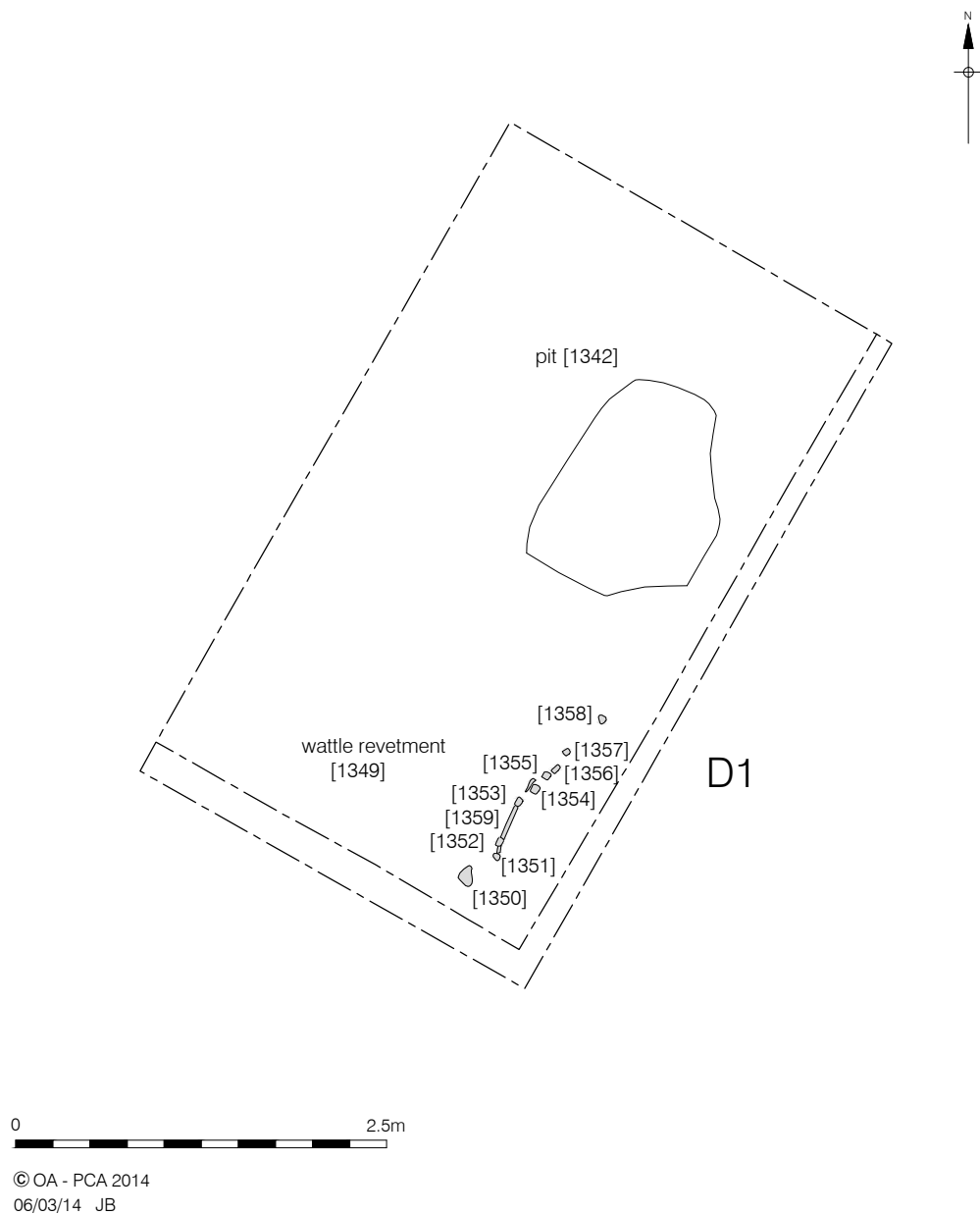


Figure 17  
Phase 4b: Trench D1  
1:50 at A4

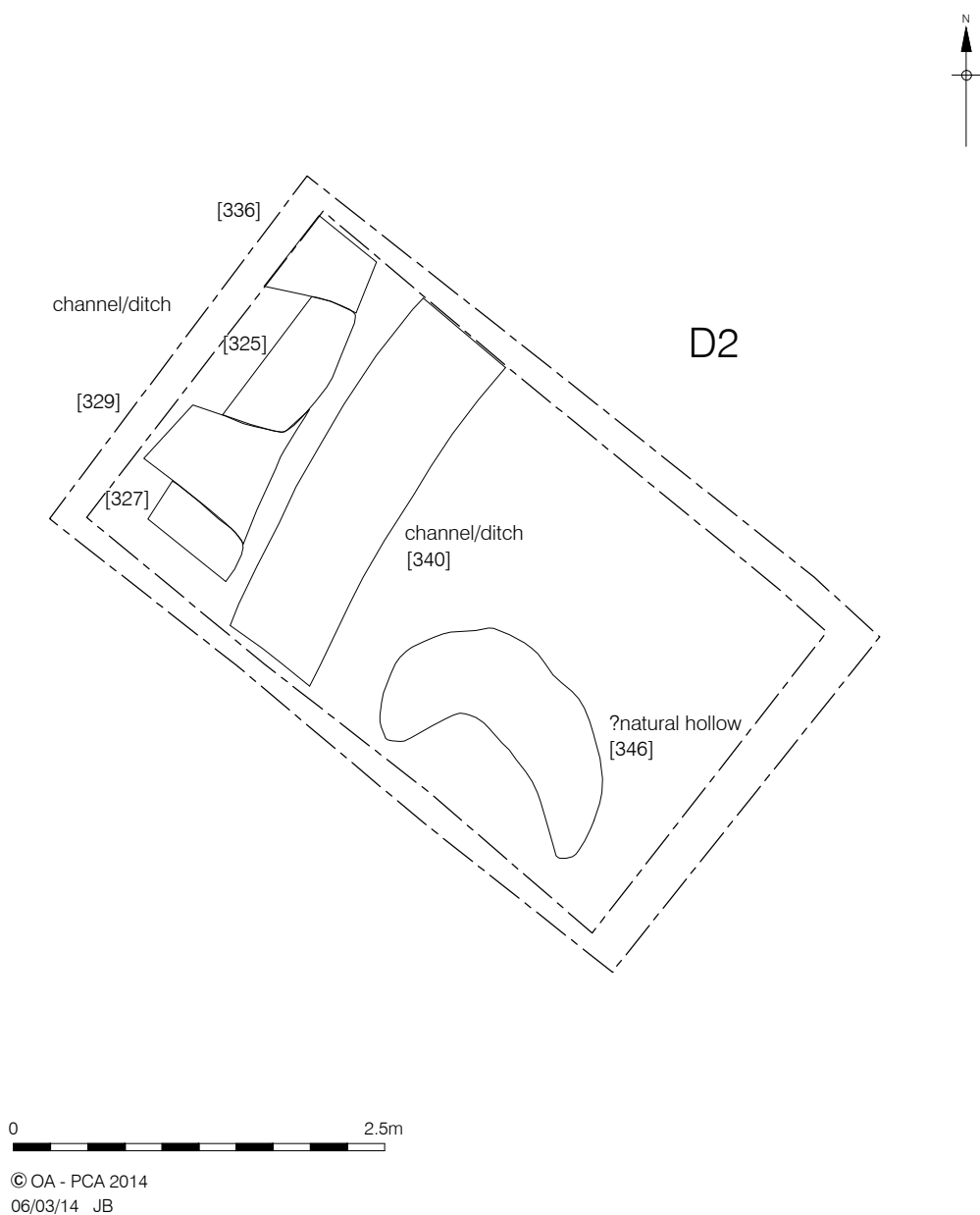
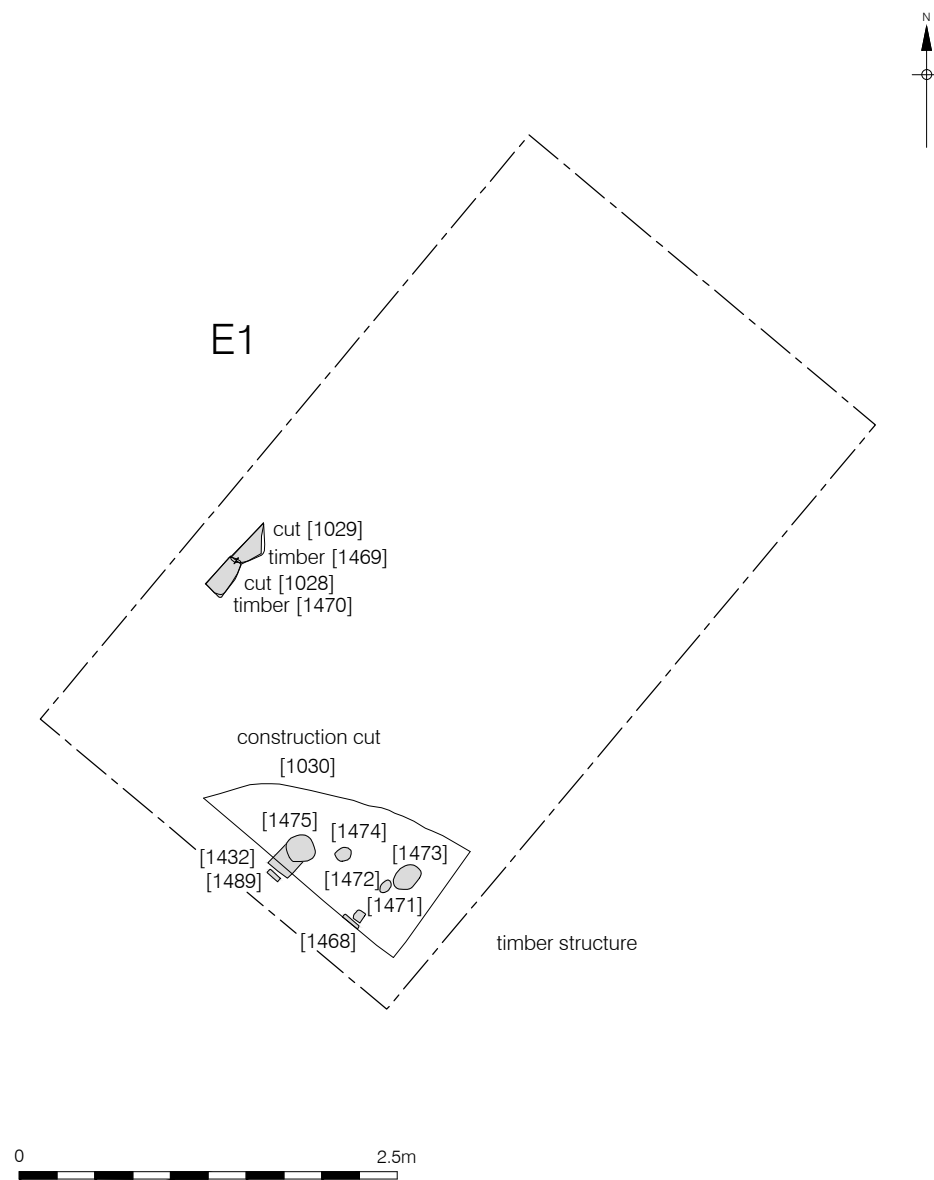


Figure 18  
Phase 4b: Trench D2  
1:50 at A4





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Figure 19  
Phase 4b: Trench E1  
1:50 at A3

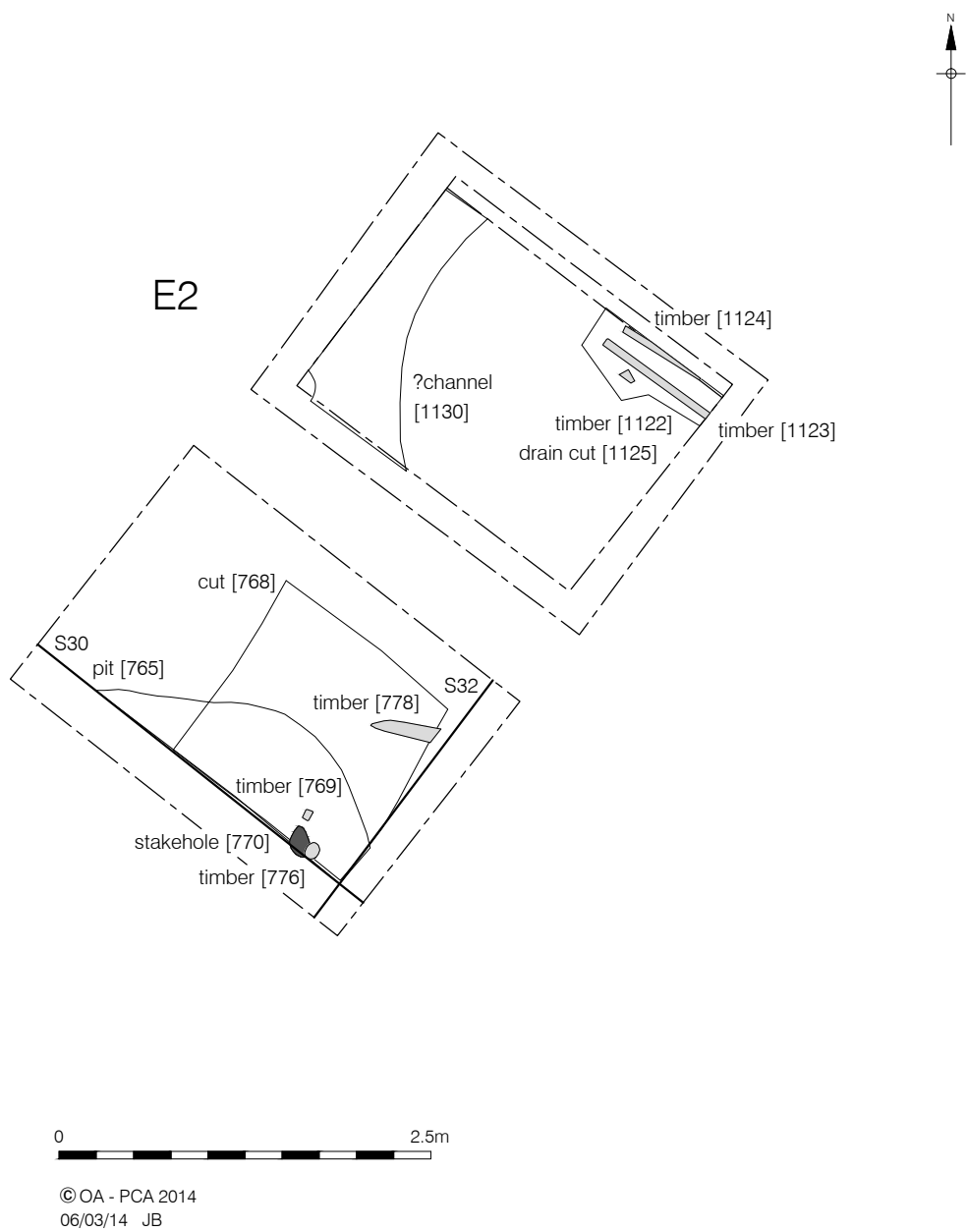


Figure 20  
Phase 4b: Trench E2  
1:50 at A3

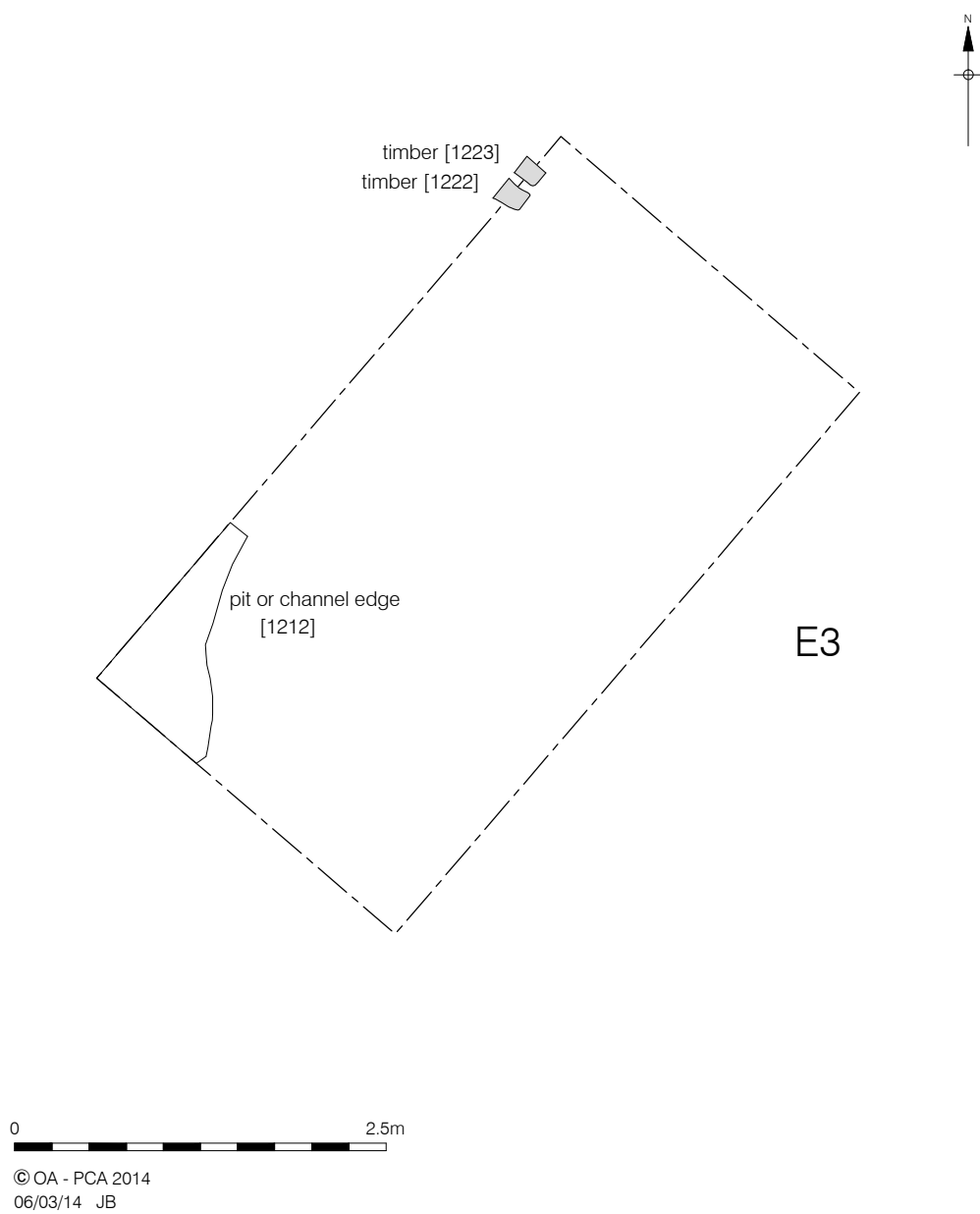
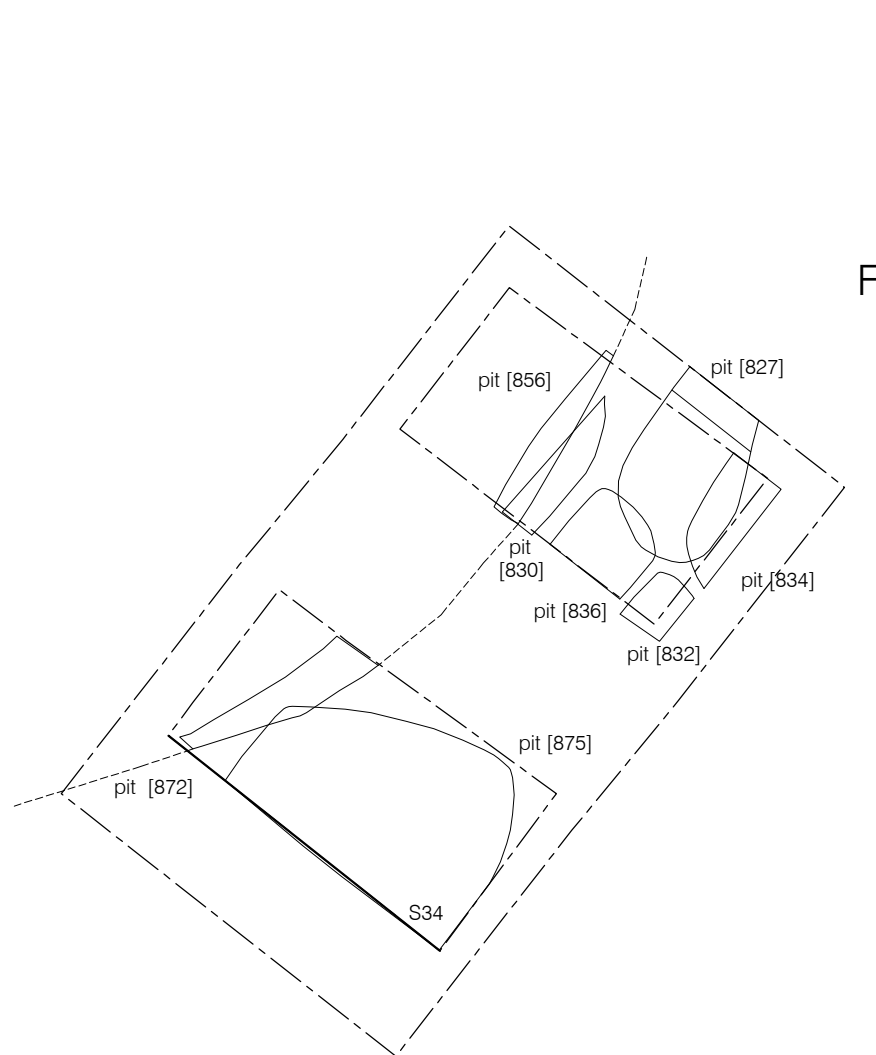


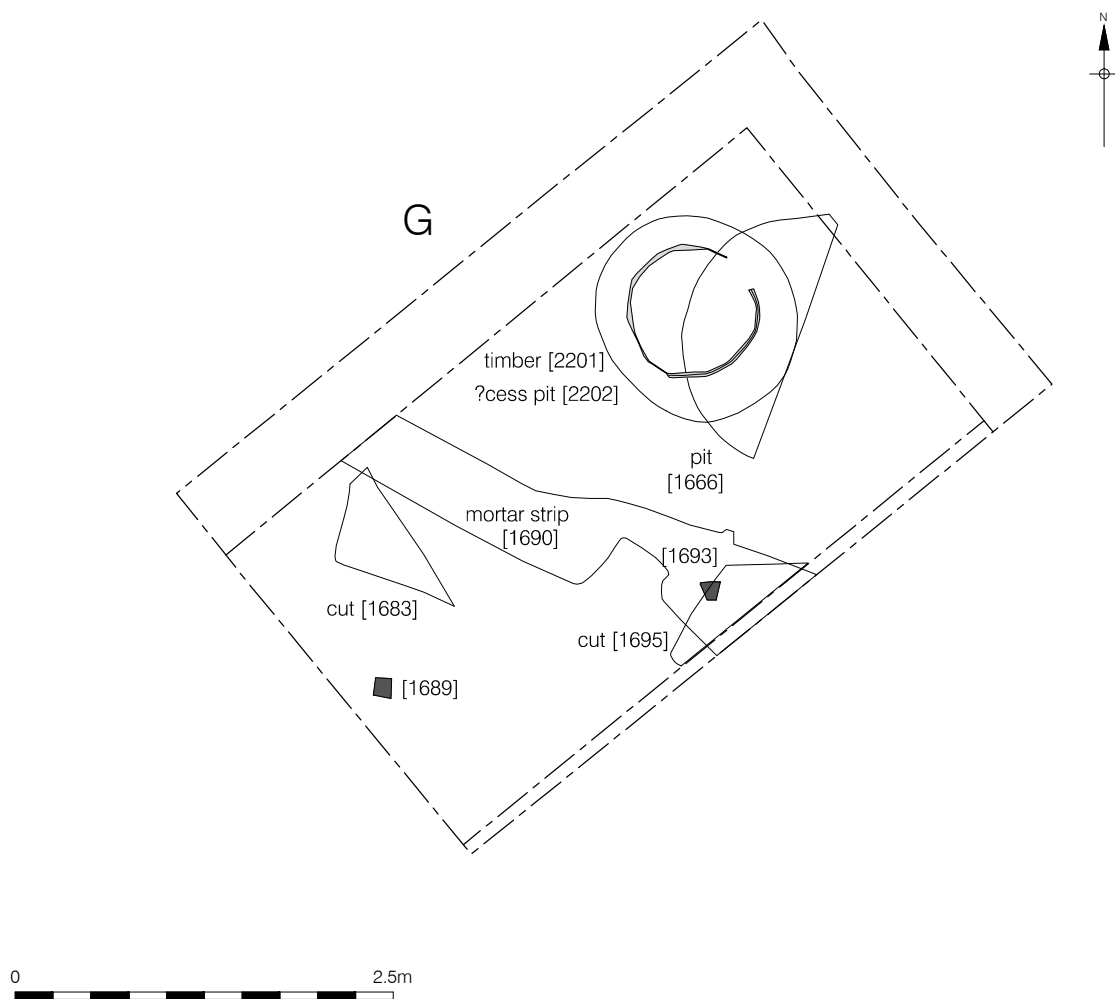
Figure 21  
Phase 4b: Trench E3  
1:50 at A4



0 2.5m

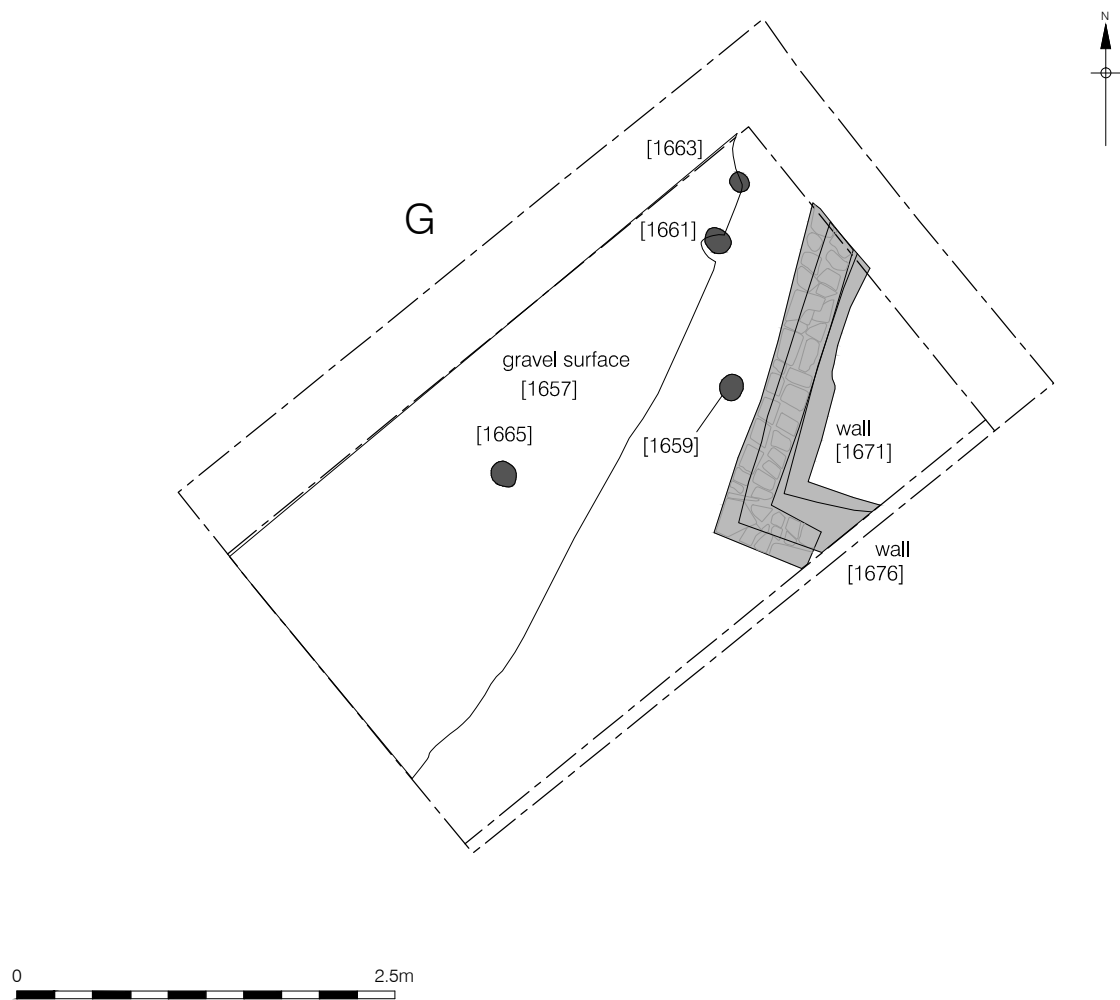
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Figure 22  
Phase 4b: Trench F  
1:50 at A4



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Figure 23  
Phase 4bi: Trench G  
1:50 at A4



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Figure 24  
Phase 4bii: Trench G  
1:50 at A4

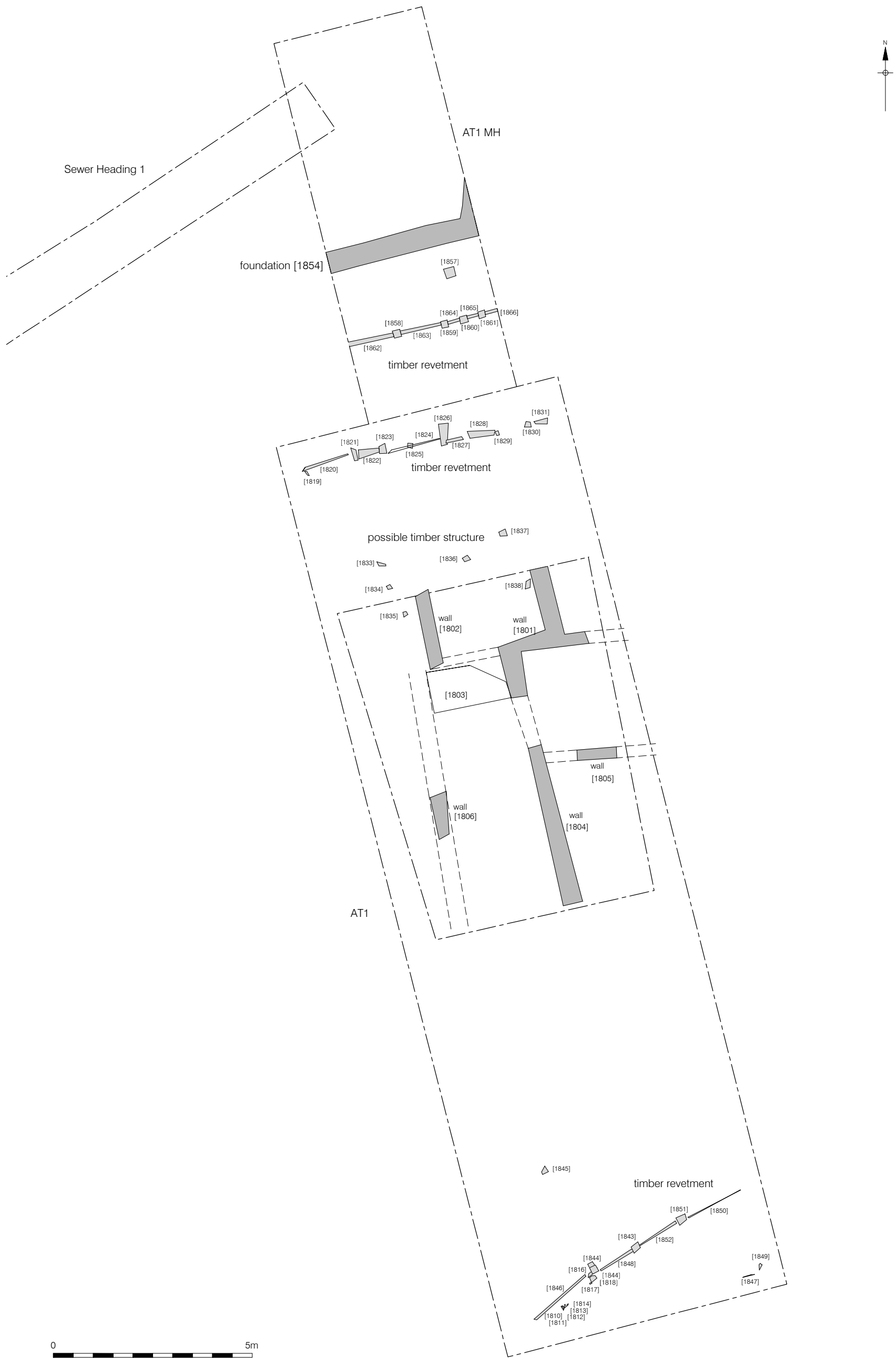
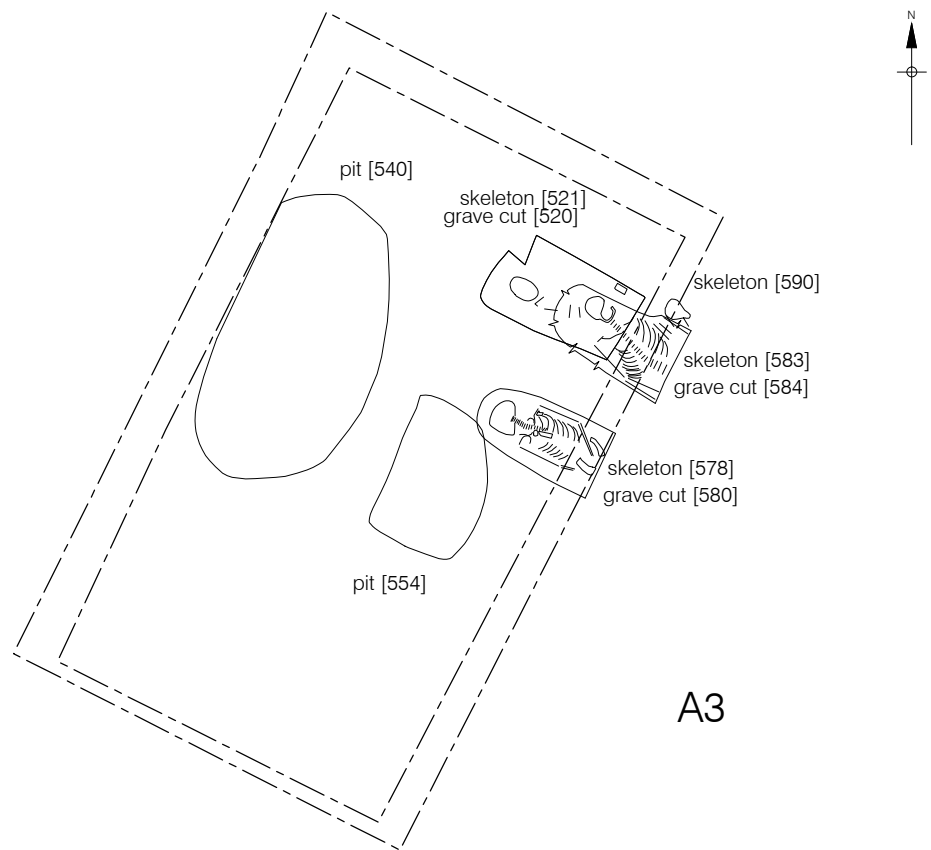


Figure 25  
Phase 4b: Trench AT1  
1:100 at A3



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Figure 26  
Phase 4c: Trench A3  
1:50 at A4



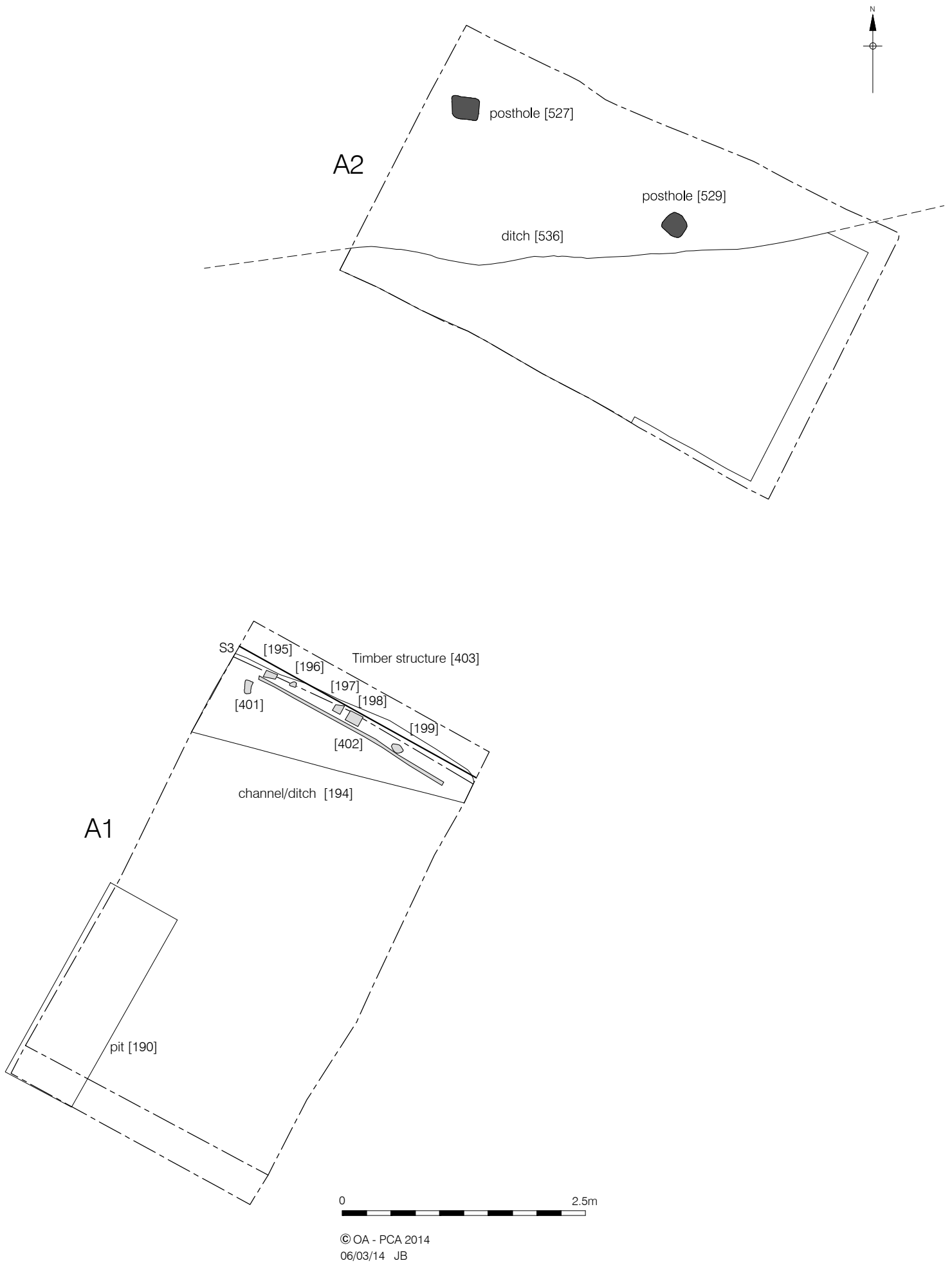


Figure 27  
Phase 5a: Trenches A1 and A2  
1:50 at A4

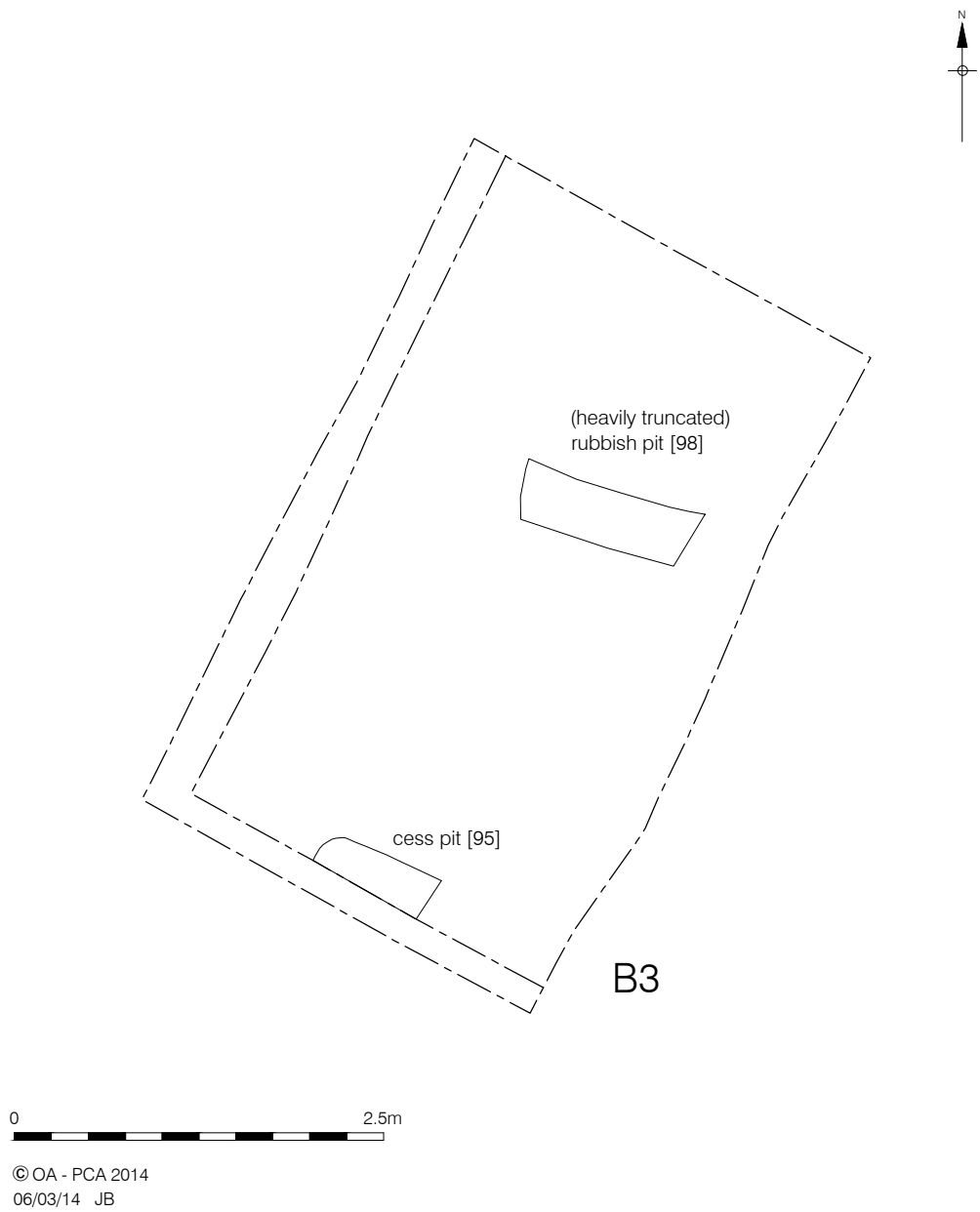
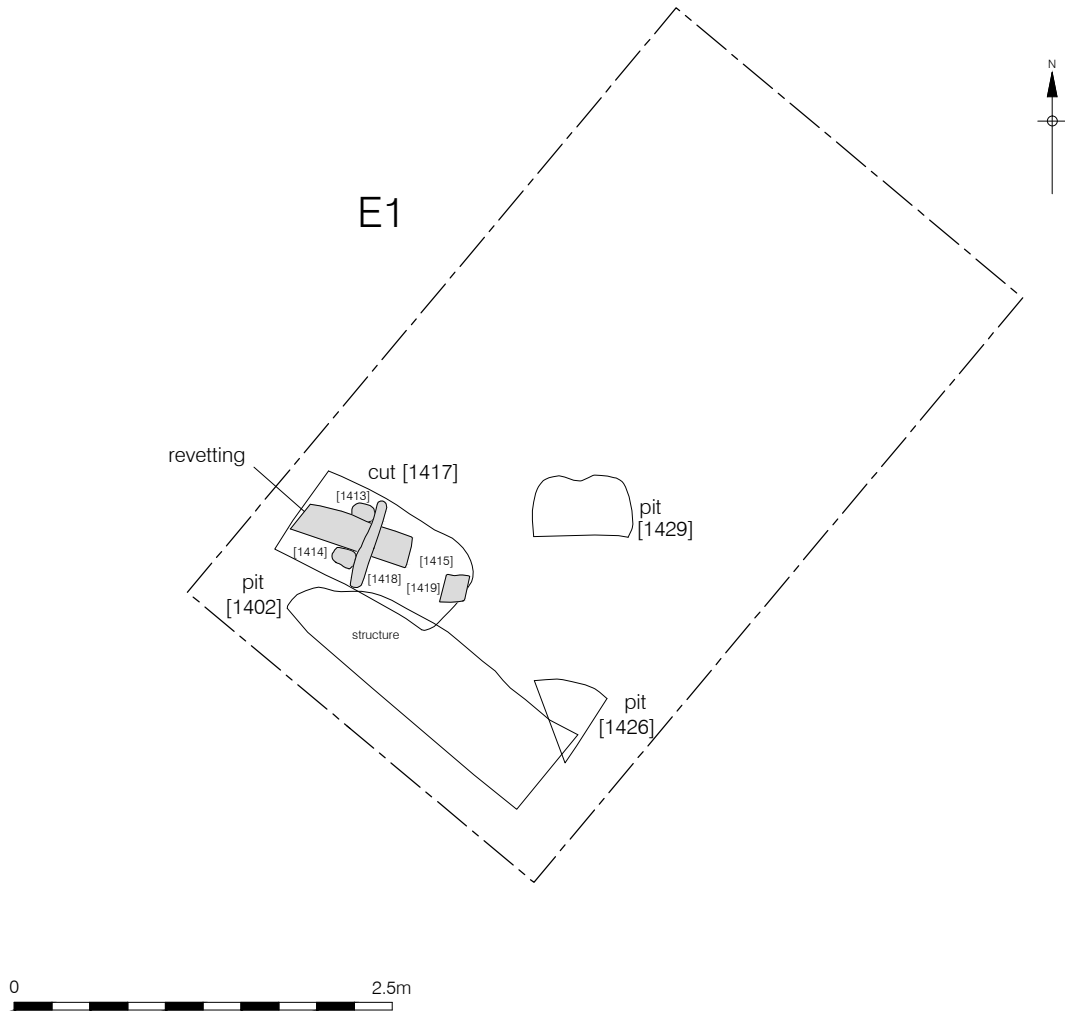
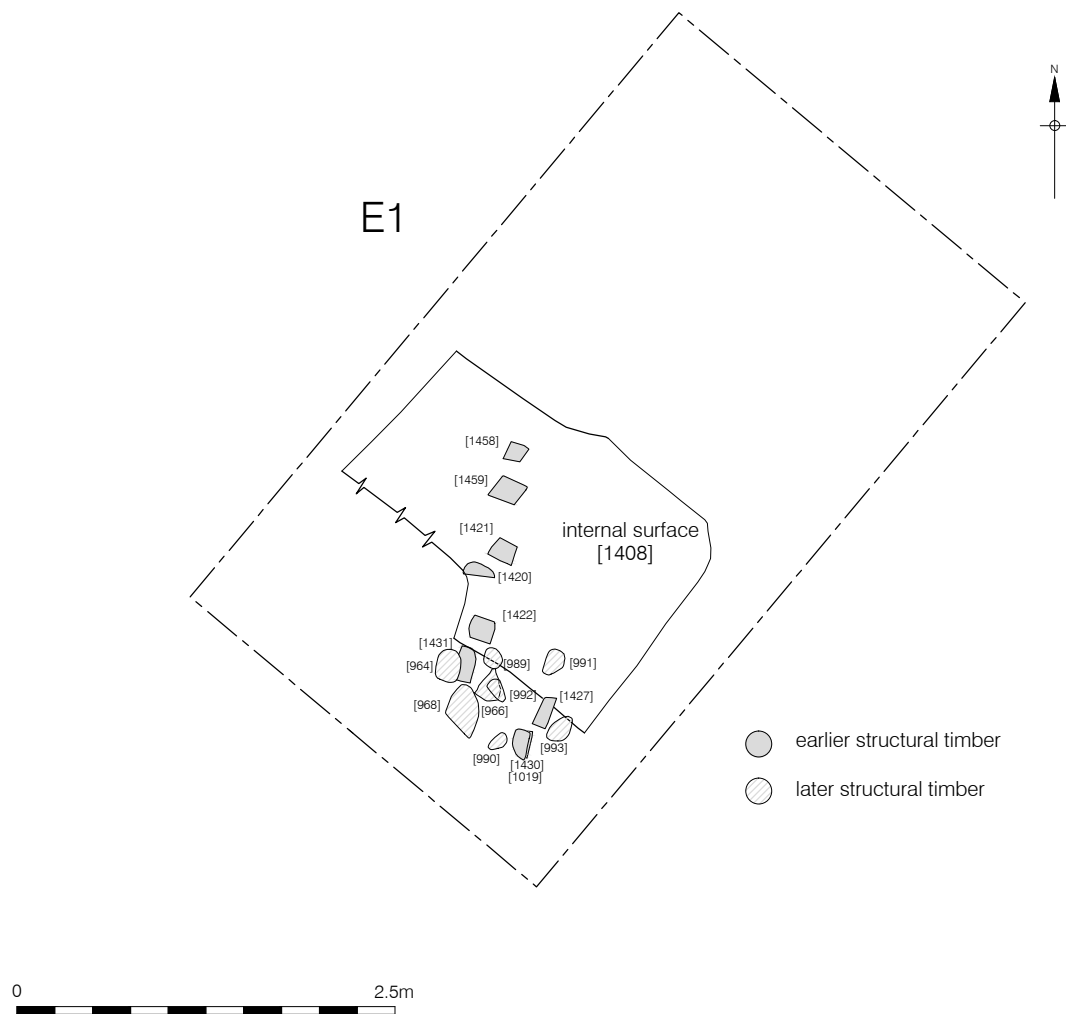


Figure 28  
Phase 5a: Trench B3  
1:50 at A4



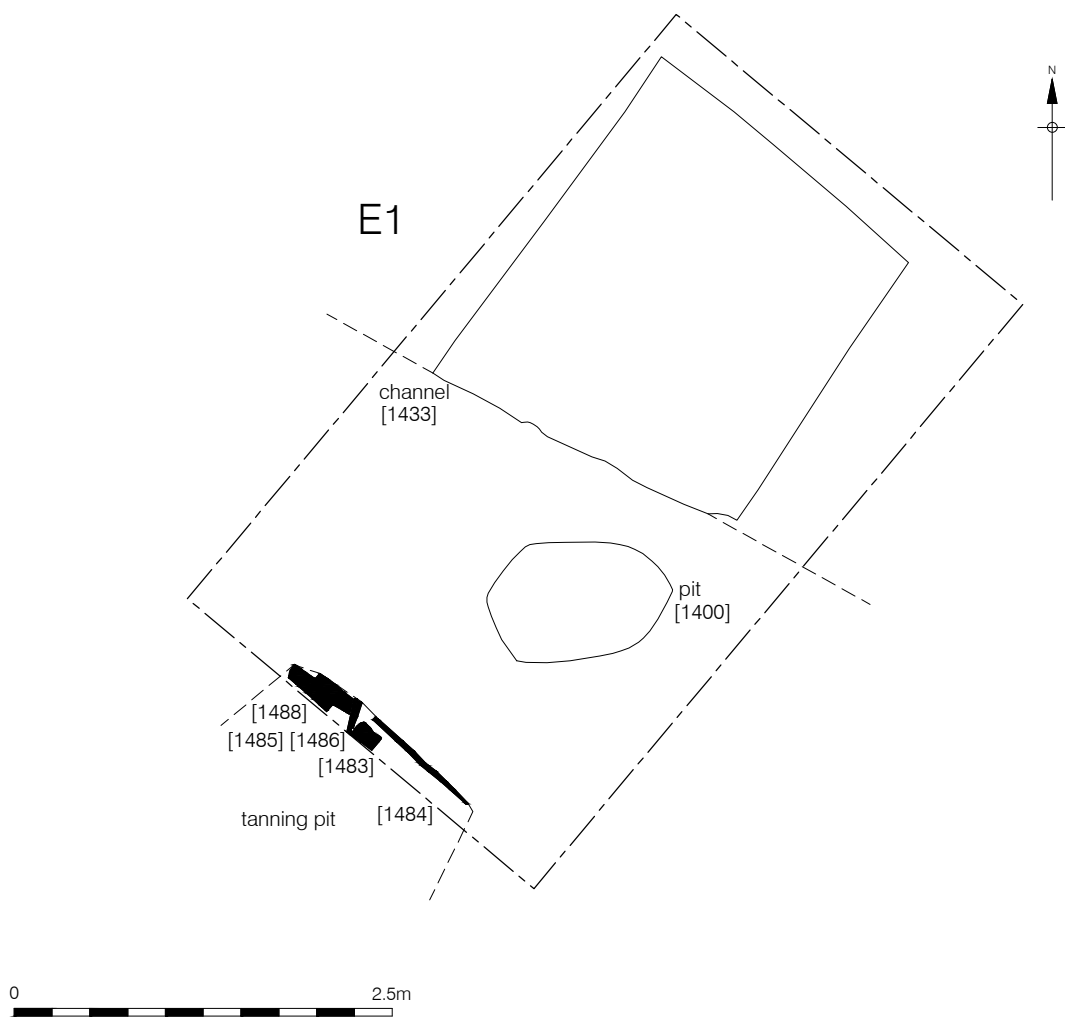
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Figure 29  
Phase 5ai: Trench E1  
1:50 at A4



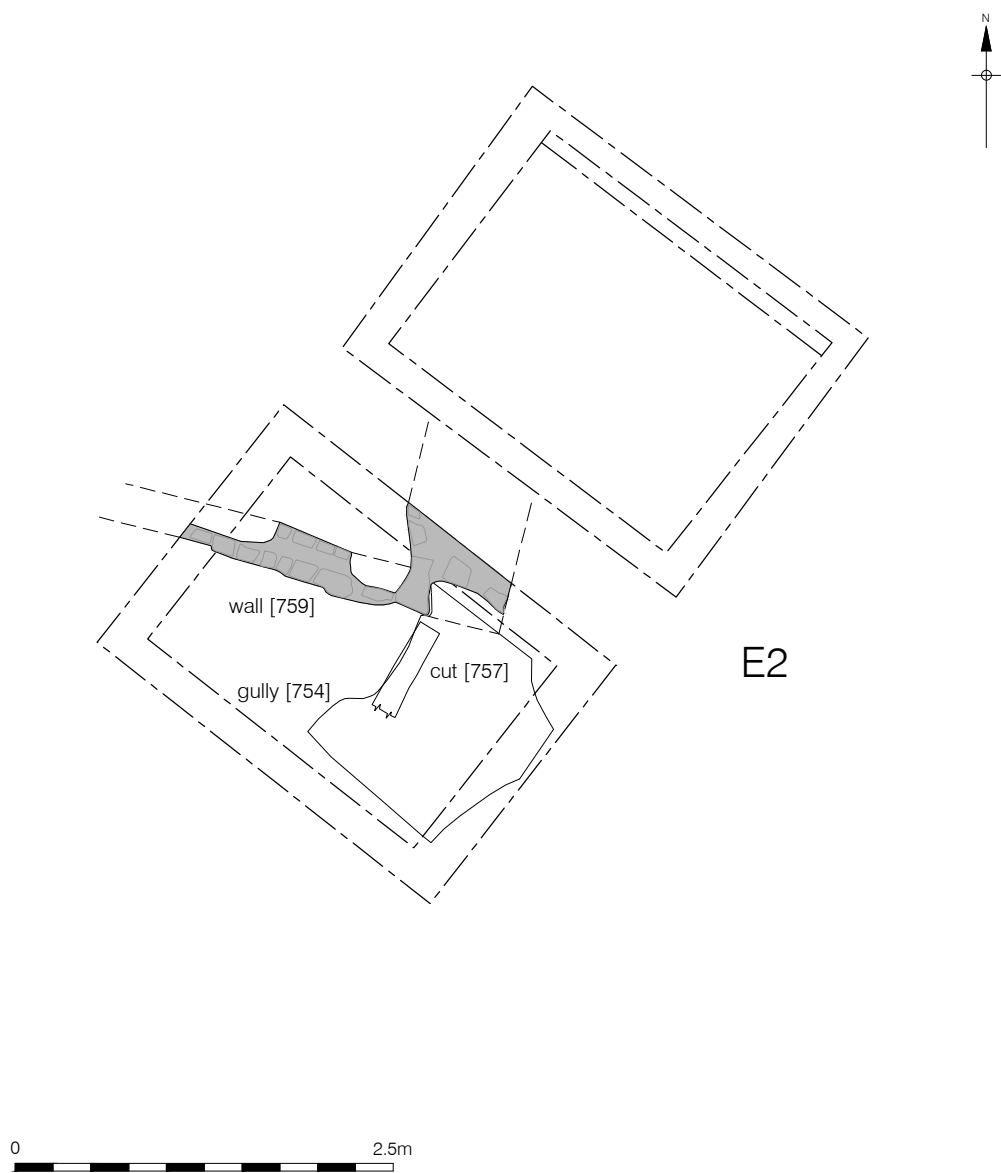
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Figure 30  
Phase 5a: Trench E1  
1:50 at A4



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Figure 31  
Phase 5a: Trench E1  
1:50 at A4



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Figure 32  
Phase 5a: Trench E2  
1:50 at A4

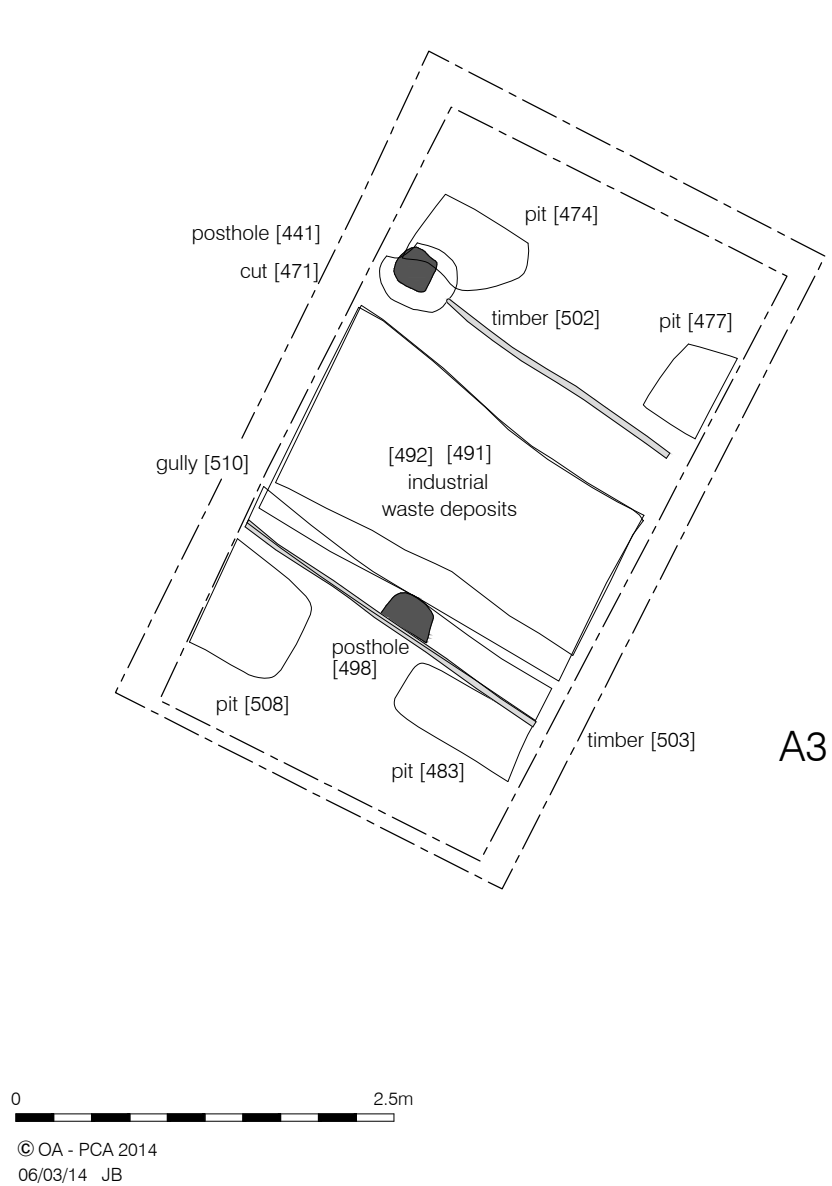
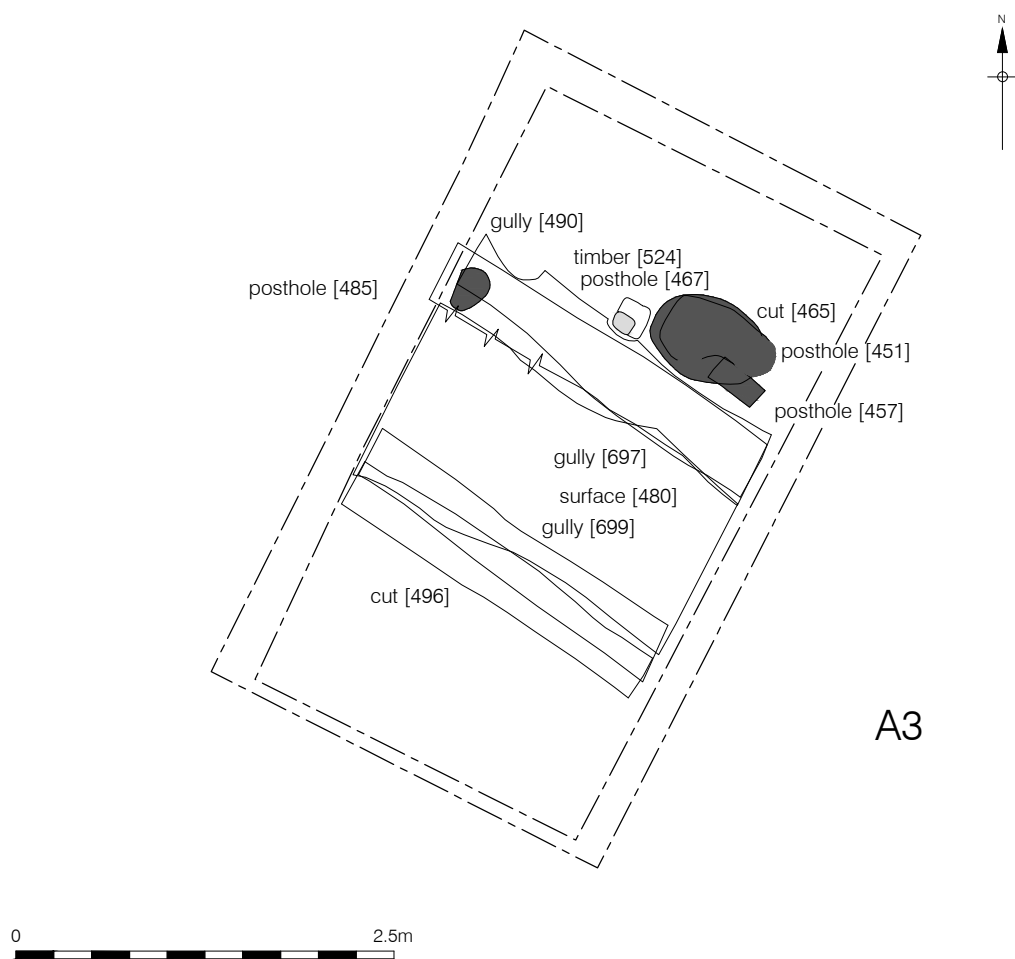


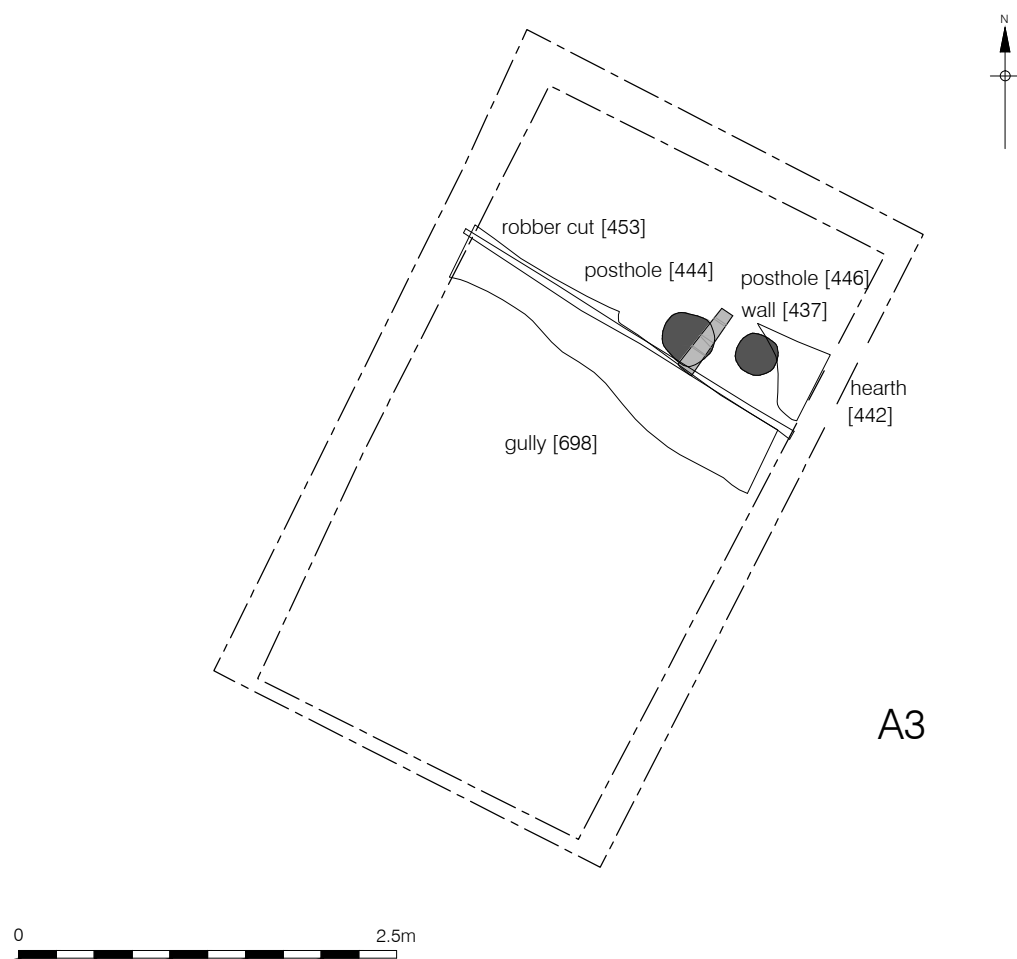
Figure 33  
Phase 5bi: Trench A3  
1:50 at A4



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Figure 34  
Phase 5bii : Trench A3  
1:50 at A4





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Figure 35  
Phase 5biii: Trench A3  
1:50 at A4

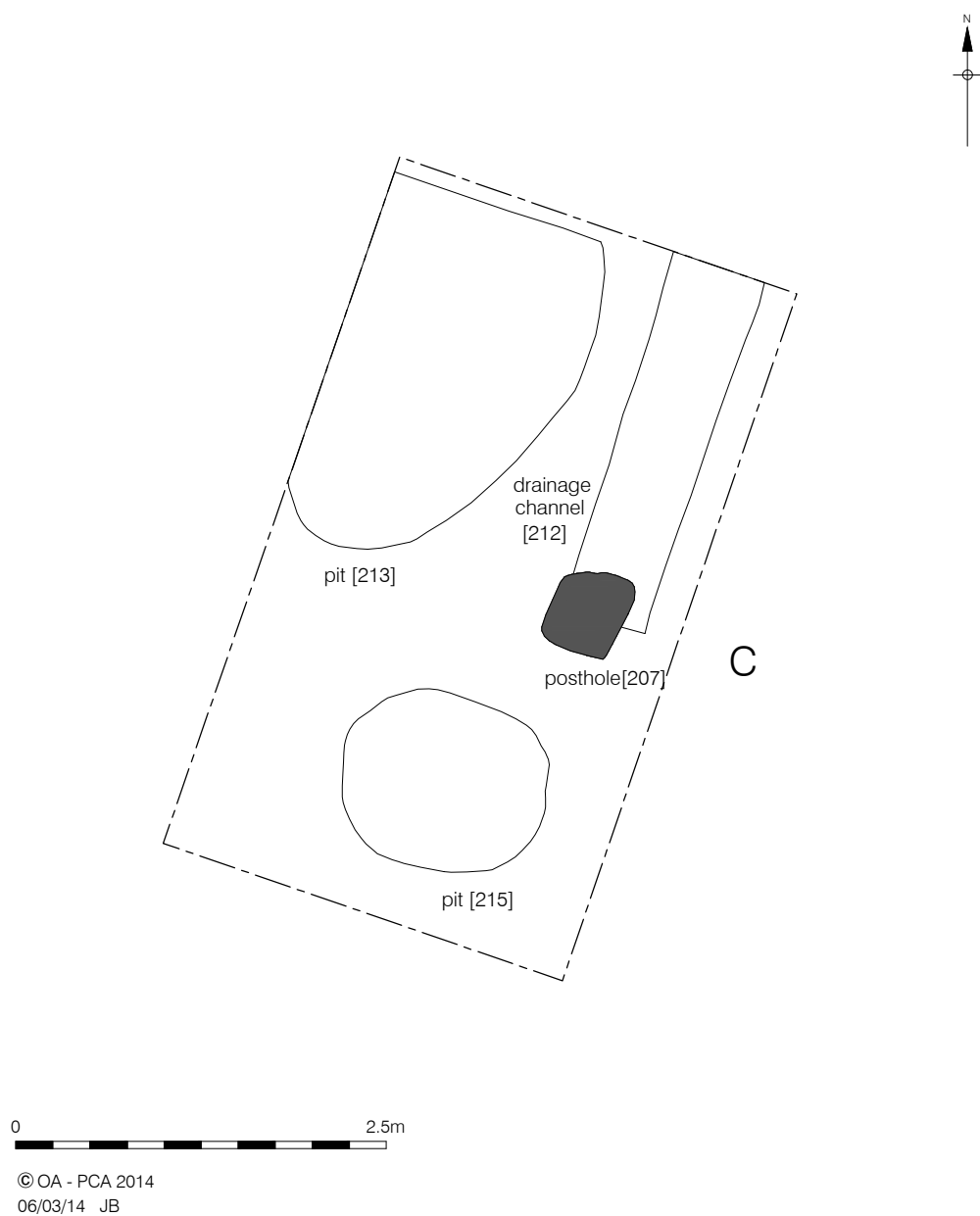


Figure 36  
Phase 5b: Trench C  
1:50 at A4

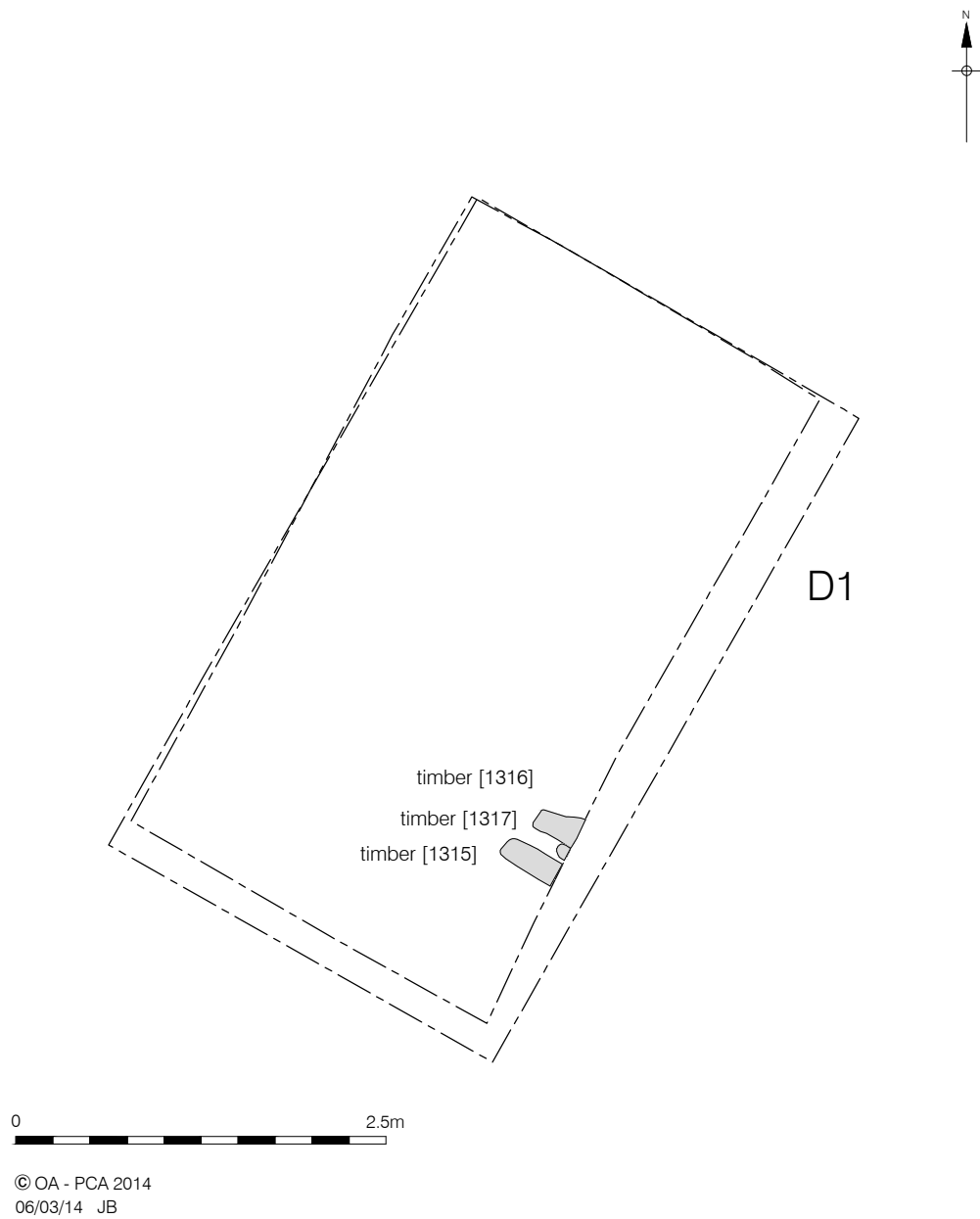
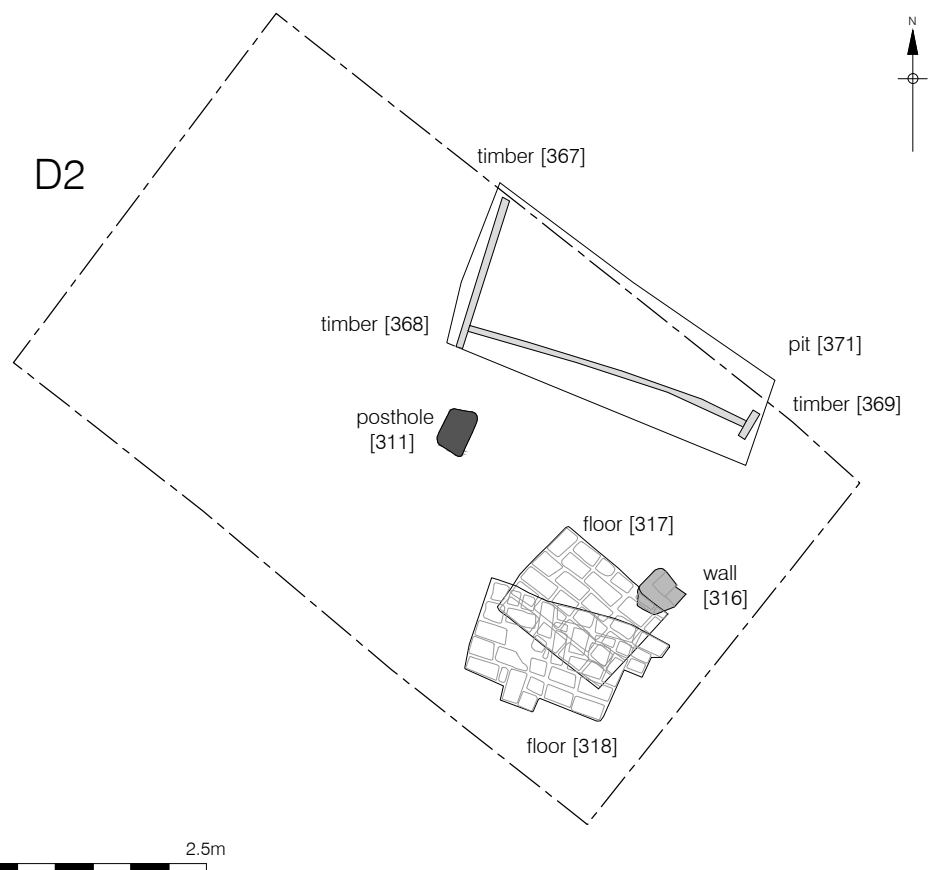
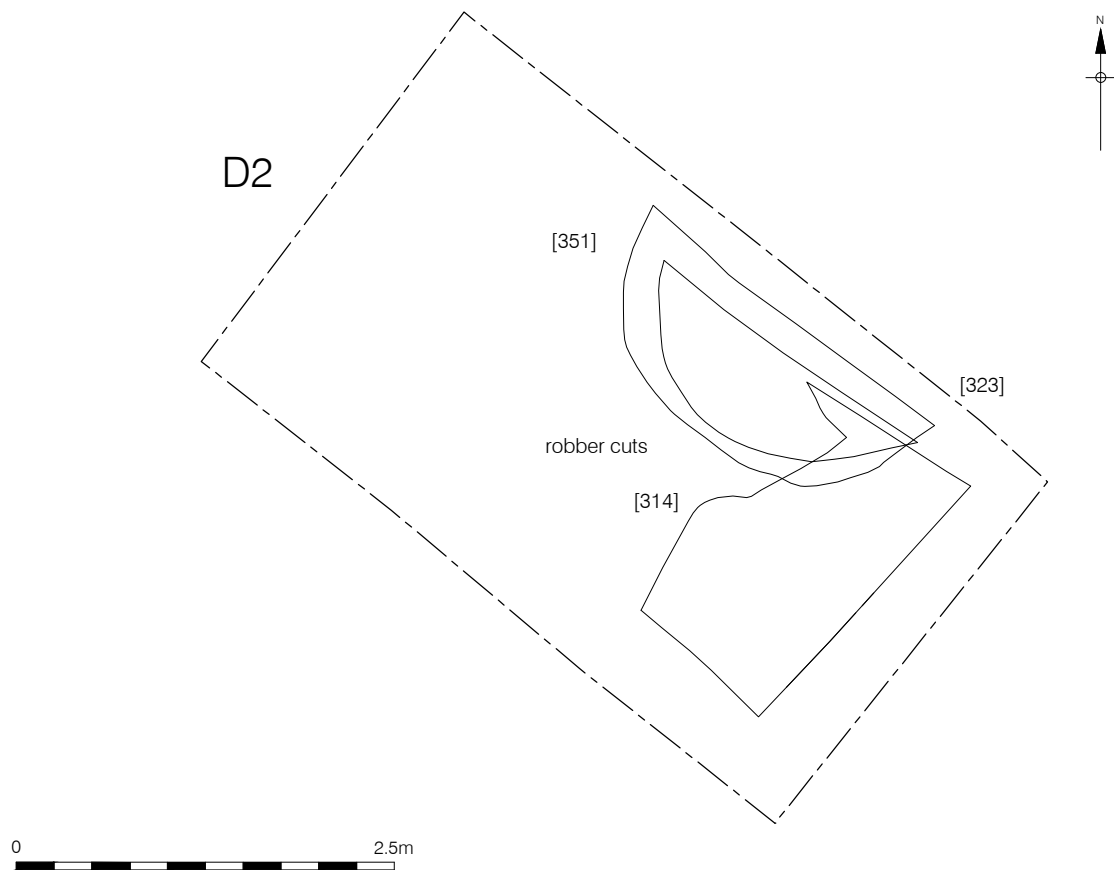


Figure 37  
Phase 5b: Trench D1  
1:50 at A4



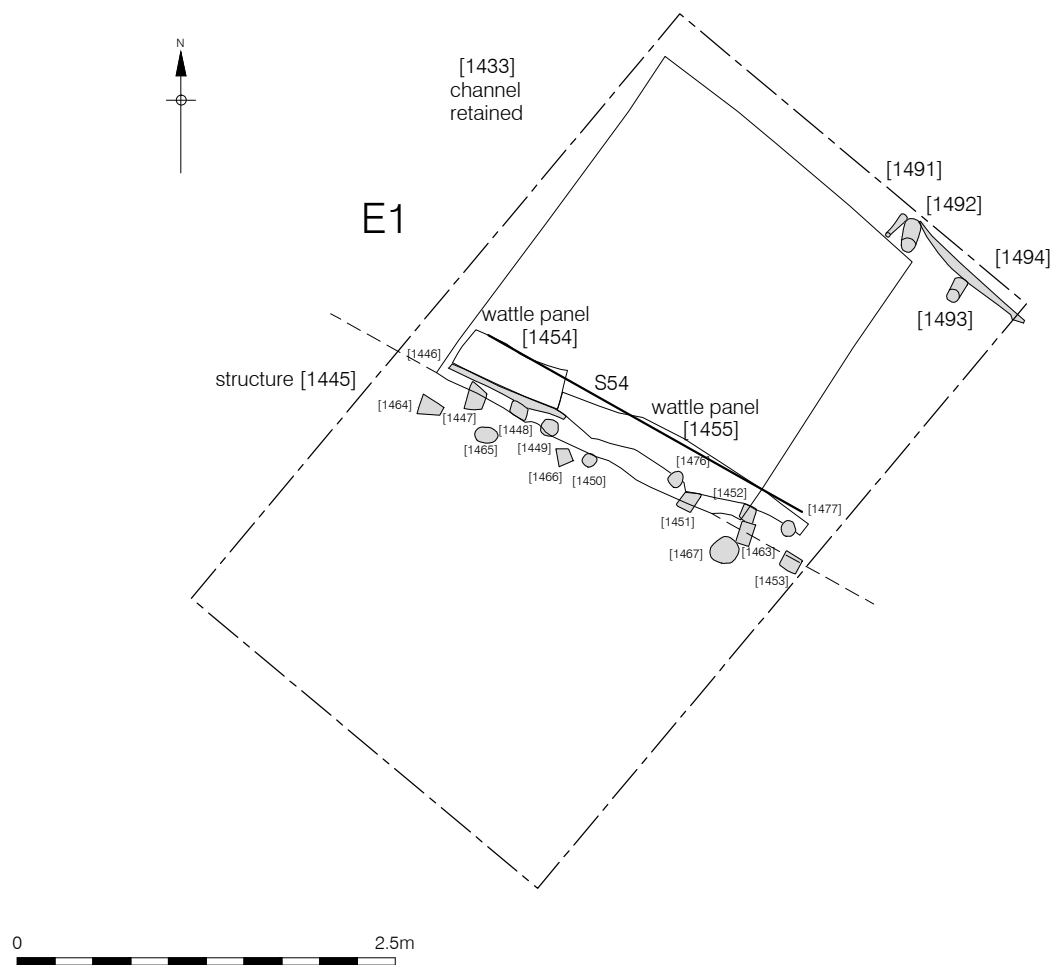
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Figure 38  
Phase 5bi: Trench D2  
1:50 at A4



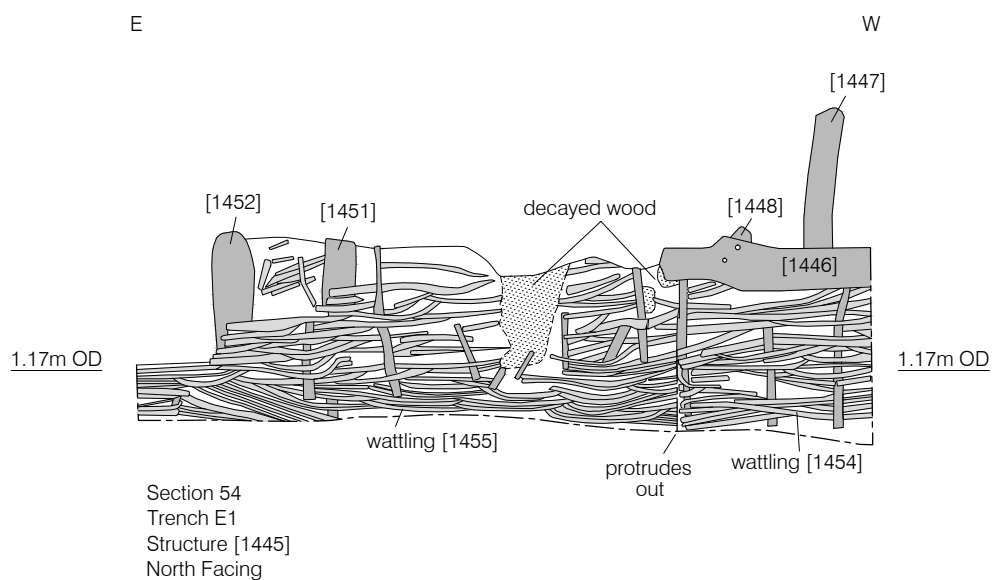
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Figure 39  
Phase 5bii: Trench D2  
1:50 at A4



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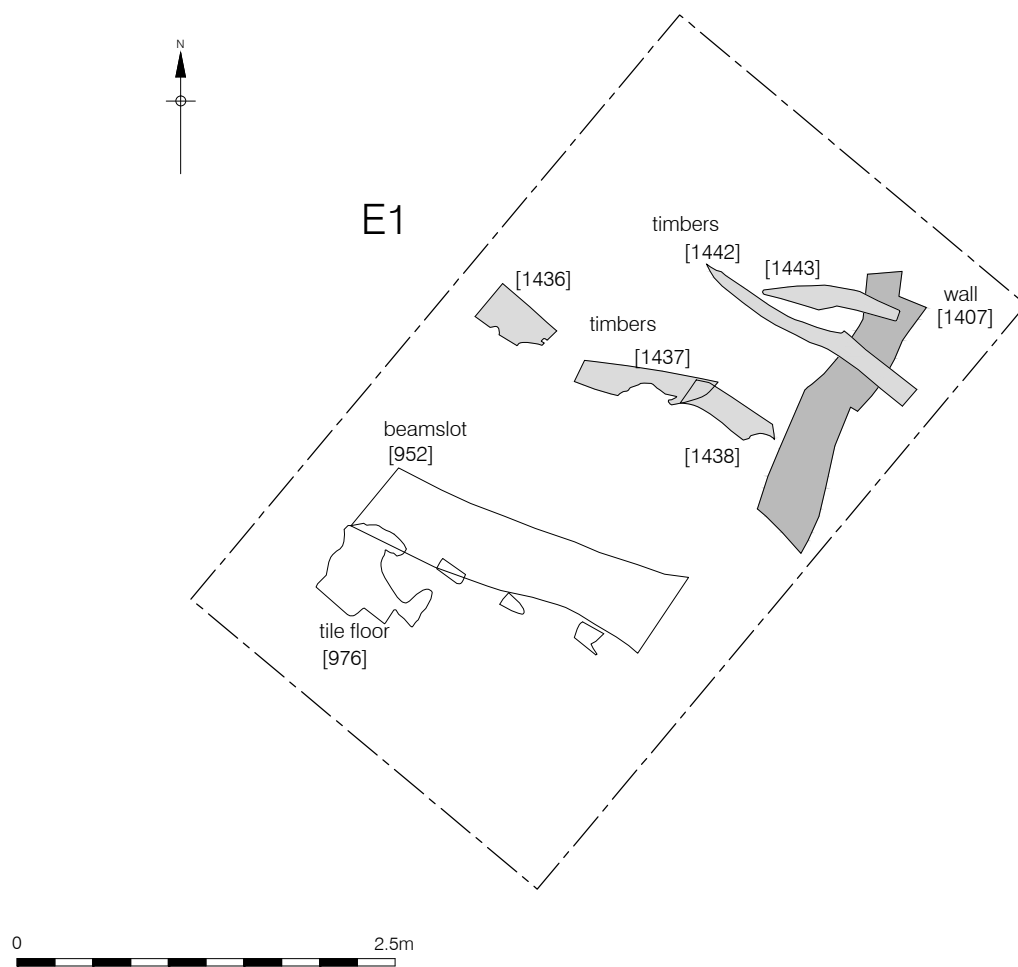
Figure 40  
Phase 5bi: Trench E1  
1:50 at A4



0 10m

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Figure 41  
Section 54  
1:25 at A4



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Figure 42  
Phase 5bii: Trench E1  
1:50 at A4



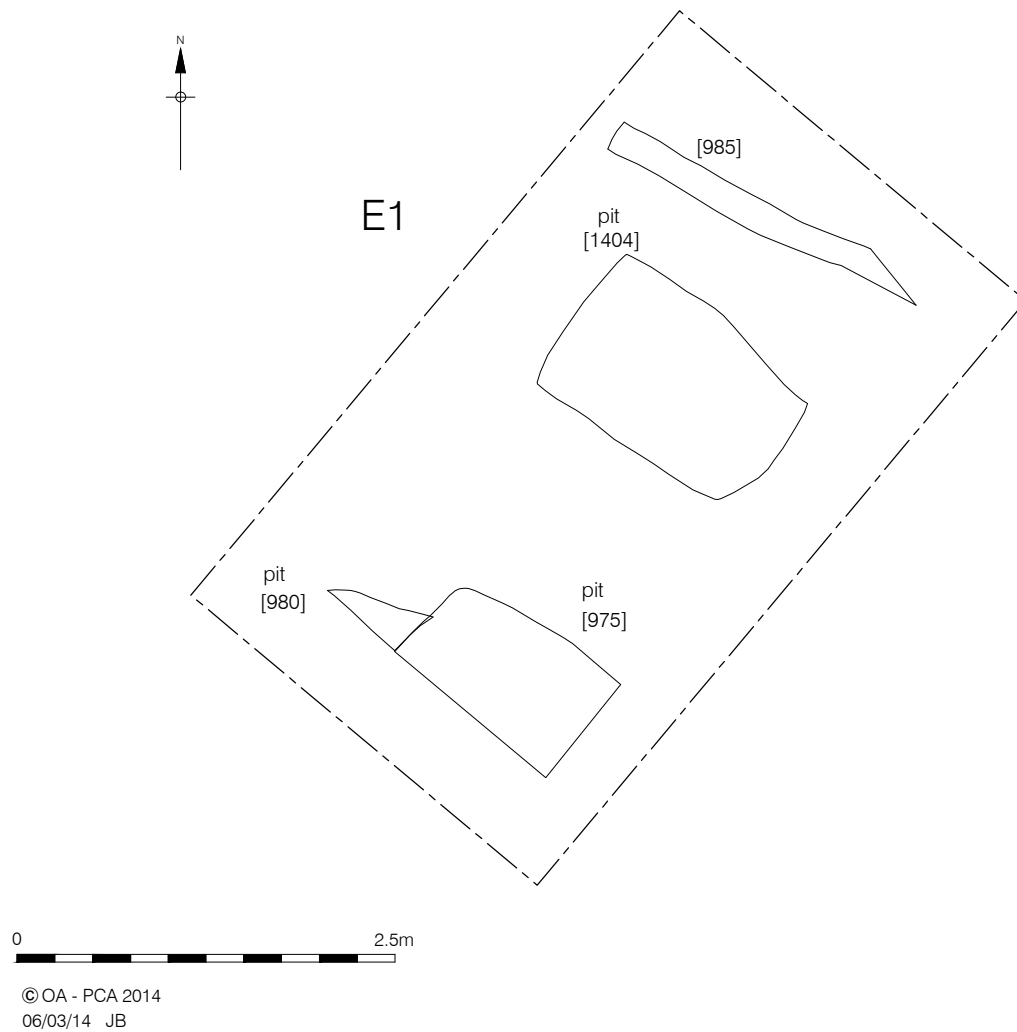


Figure 43  
Phase 5biii: Trench E1  
1:50 at A4

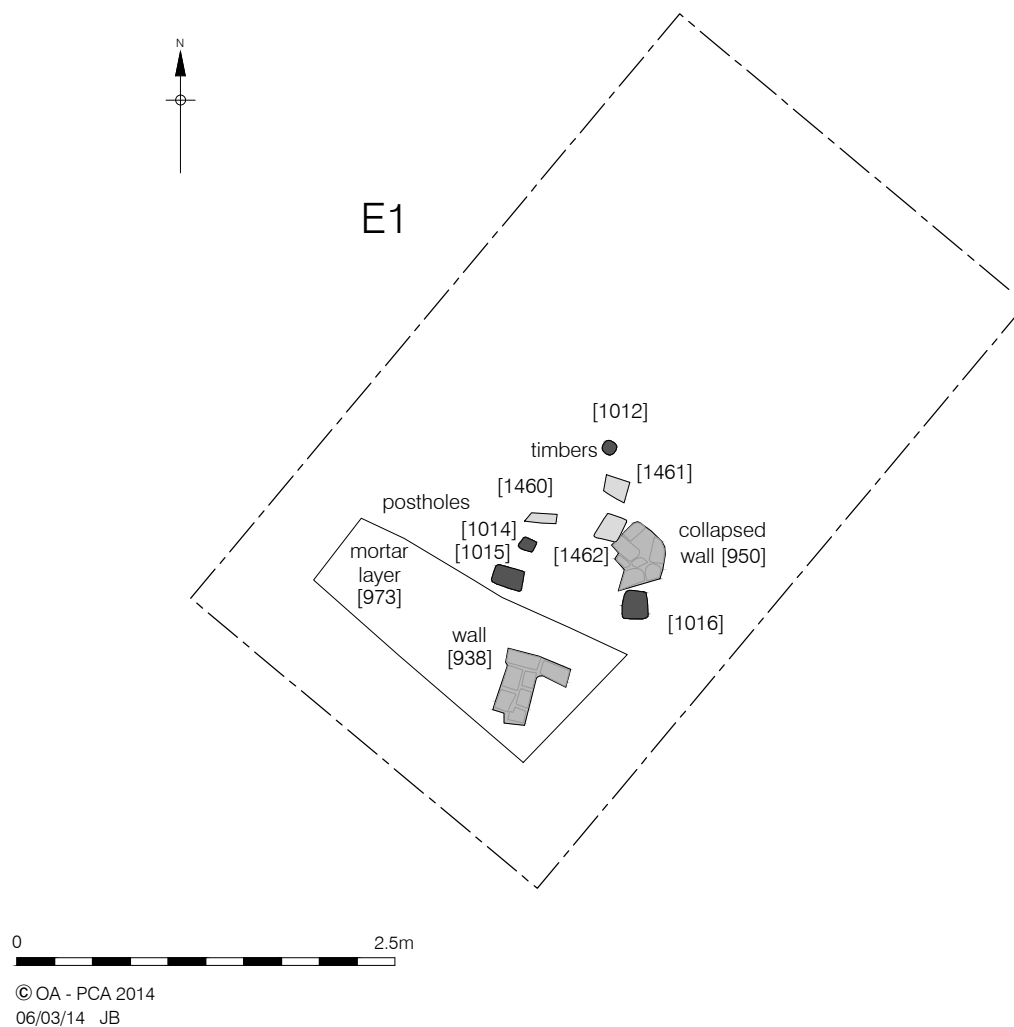


Figure 44  
Phase 5biv: Trench E1  
1:50 at A4

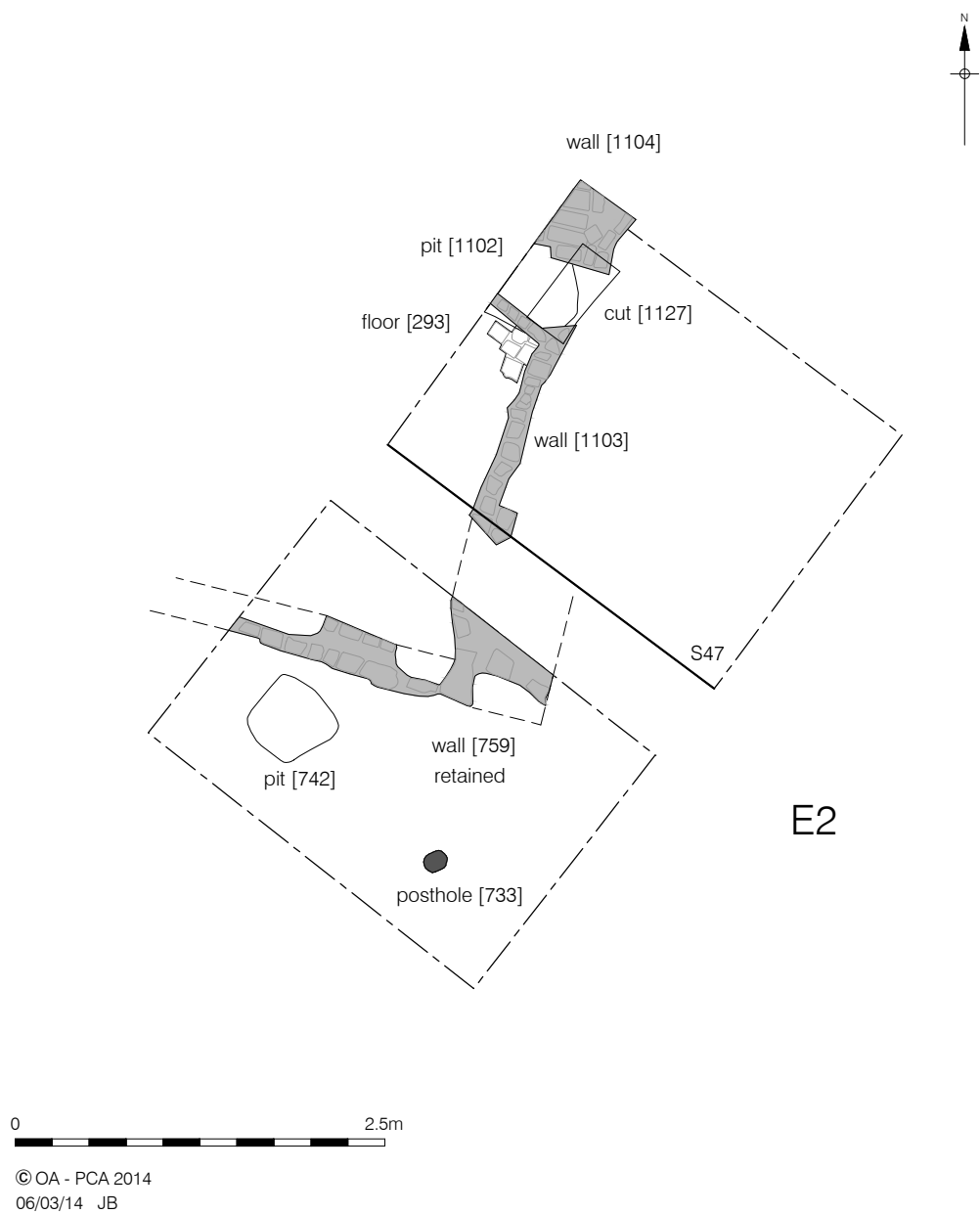
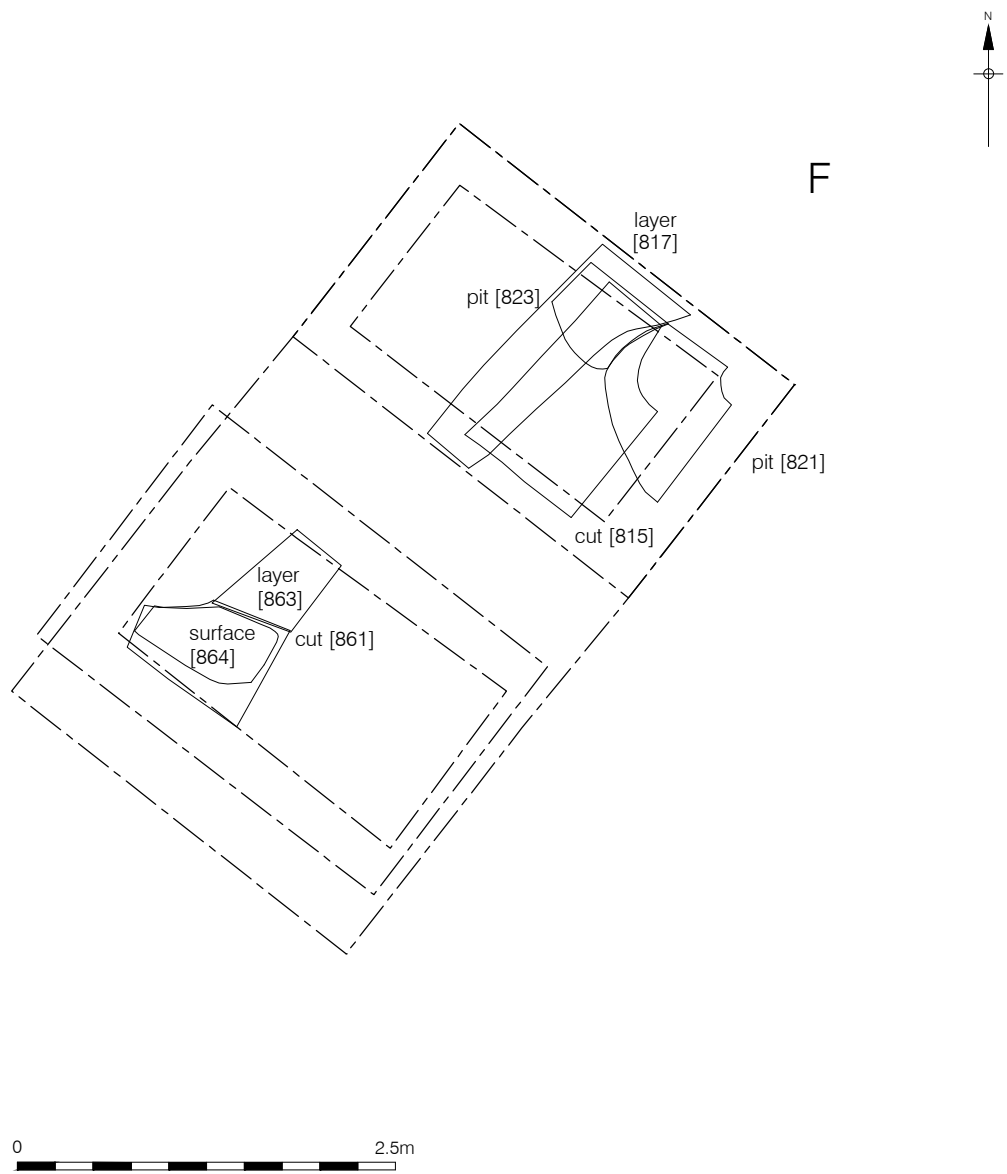


Figure 45  
Phase 5b: Trench E2  
1:50 at A4



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Figure 46  
Phase 5b: Trench F  
1:50 at A4

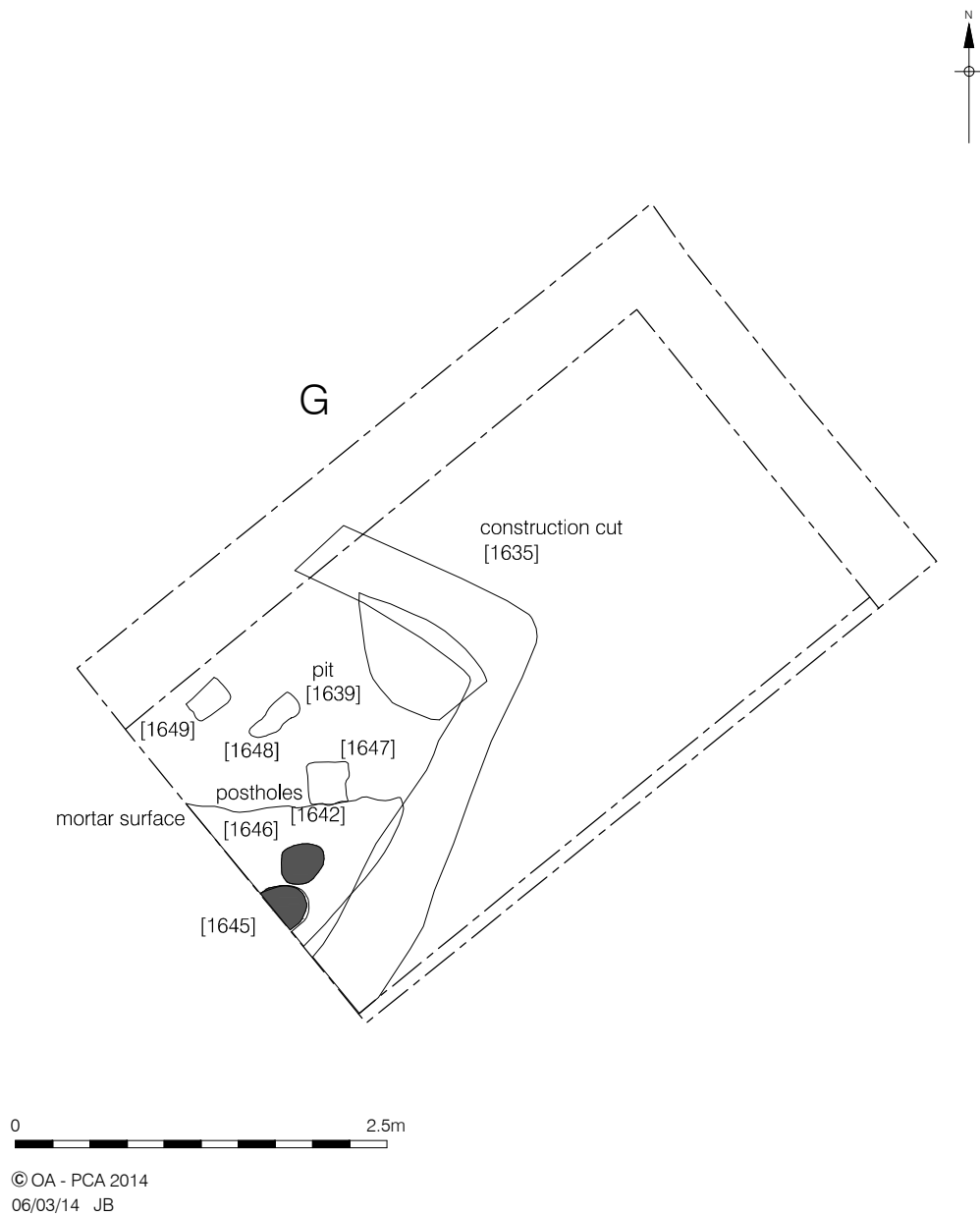
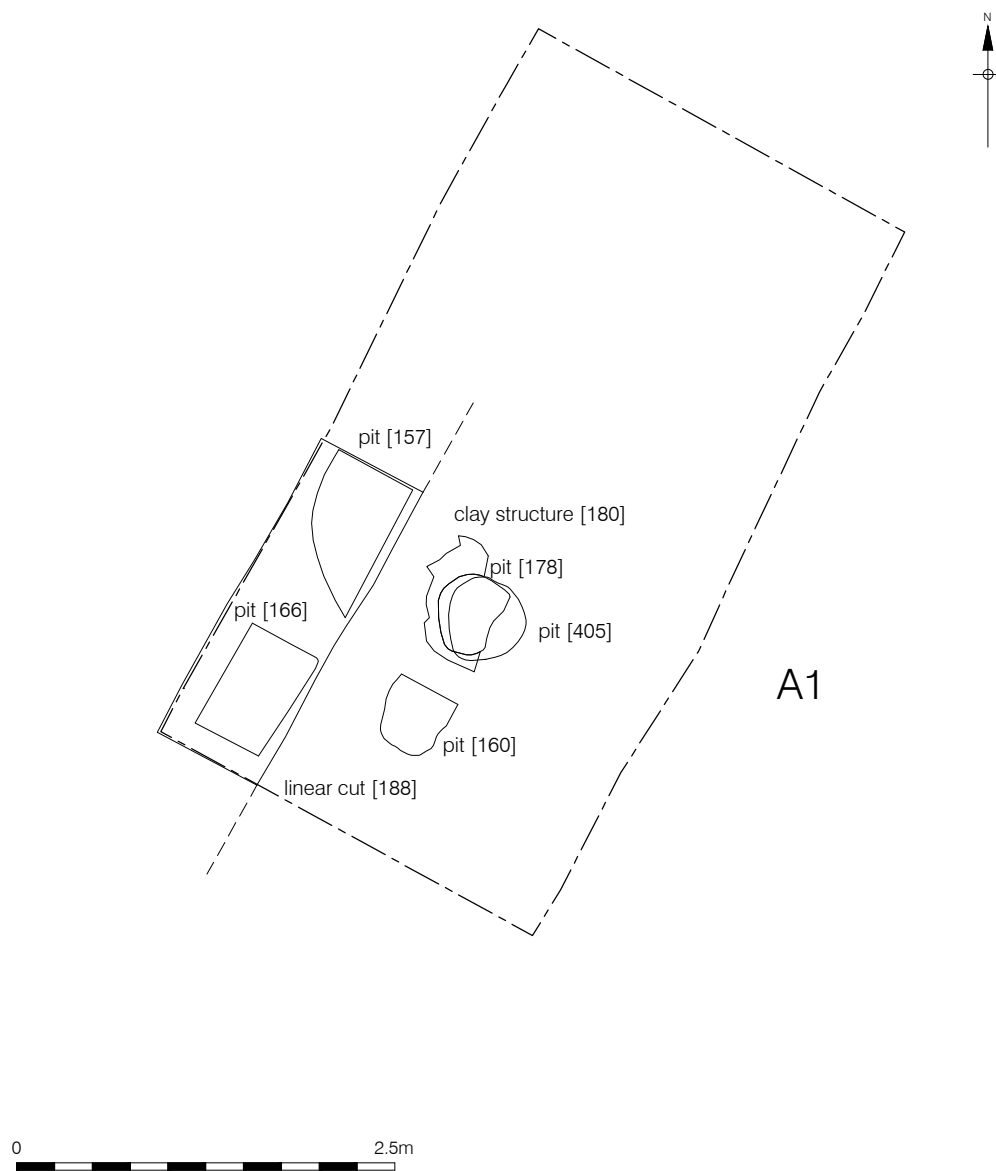
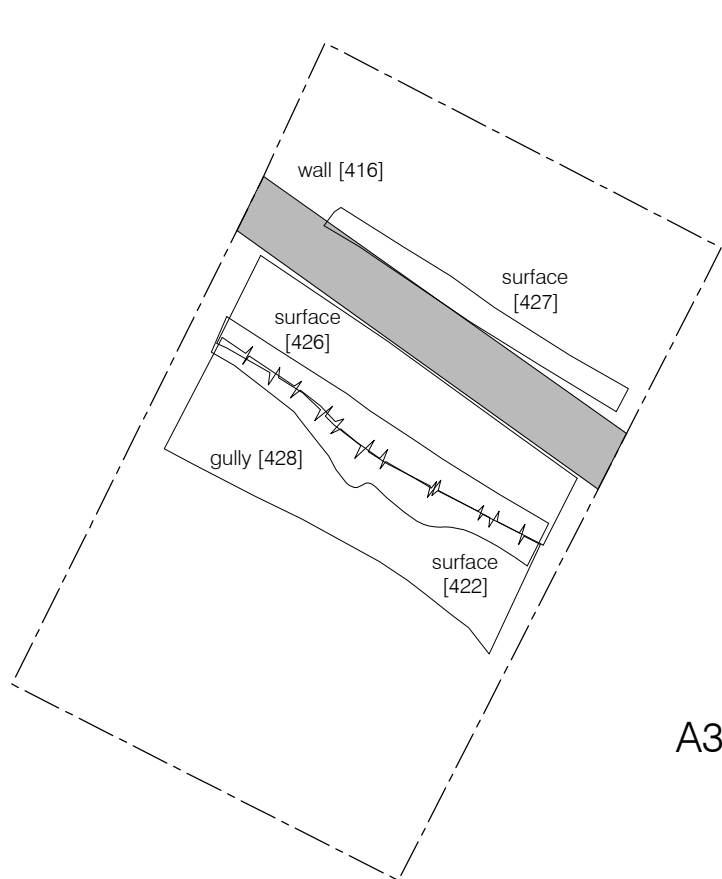


Figure 47  
Phase 5b: Trench G  
1:50 at A4



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Figure 48  
Phase 6a: Trench A1  
1:50 at A4

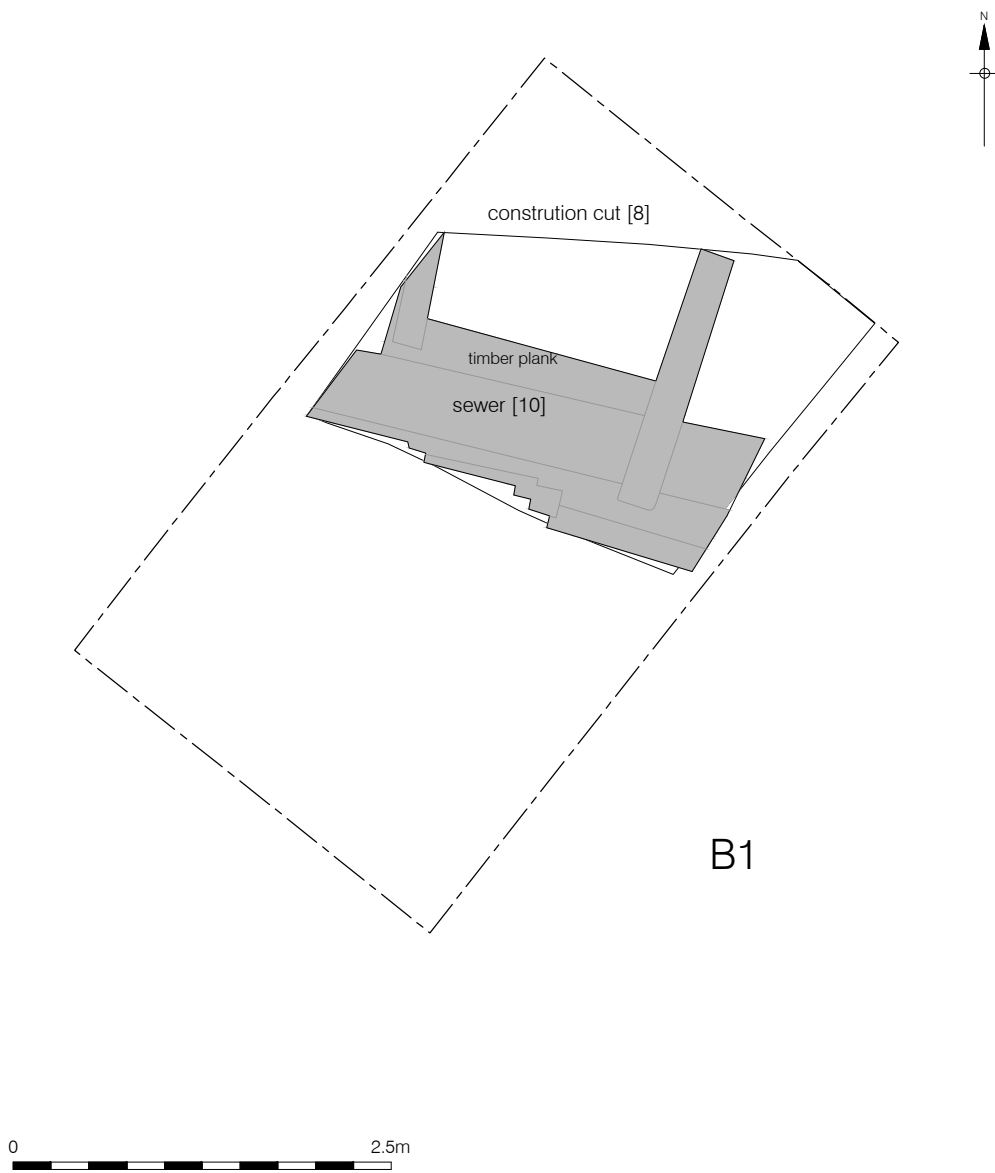


A3



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Figure 49  
Phase 6a: Trench A3  
1:50 at A4



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Figure 50  
Phase 6a: Trench B1  
1:50 at A4



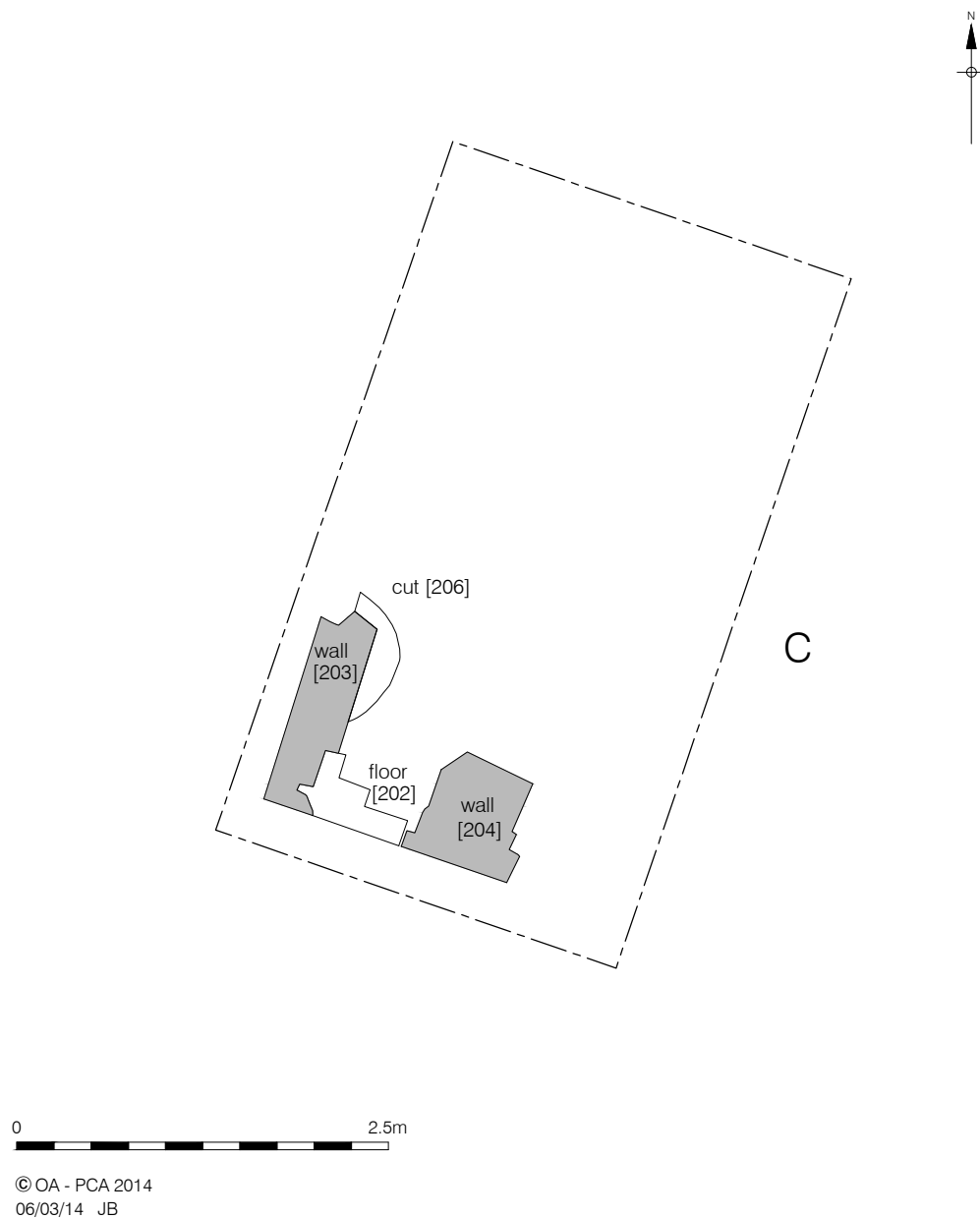
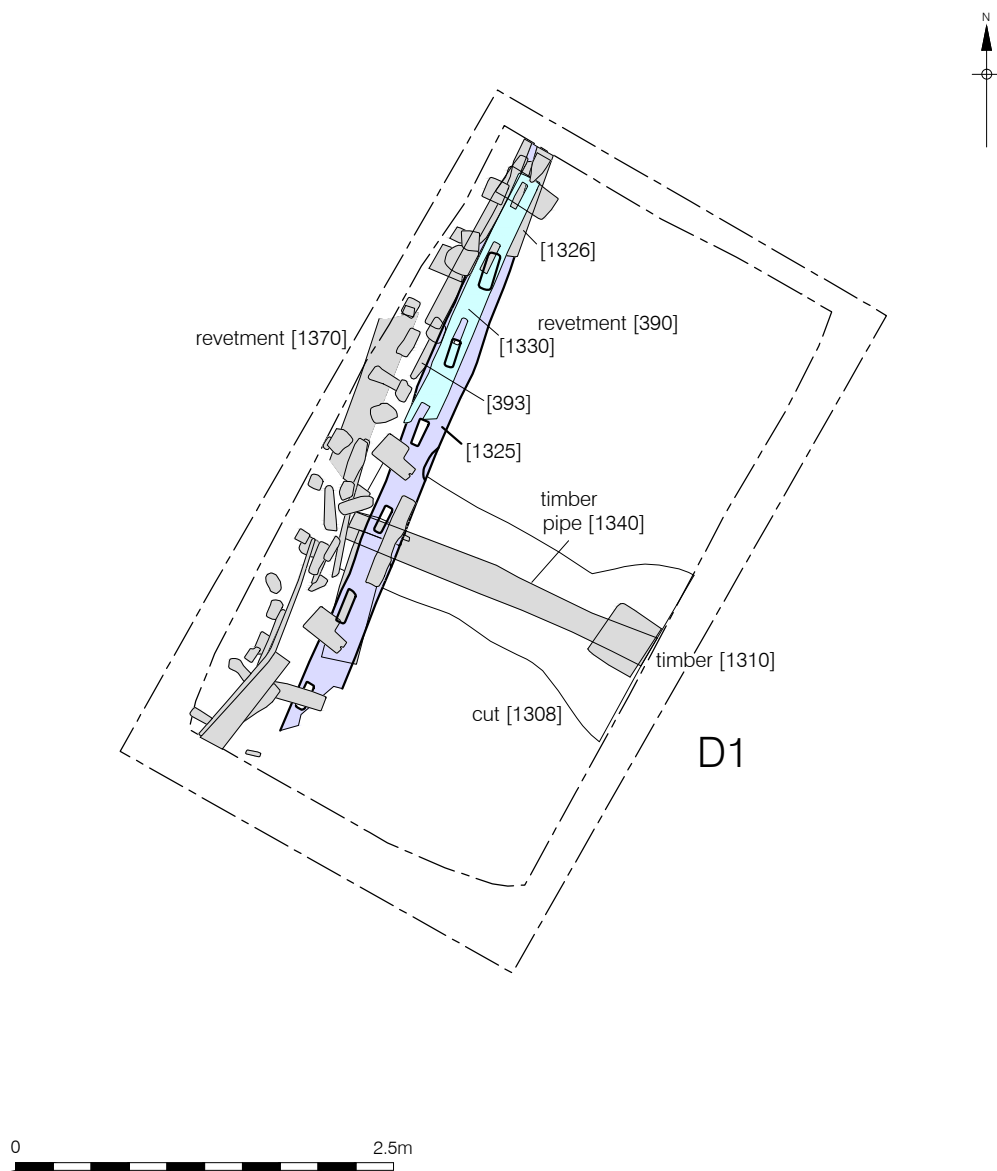


Figure 51  
Phase 6a: Trench C  
1:50 at A4



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Figure 52  
Phase 6a: Trench D1  
1:50 at A4

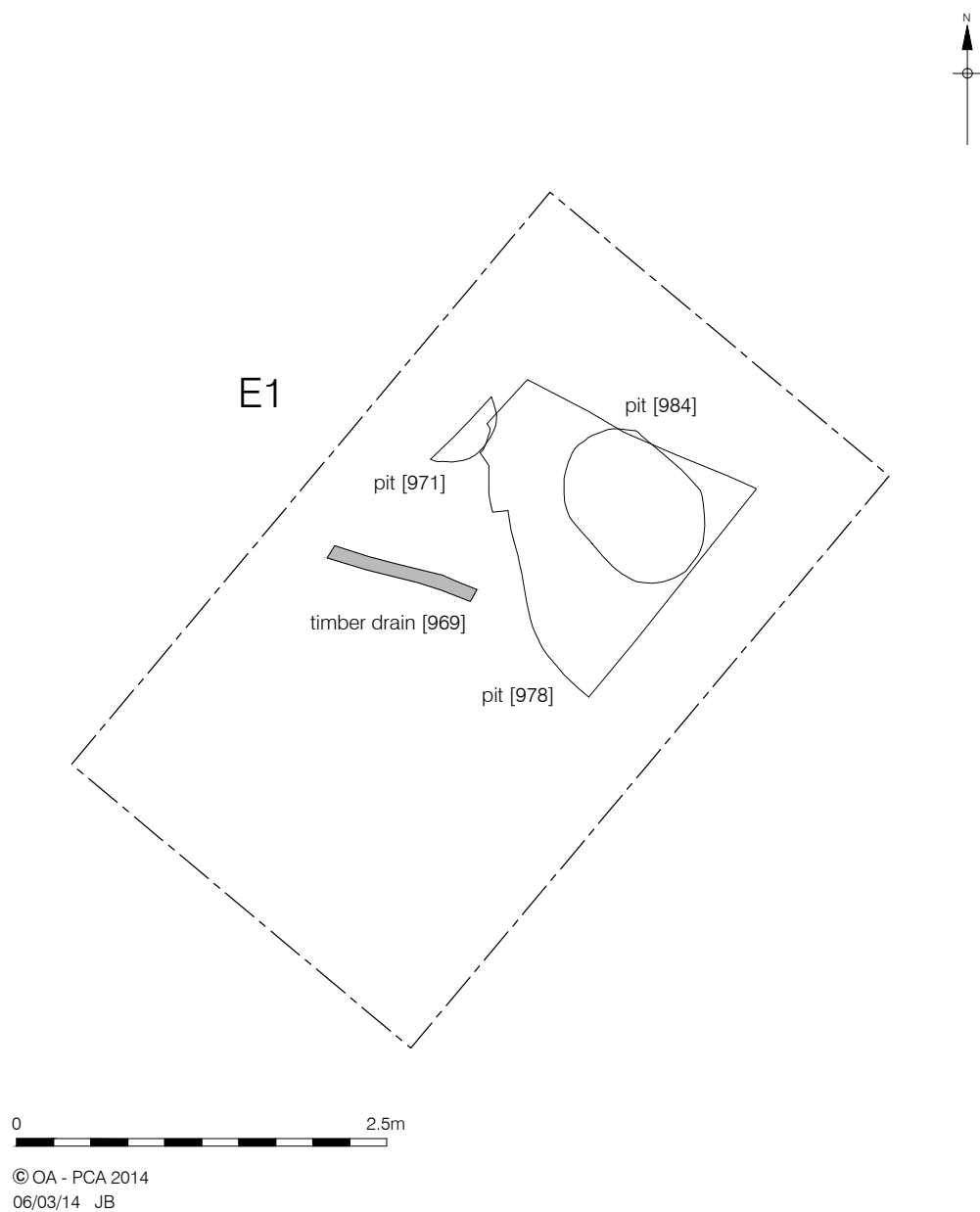
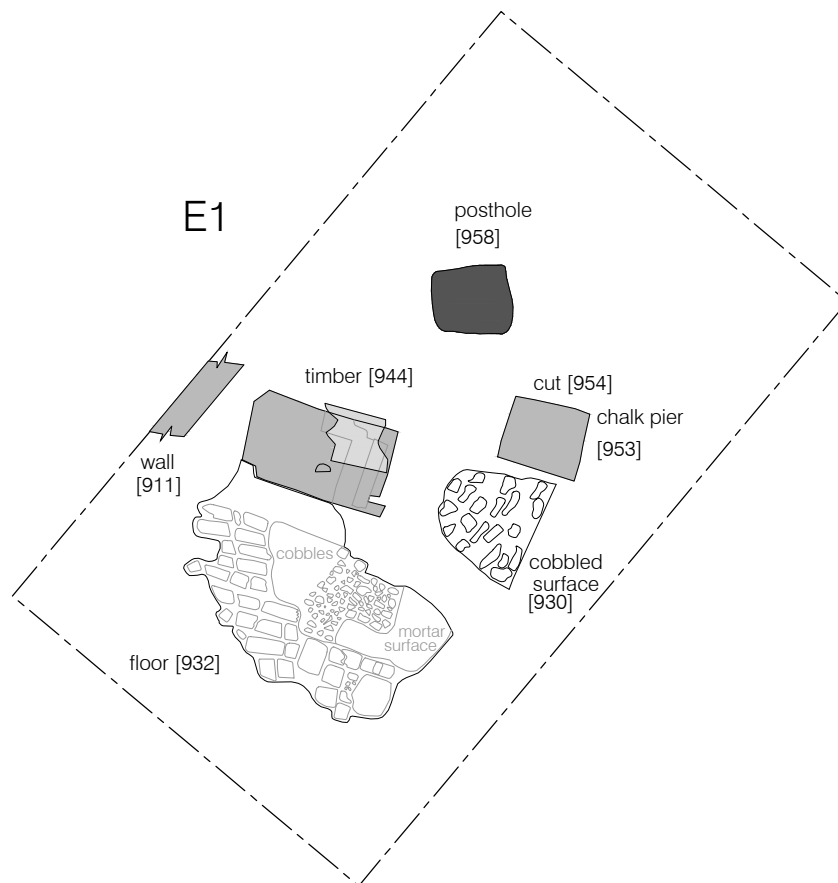


Figure 53  
Phase 6ai: Trench E1  
1:50 at A4



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Figure 54  
Phase 6a: Trench E1  
1:50 at A4

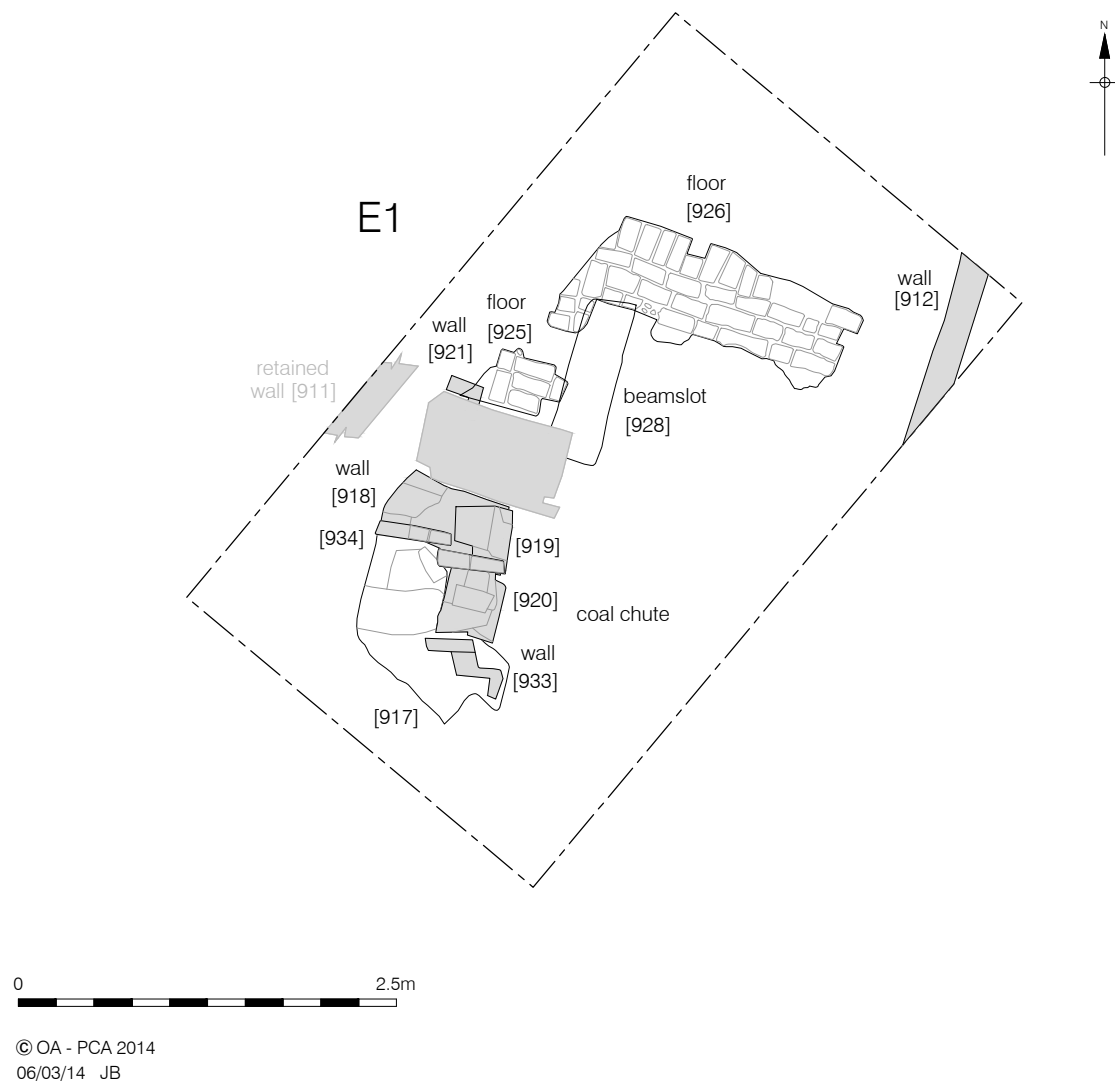


Figure 55  
Phase 6aiii: Trench E1  
1:50 at A4

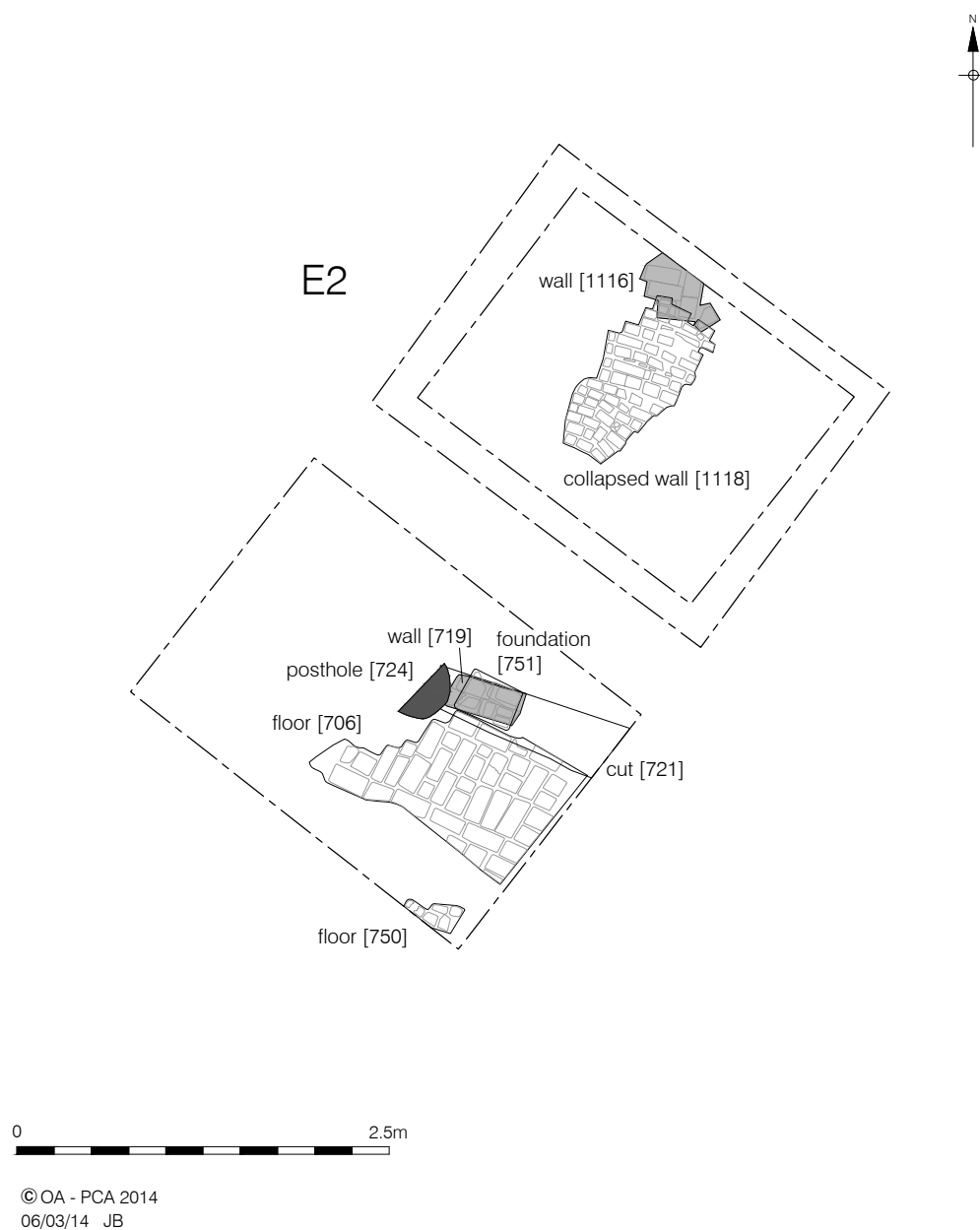
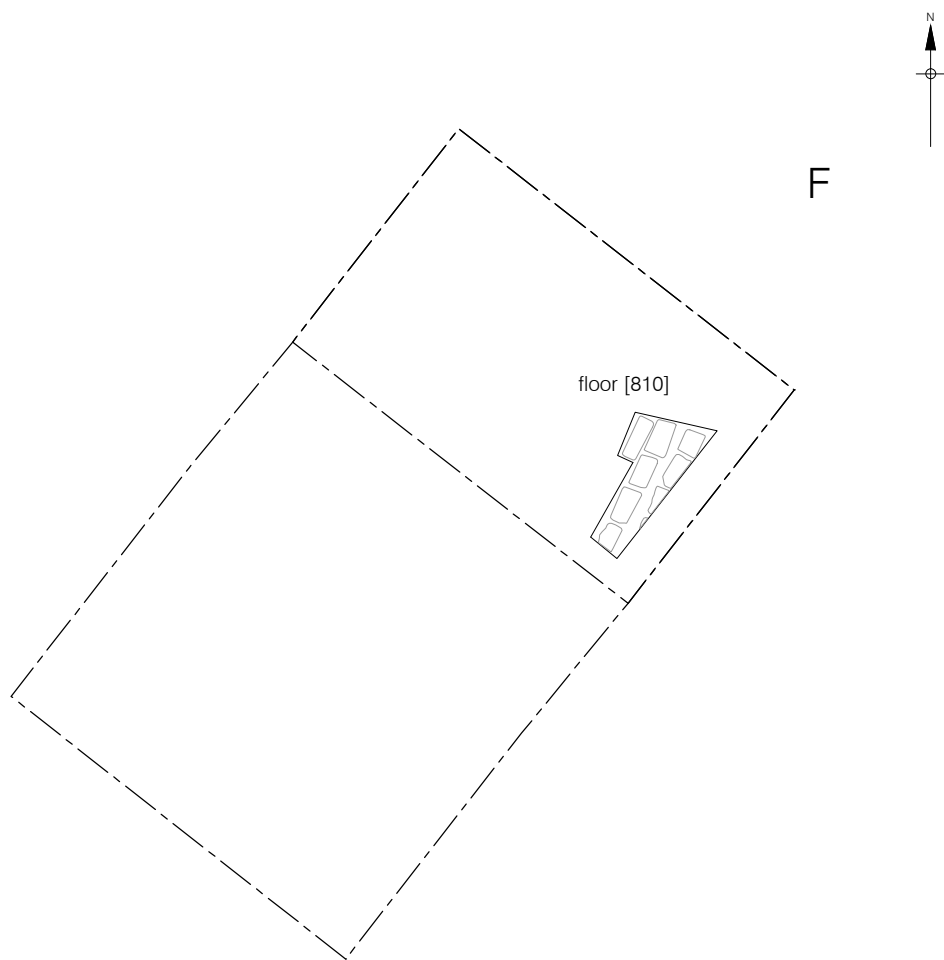


Figure 56  
Phase 6a: Trench E2  
1:50 at A4



0 2.5m

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Figure 57  
Phase 6a: Trench F  
1:50 at A4

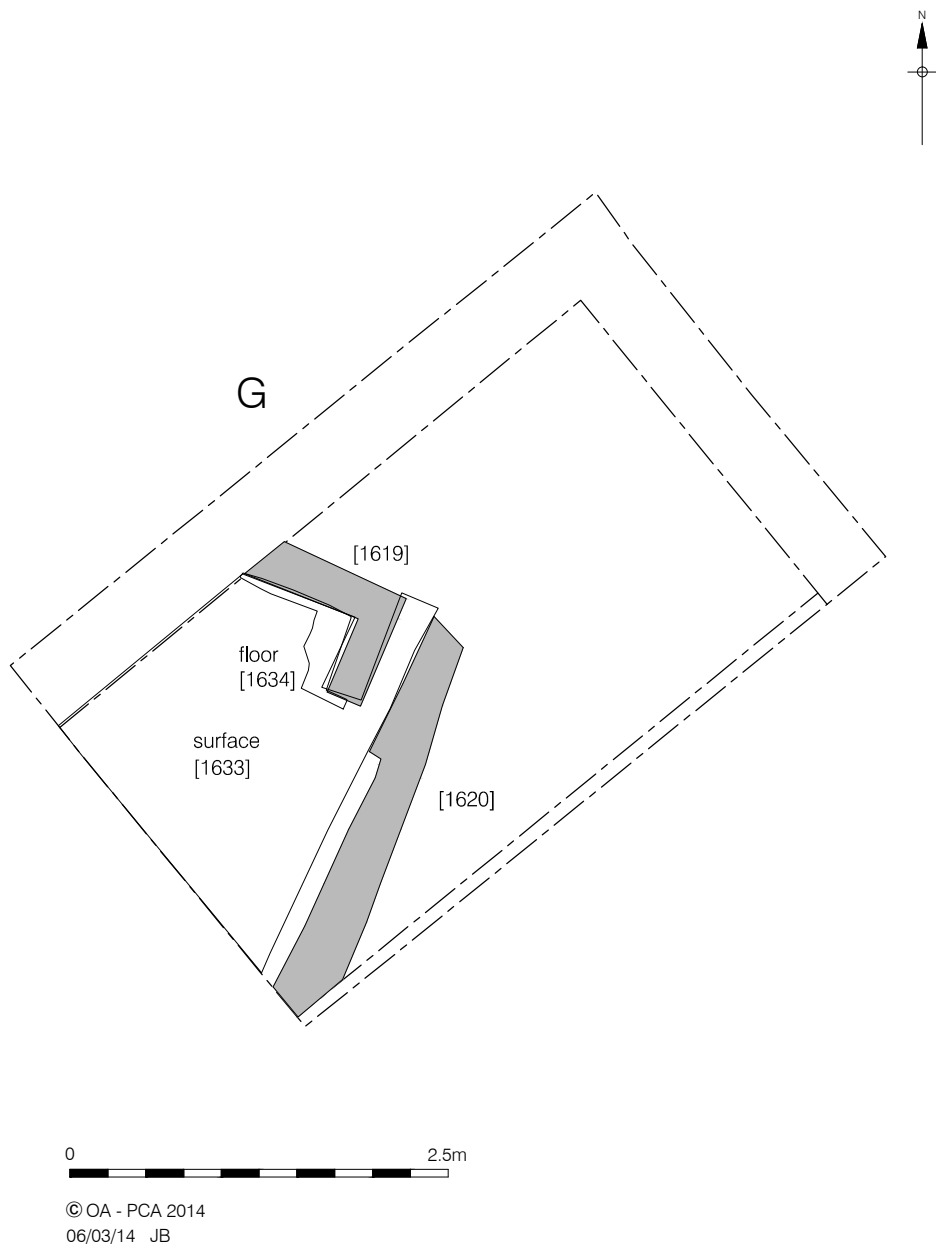
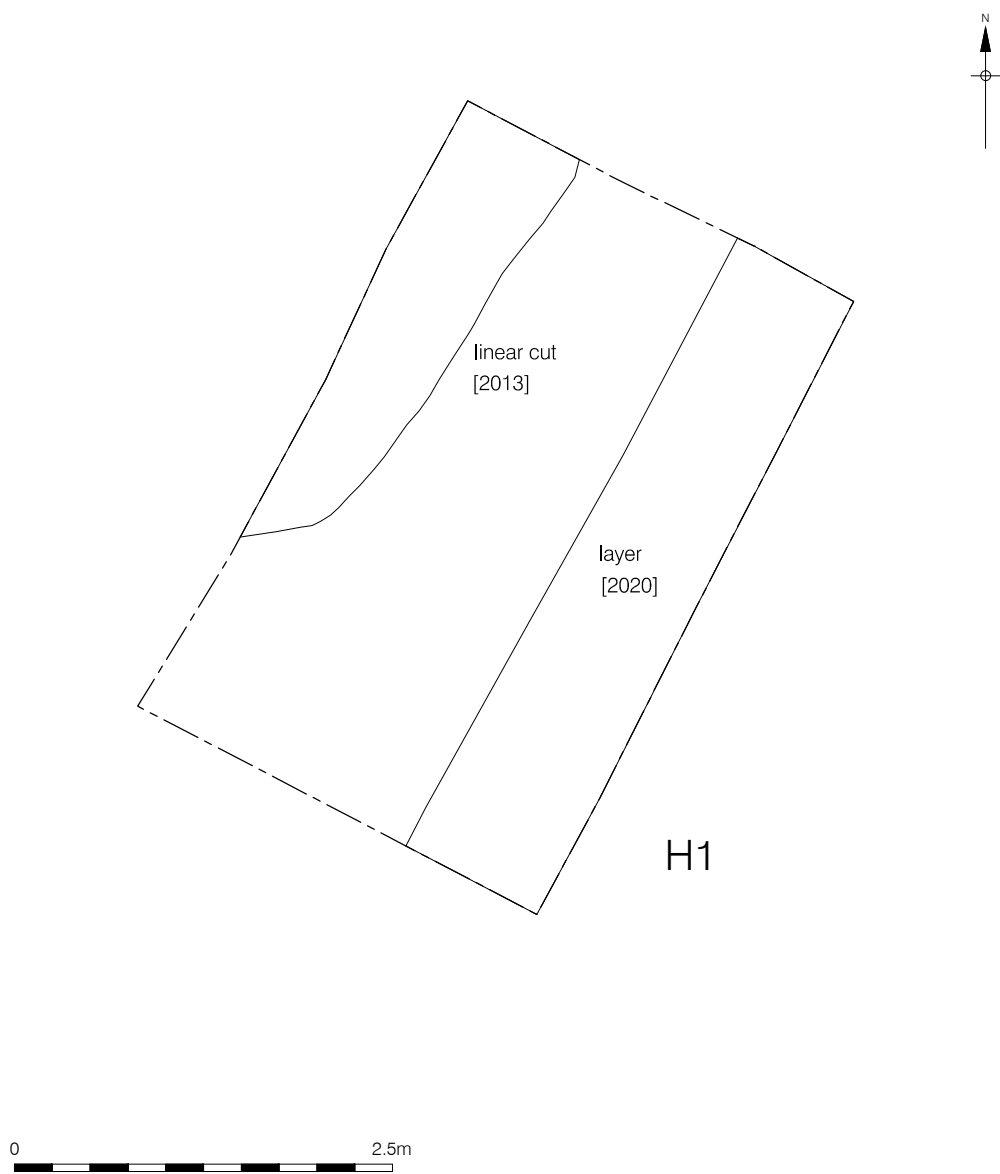


Figure 58  
Phase 6a: Trench G  
1:50 at A4





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Figure 59  
Phase 6a: Trench H1  
1:50 at A4

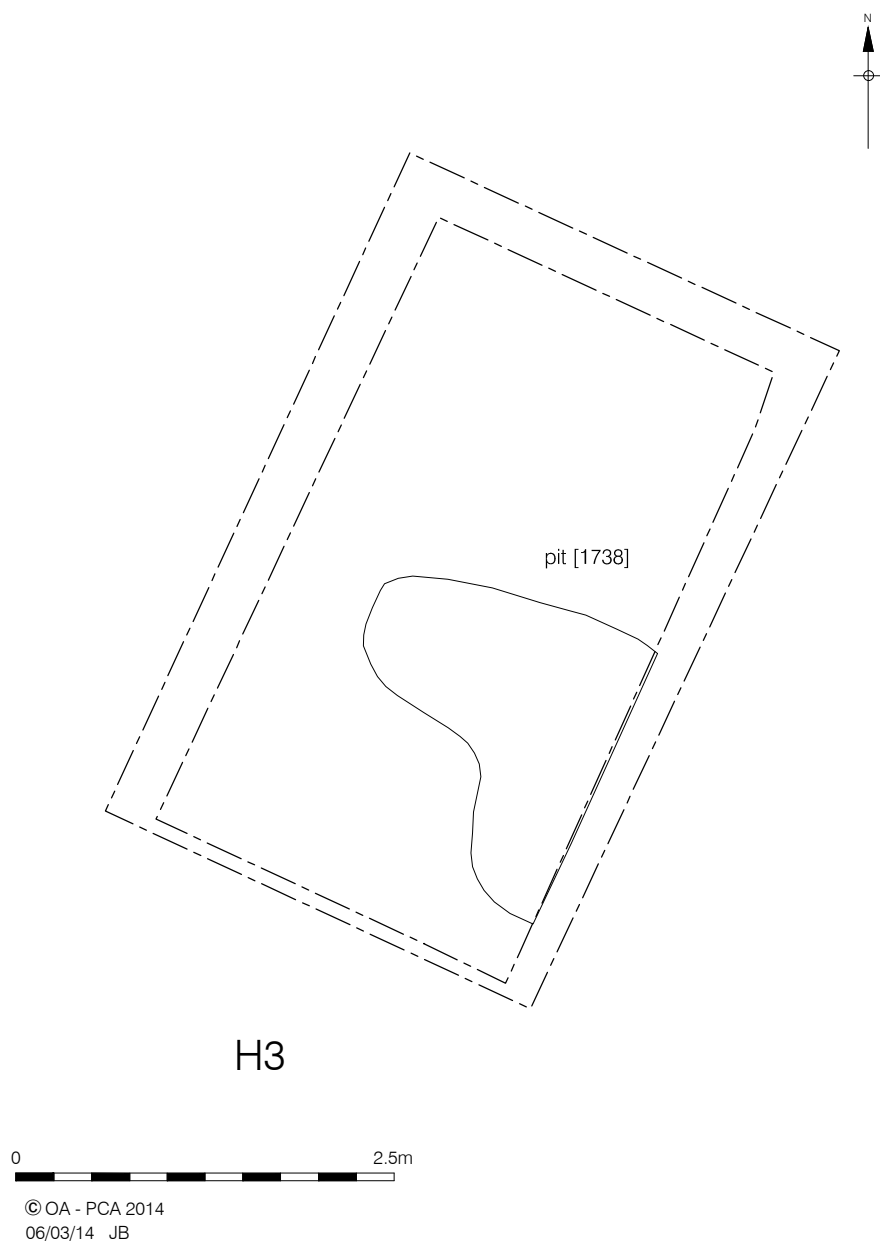


Figure 60  
Phase 6a: Trench H3  
1:50 at A4

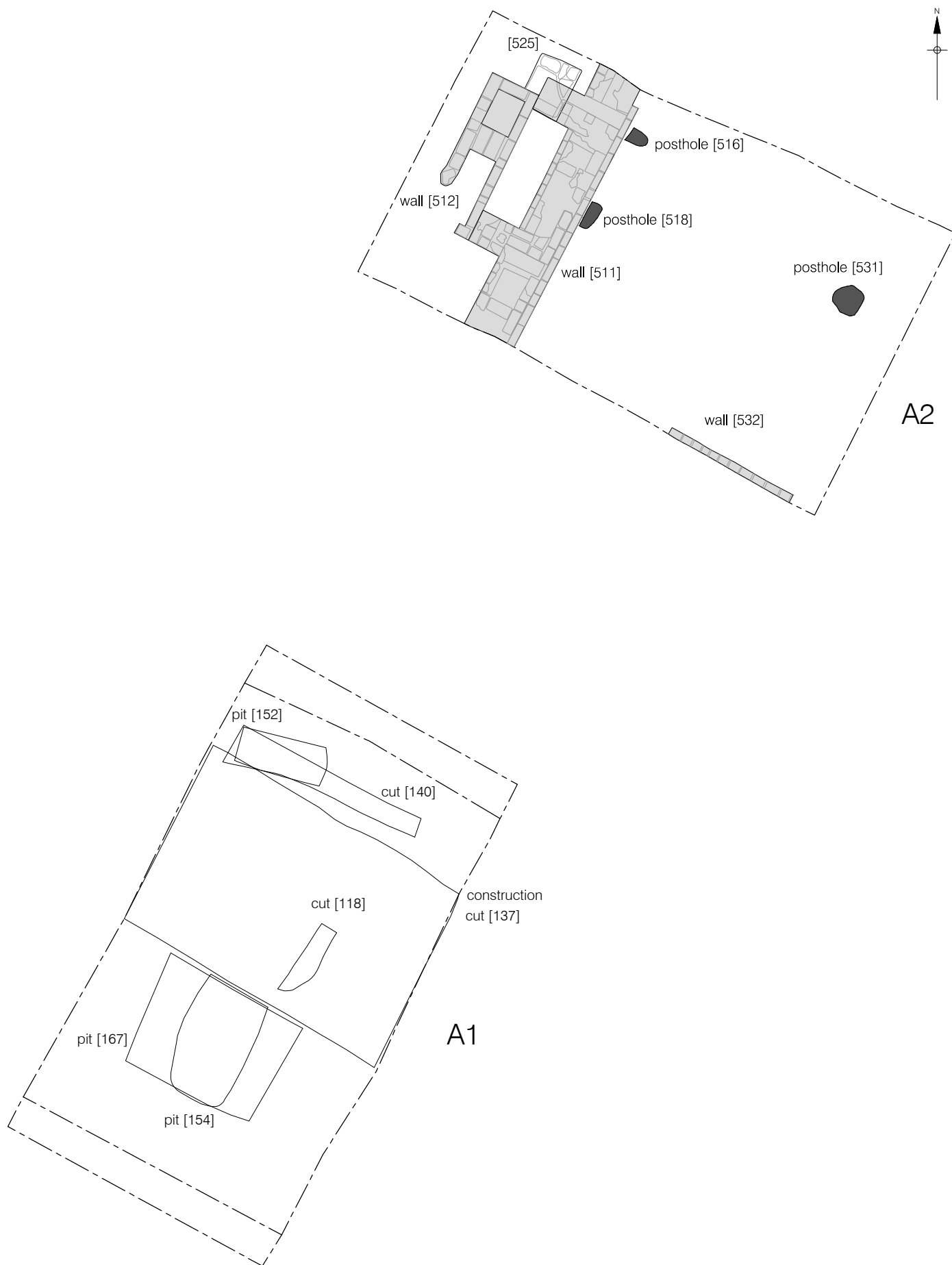


Figure 61  
 Phase 6b: Trench A1 and A2  
 1:50 at A4

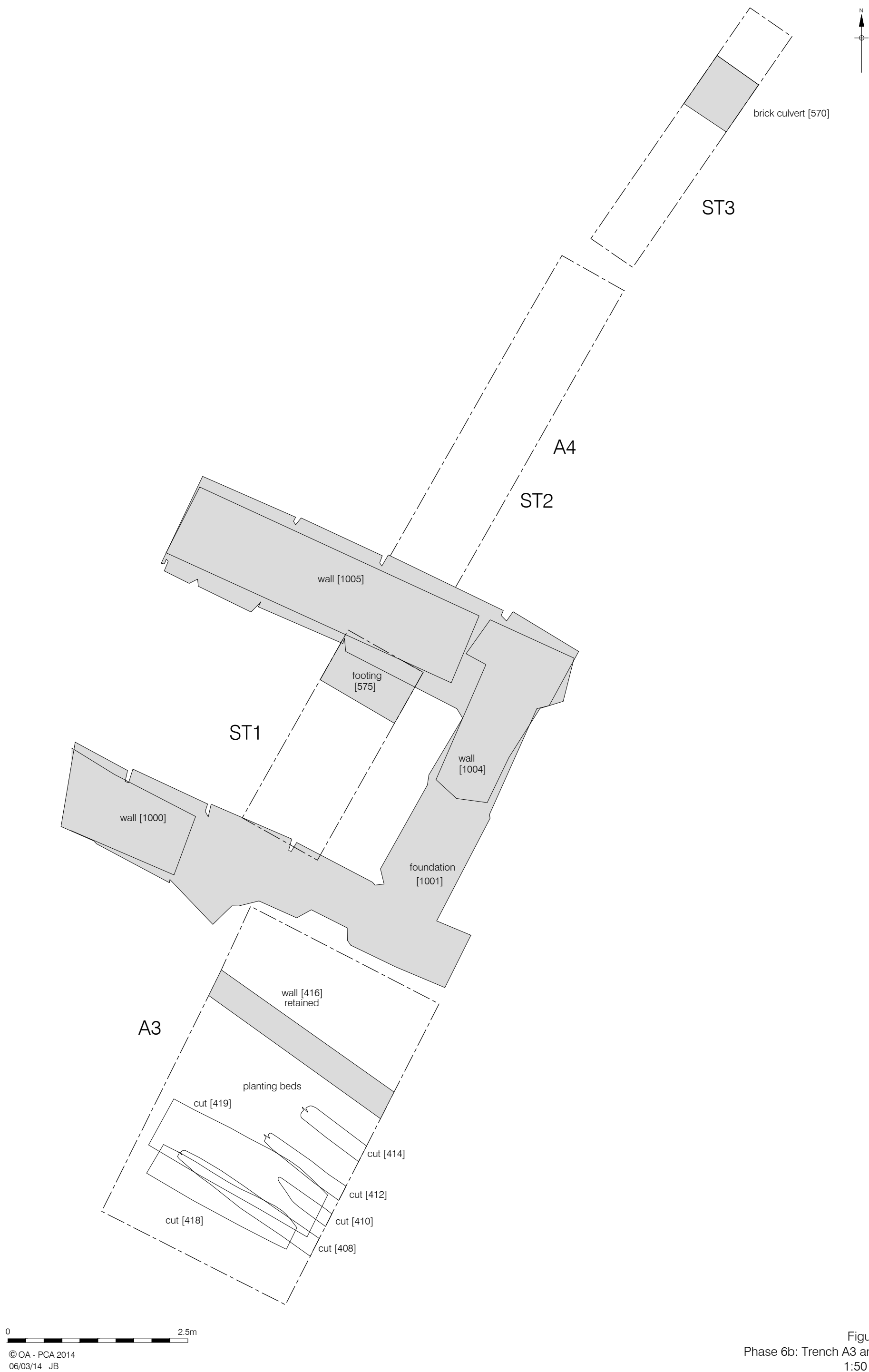
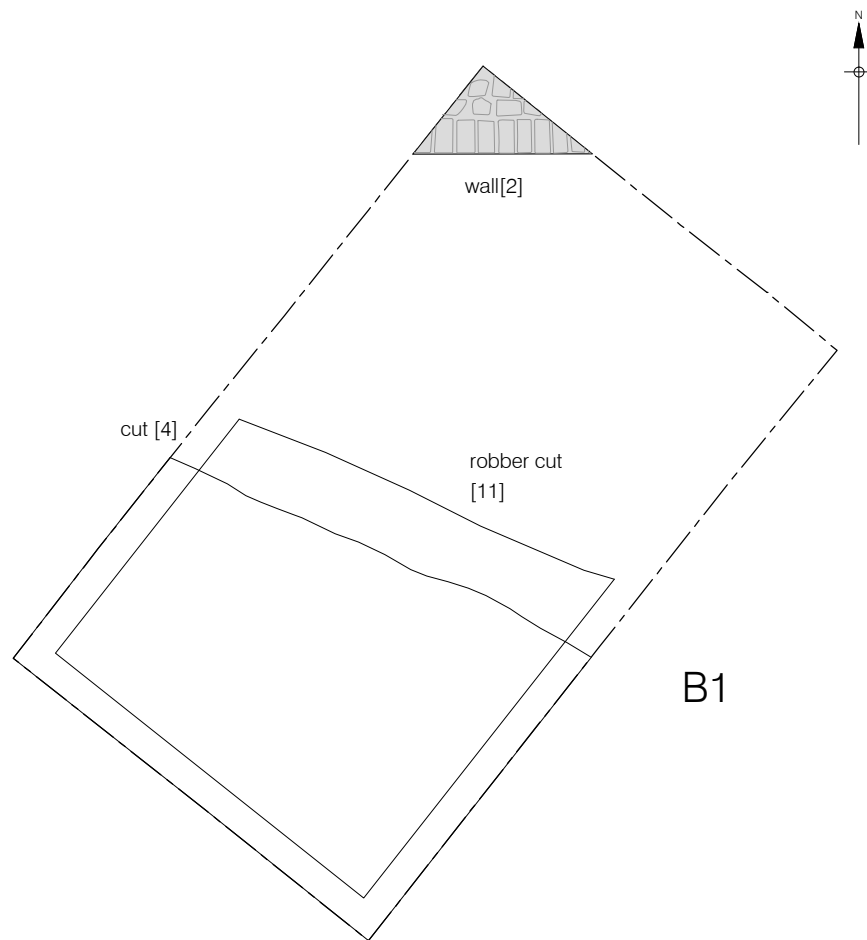


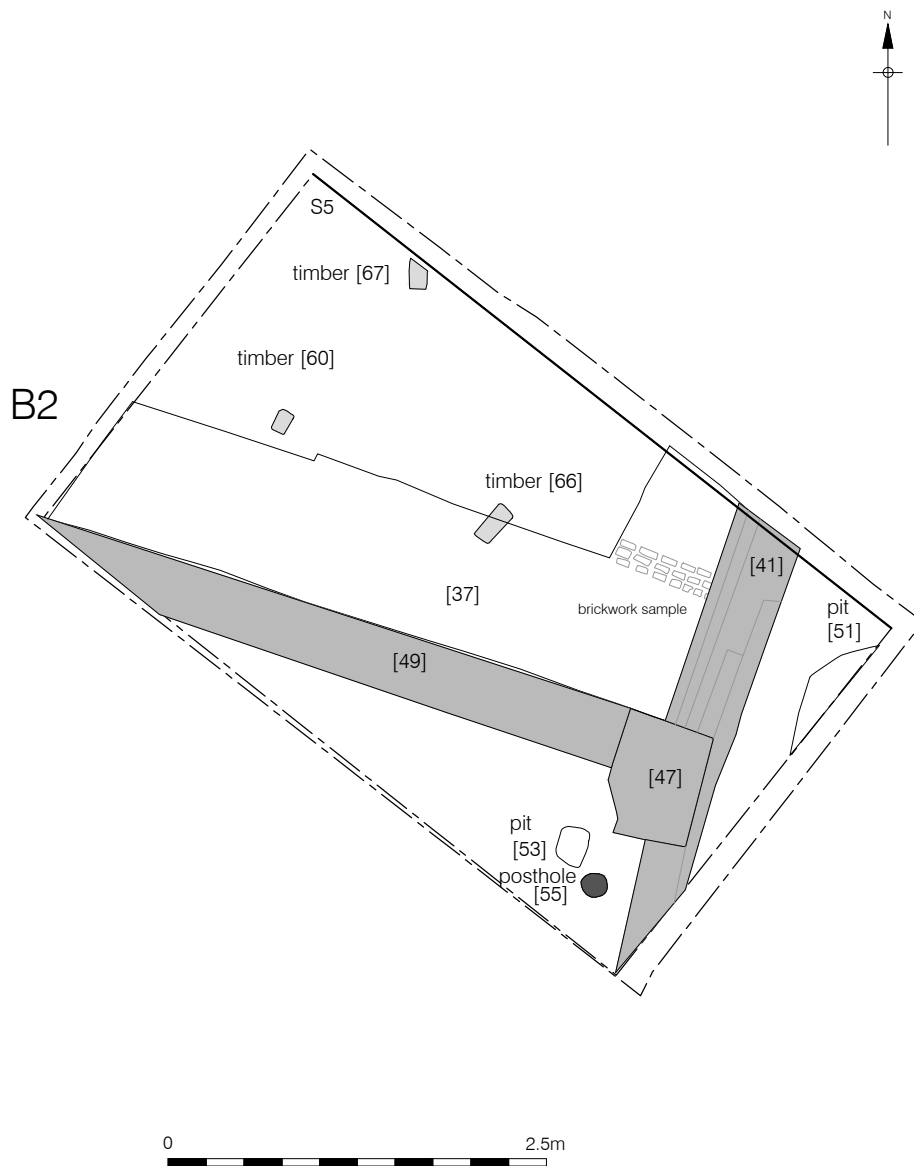
Figure 62  
Phase 6b: Trench A3 and A4  
1:50 at A3



0 2.5m

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Figure 63  
Phase 6b: Trench B1  
1:50 at A4



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Figure 64  
Phase 6bi: Trench B2  
1:50 at A4

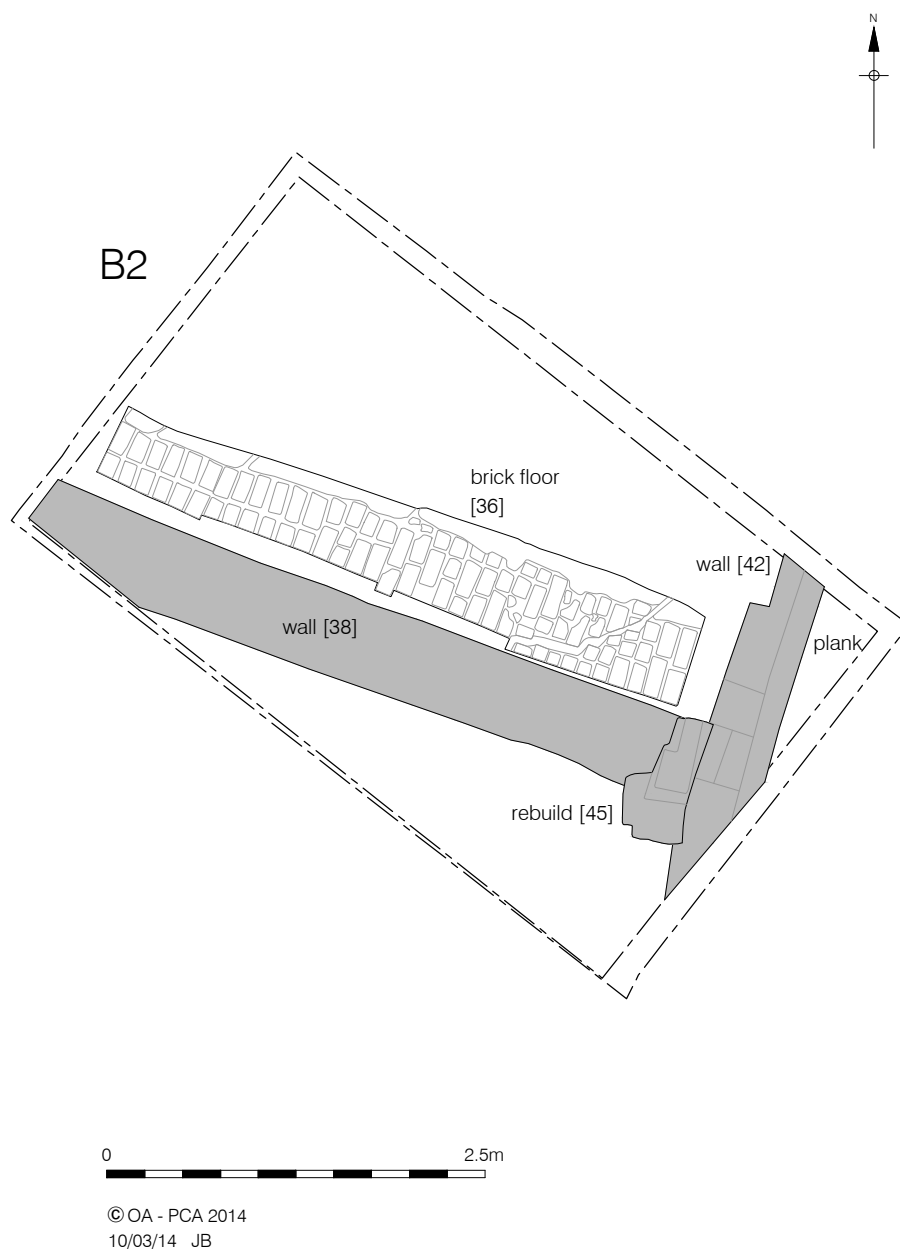
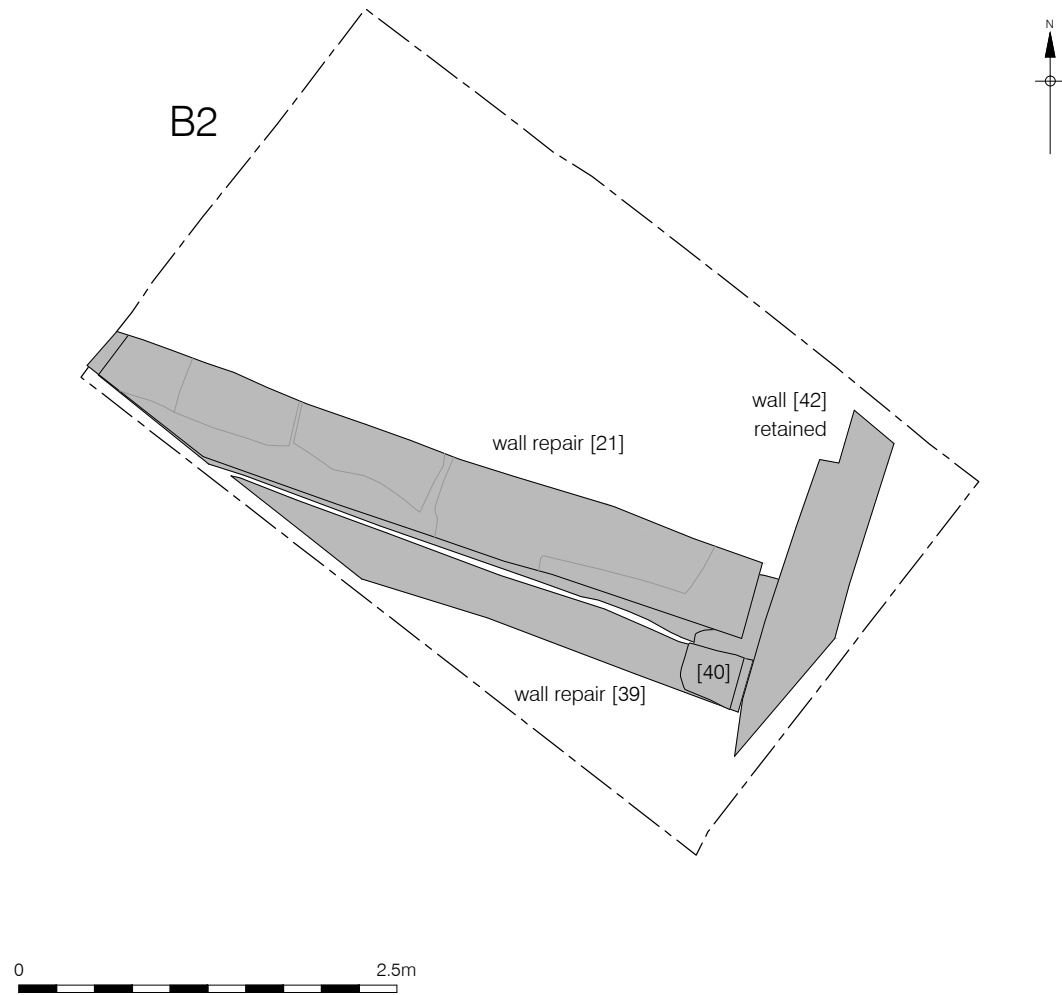


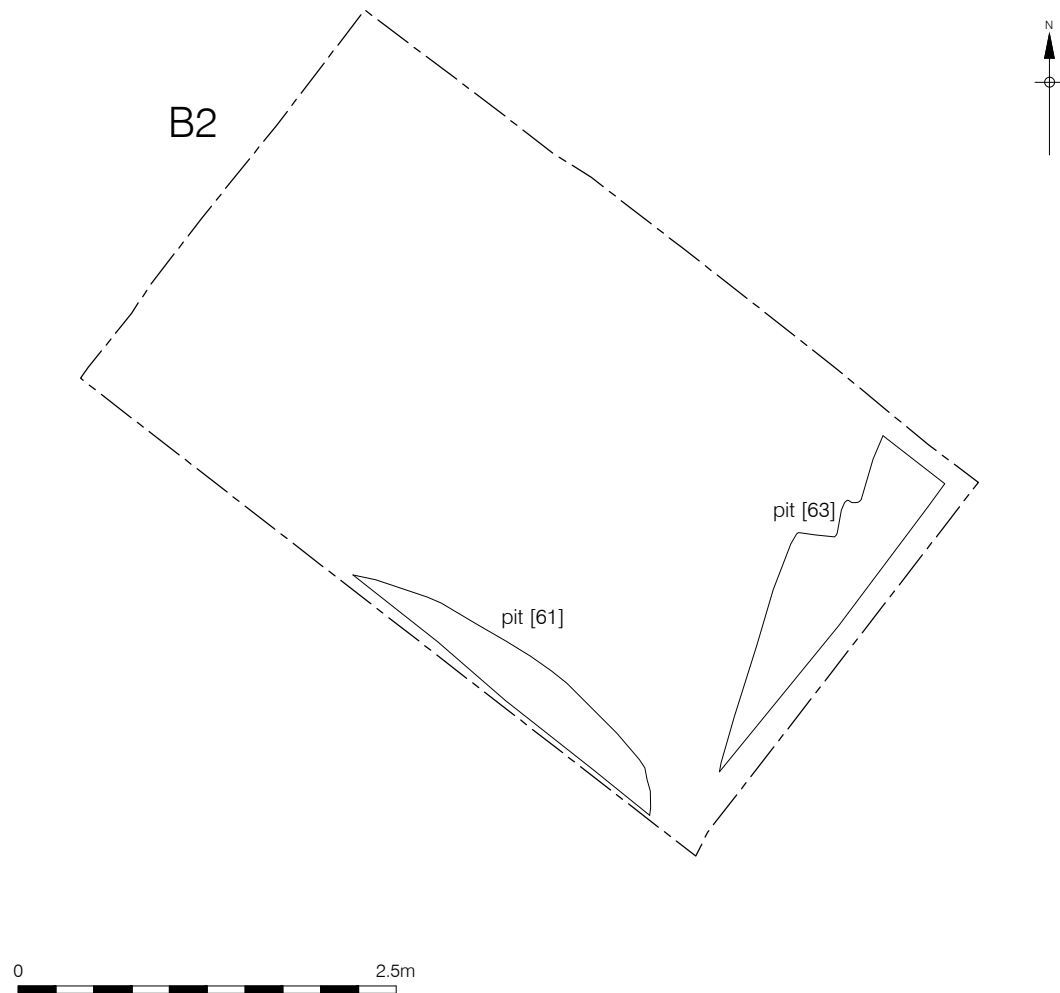
Figure 65  
Phase 6bii: Trench B2  
1:50 at A4



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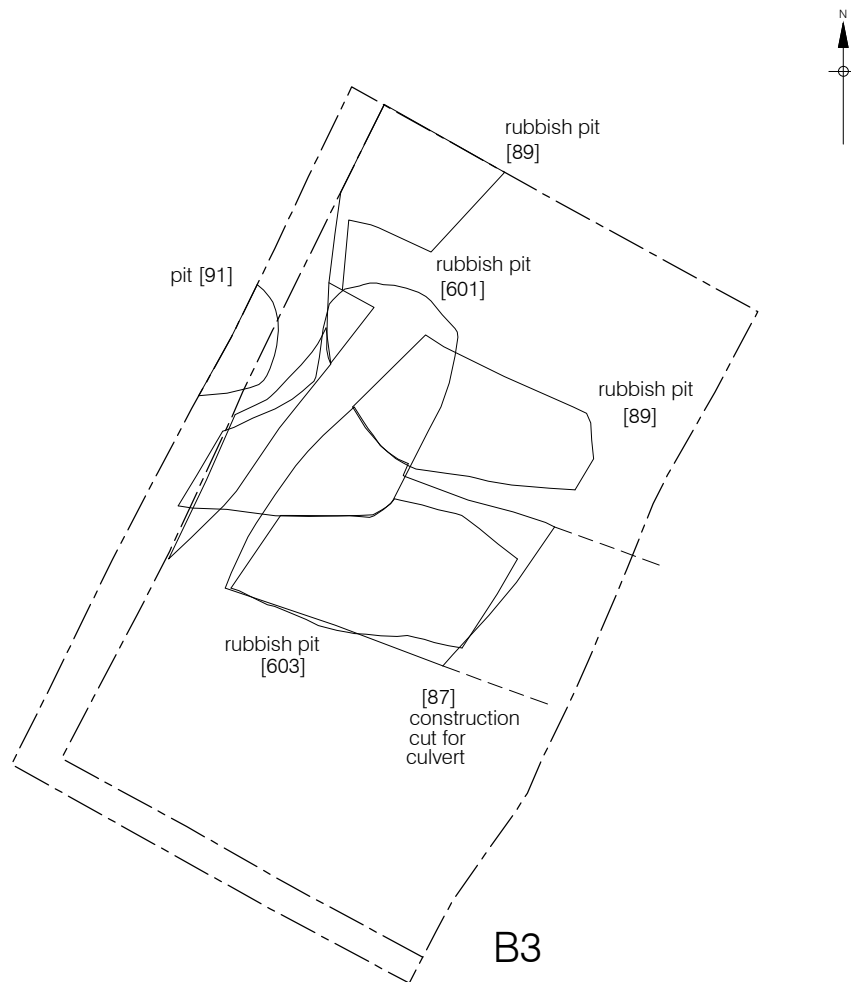
Figure 66  
Phase 6biii: Trench B2  
1:50 at A4





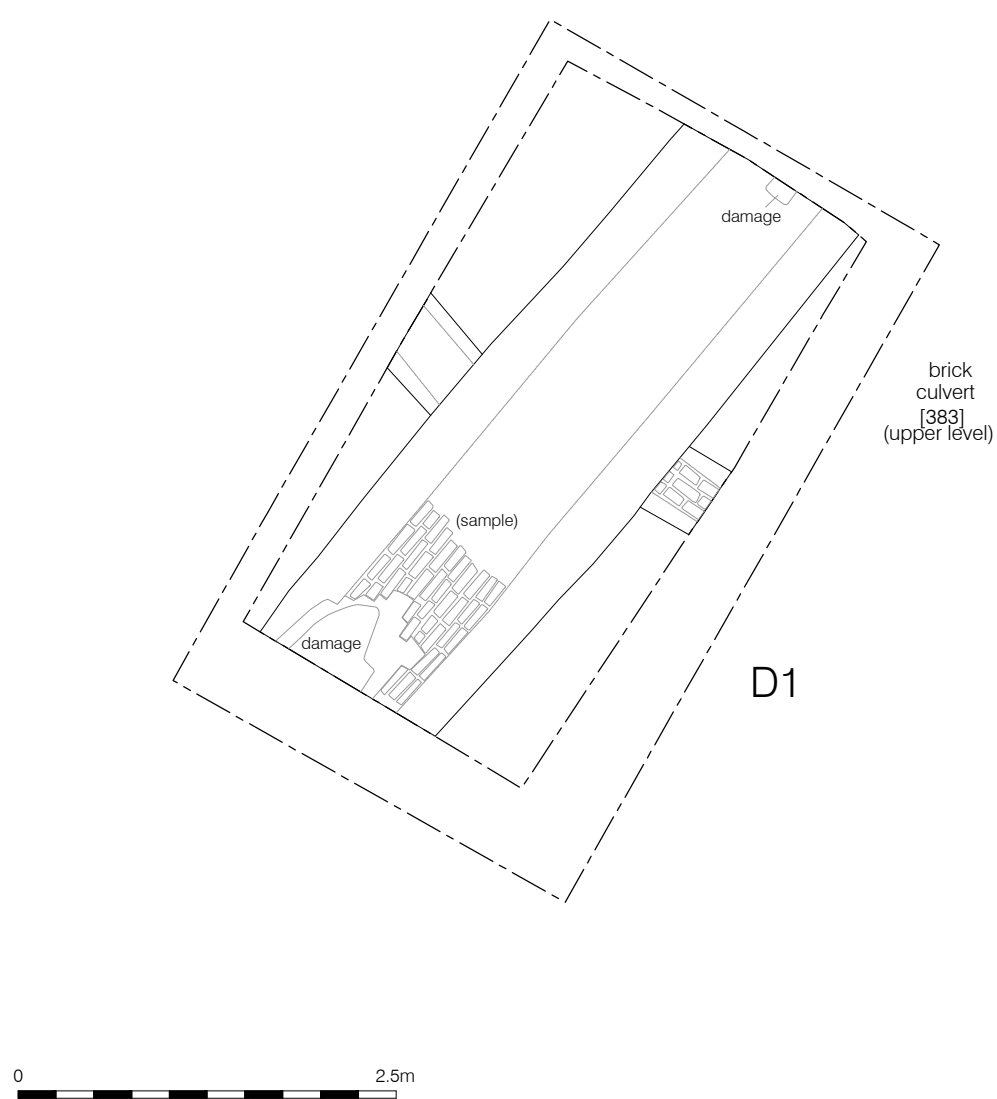
© OA - PCA 2014  
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Figure 67  
Phase 6biv: Trench B2  
1:50 at A4



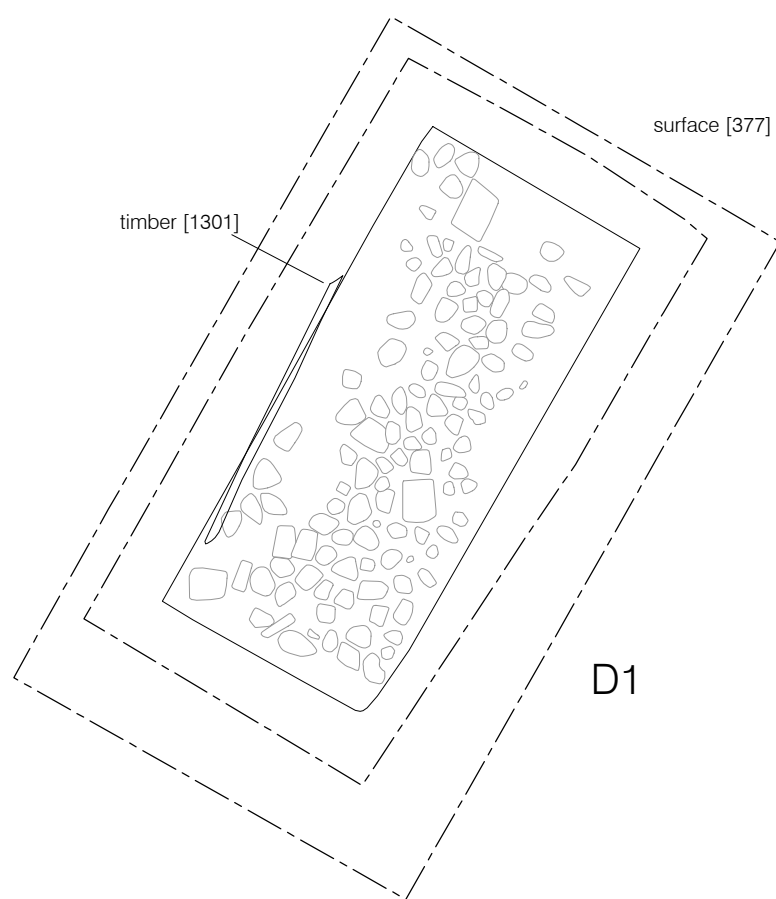
© OA - PCA 2014  
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Figure 68  
Phase 6b: Trench B3  
1:50 at A4



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Figure 69  
Phase 6bi: Trench D1  
1:50 at A4



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Figure 70  
Phase 6bii: Trench D1  
1:50 at A4

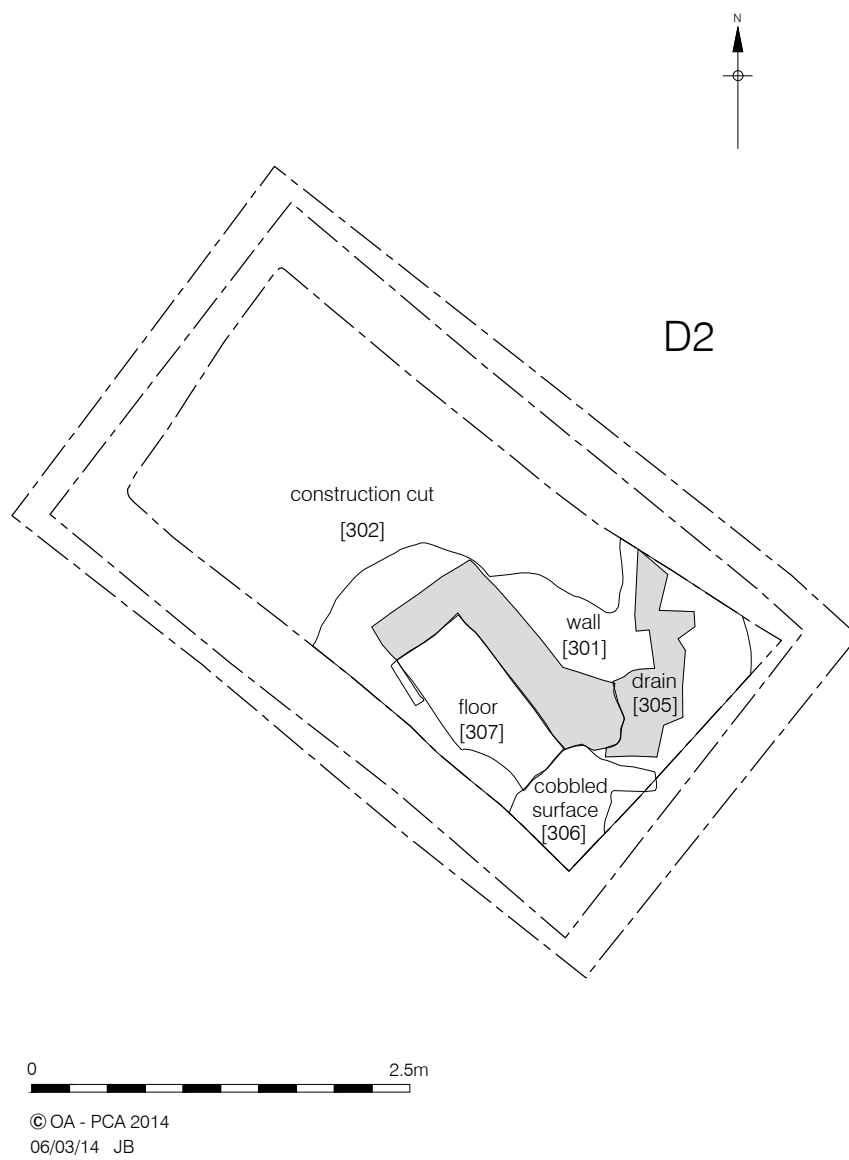


Figure 71  
Phase 6b: Trench D2  
1:50 at A4

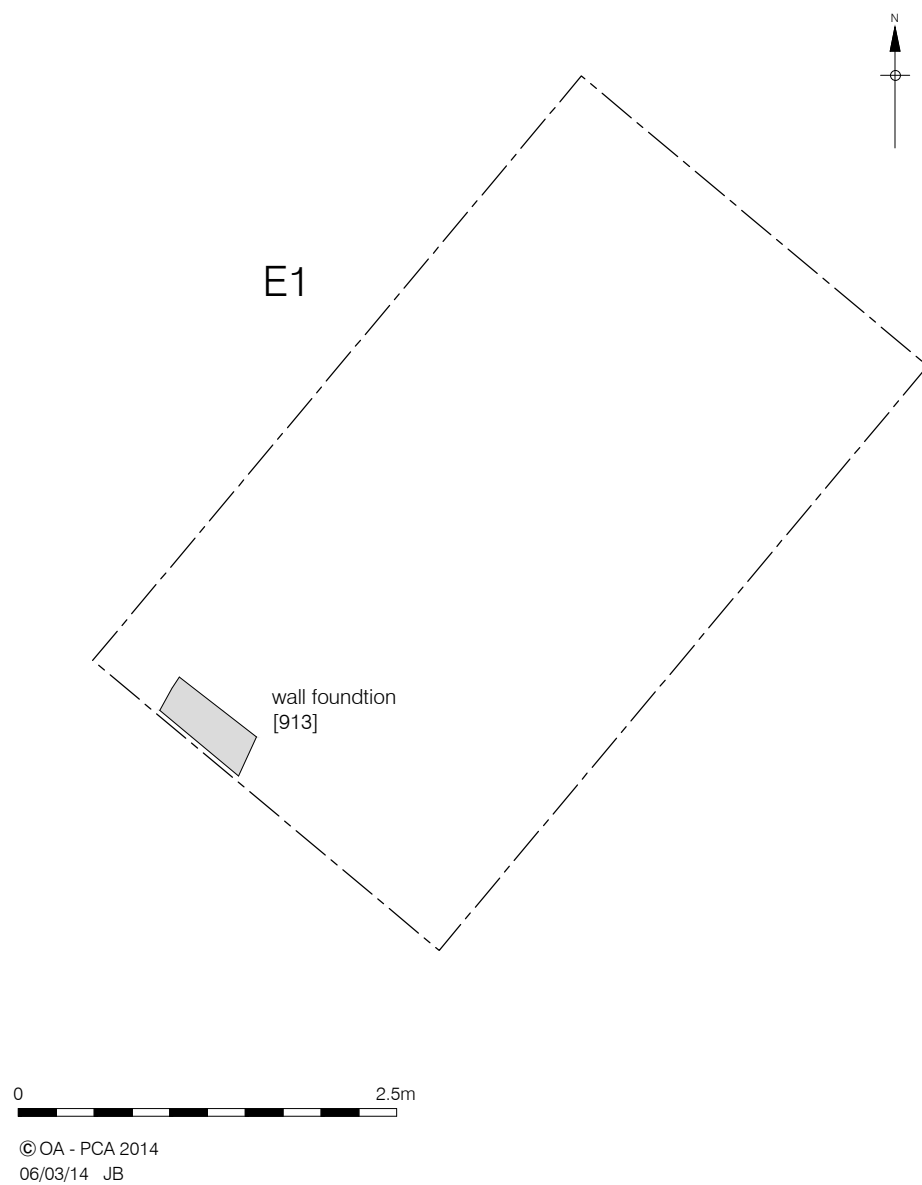
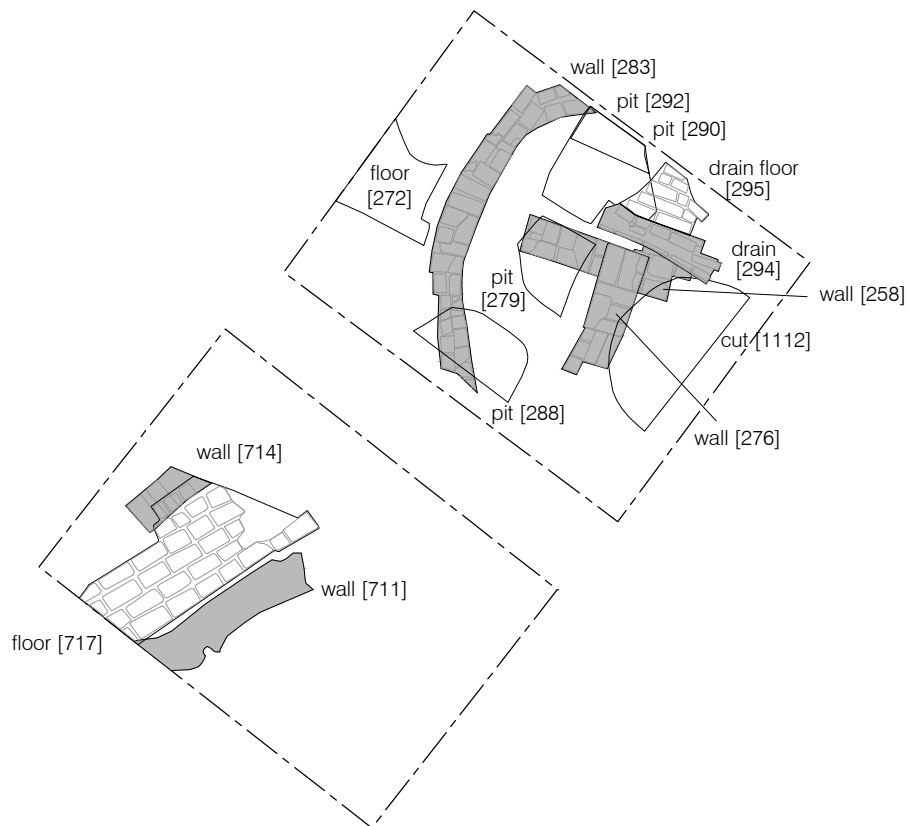


Figure 72  
Phase 6b: Trench E1  
1:50 at A4

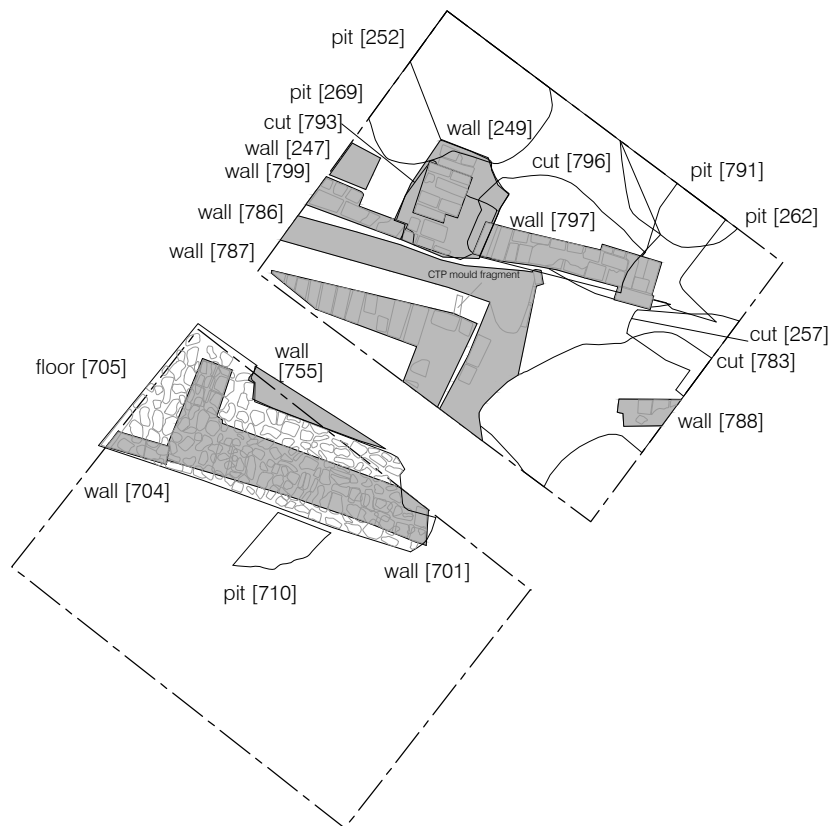
E2



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Figure 73  
Phase 6bi: Trench E2  
1:50 at A4

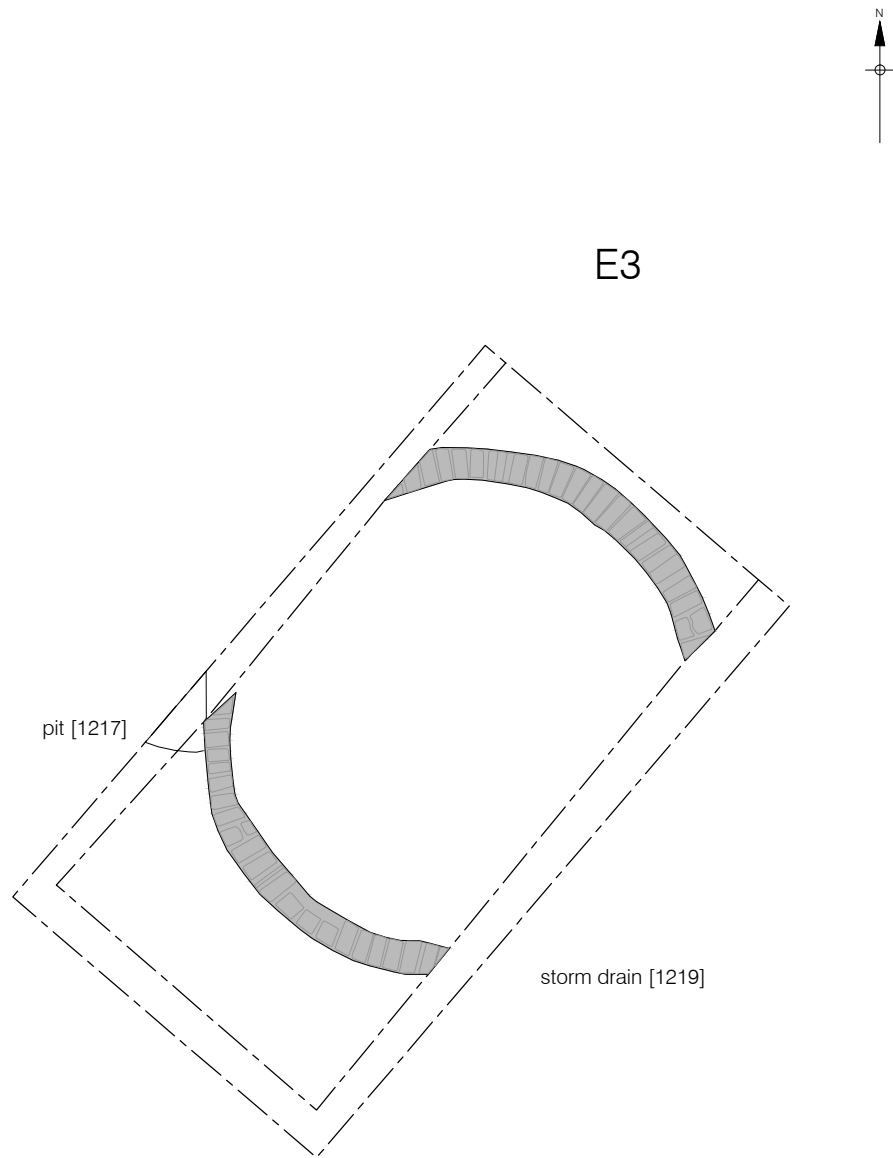
E2



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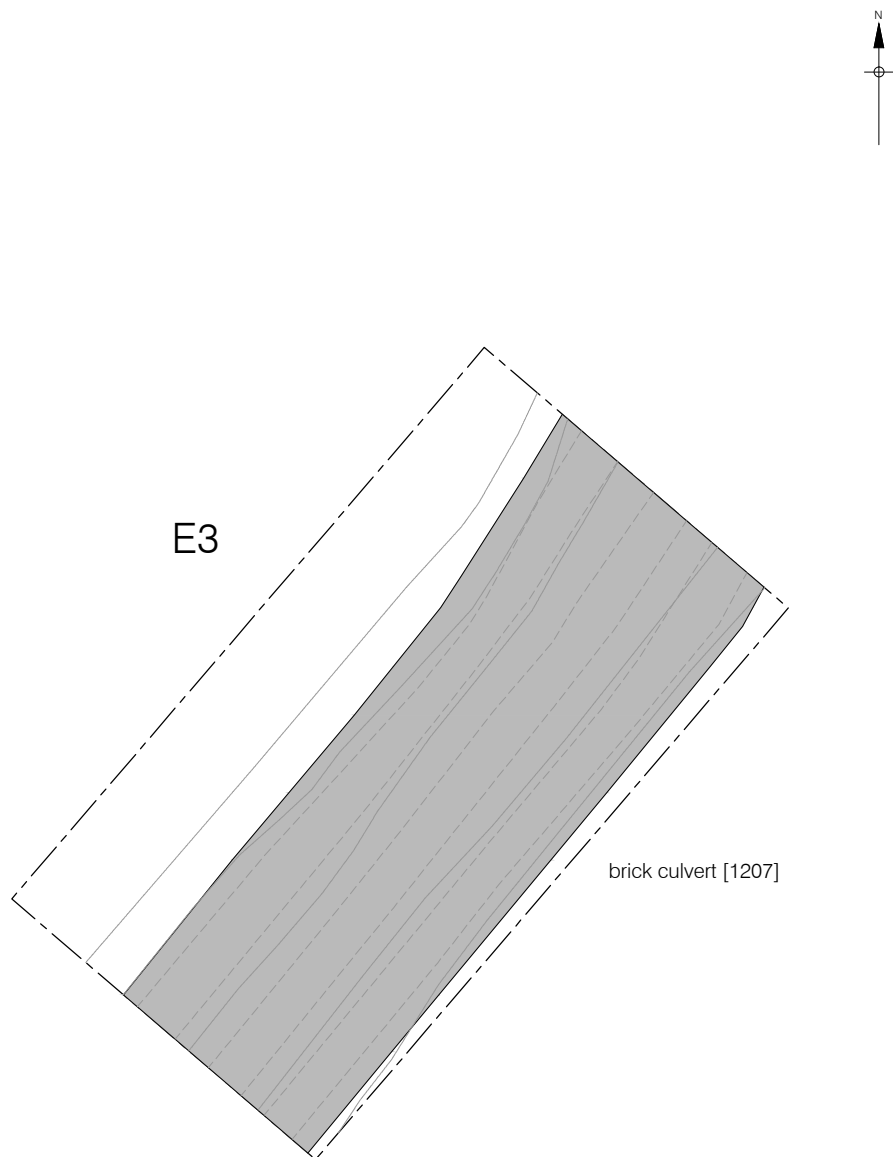
Figure 74  
Phase 6bii: Trench E2  
1:50 at A4





0 2.5m  
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Figure 75  
Phase 6bi: Trench E3  
1:50 at A4



0 2.5m  
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Figure 76  
Phase 6bii: Trench E3  
1:50 at A4

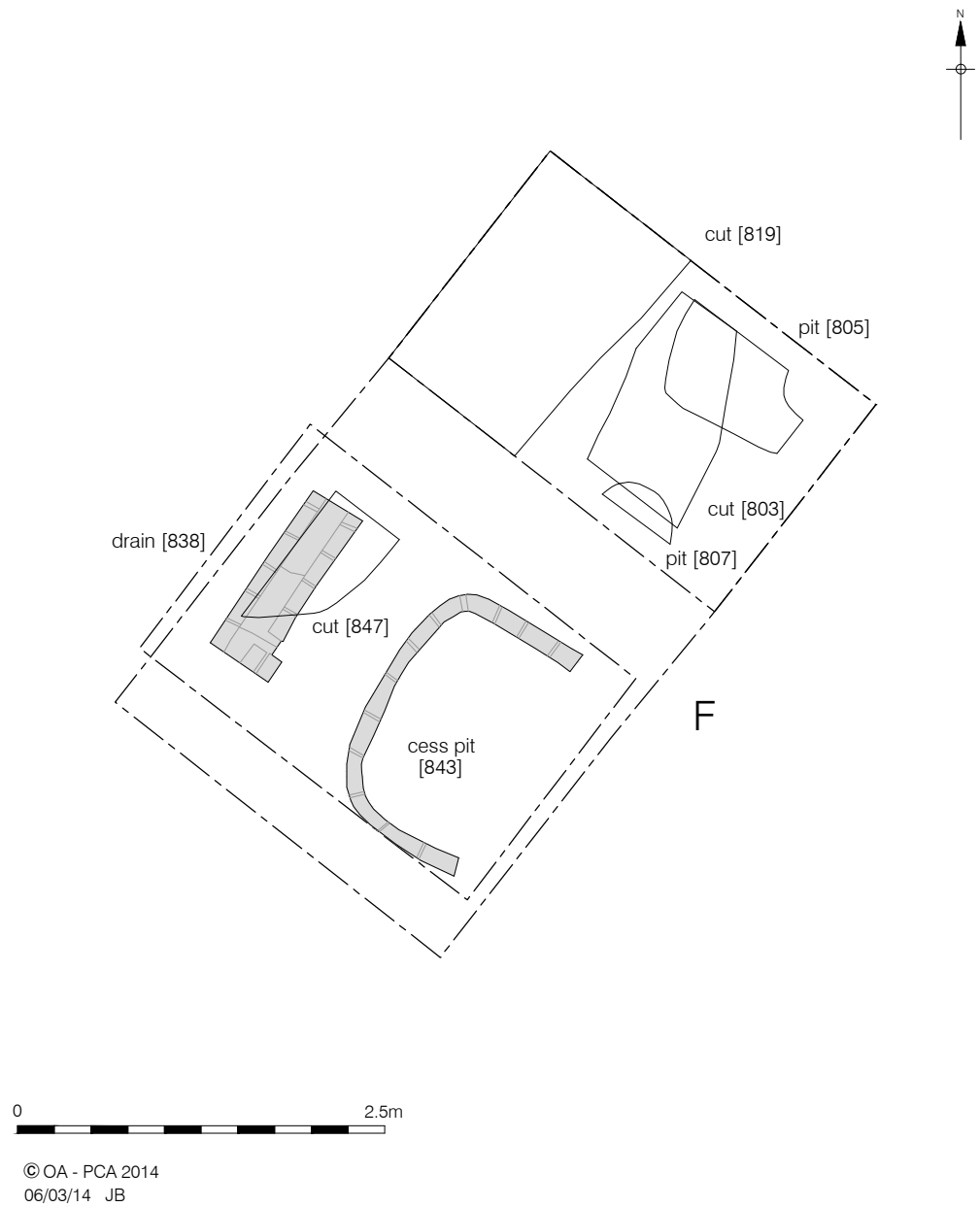


Figure 77  
Phase 6b: Trench F  
1:50 at A4

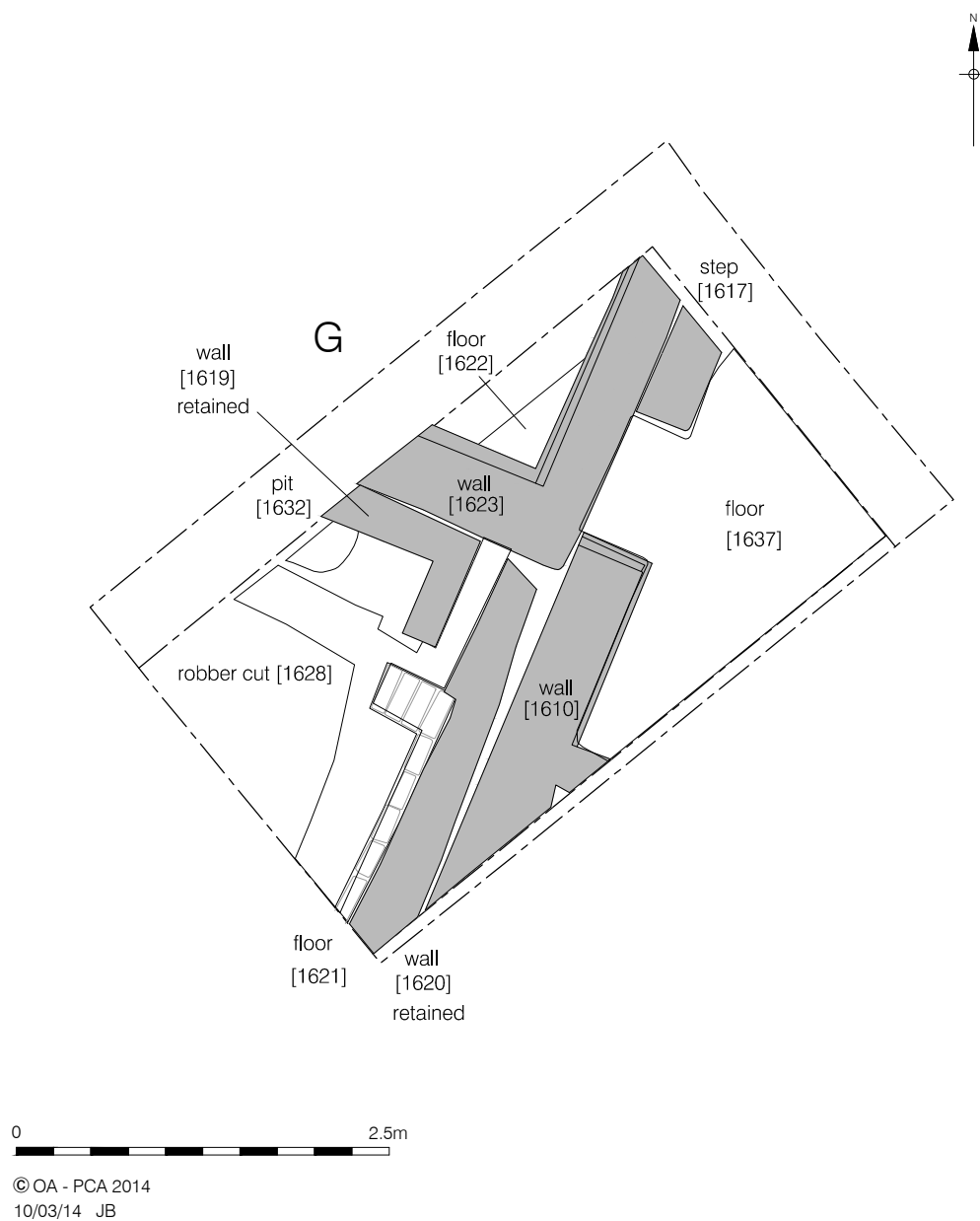


Figure 78  
Phase 6bi: Trench G  
1:50 at A4

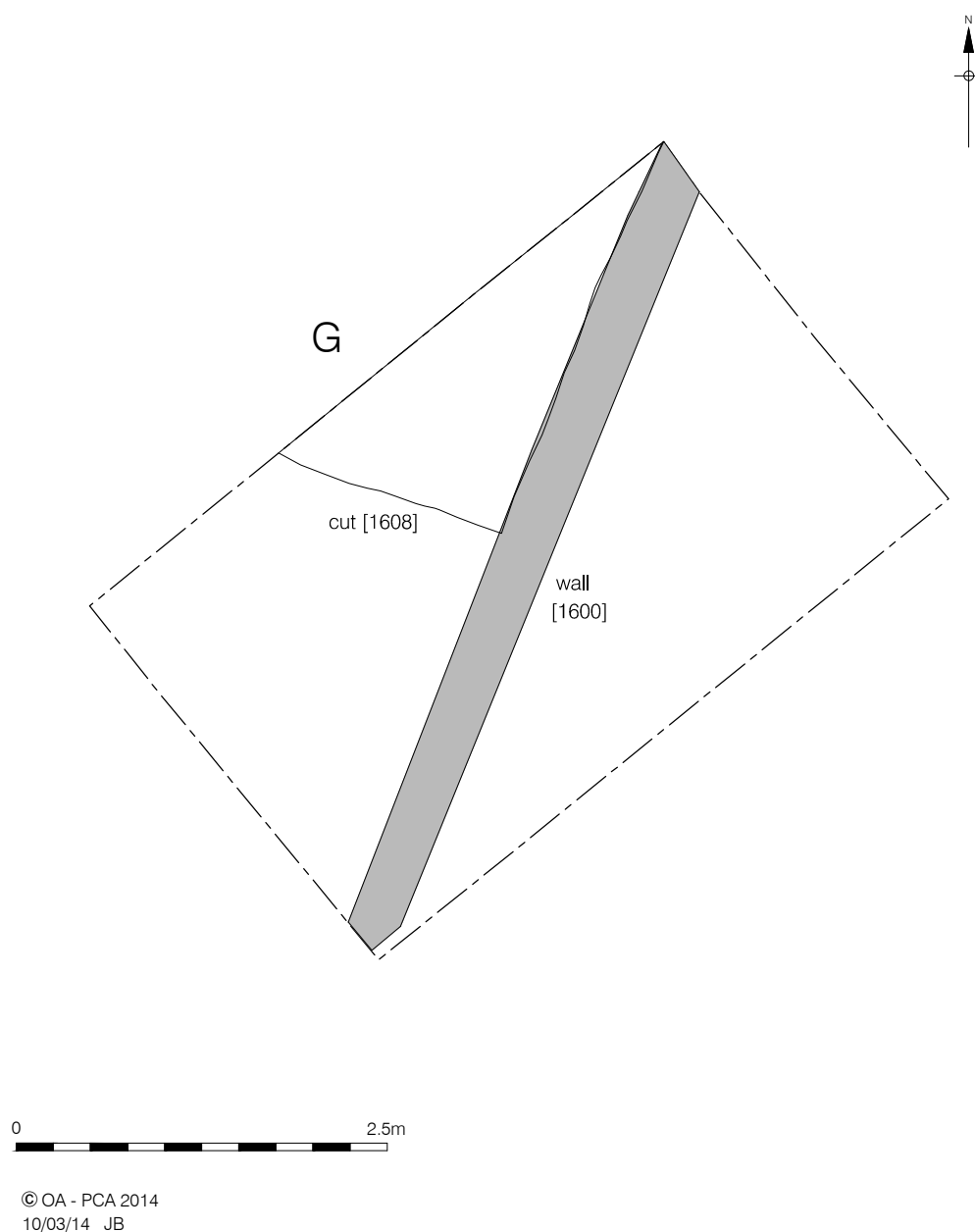


Figure 79  
Phase 6bii: Trench G  
1:50 at A4

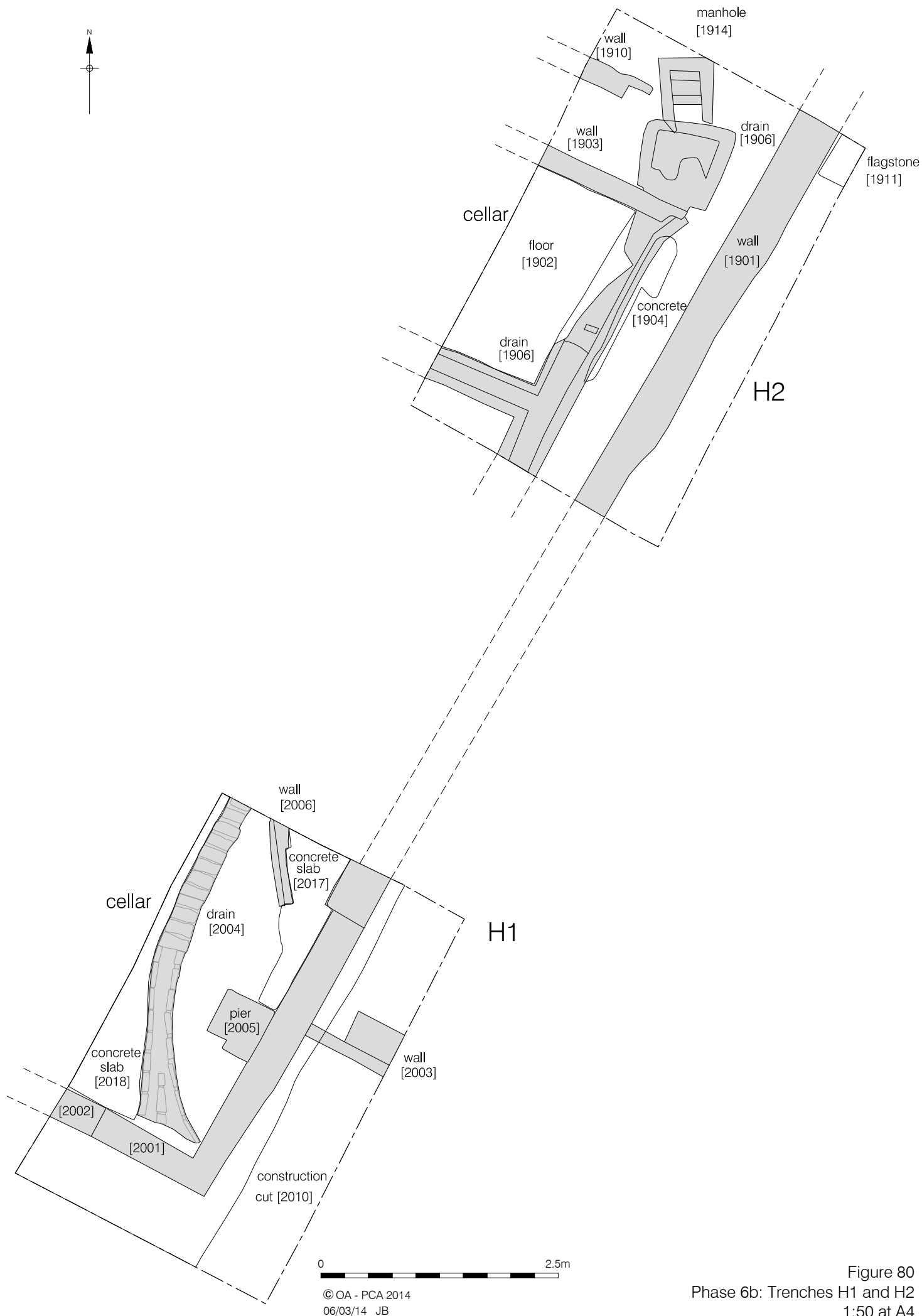


Figure 80  
Phase 6b: Trenches H1 and H2  
1:50 at A4

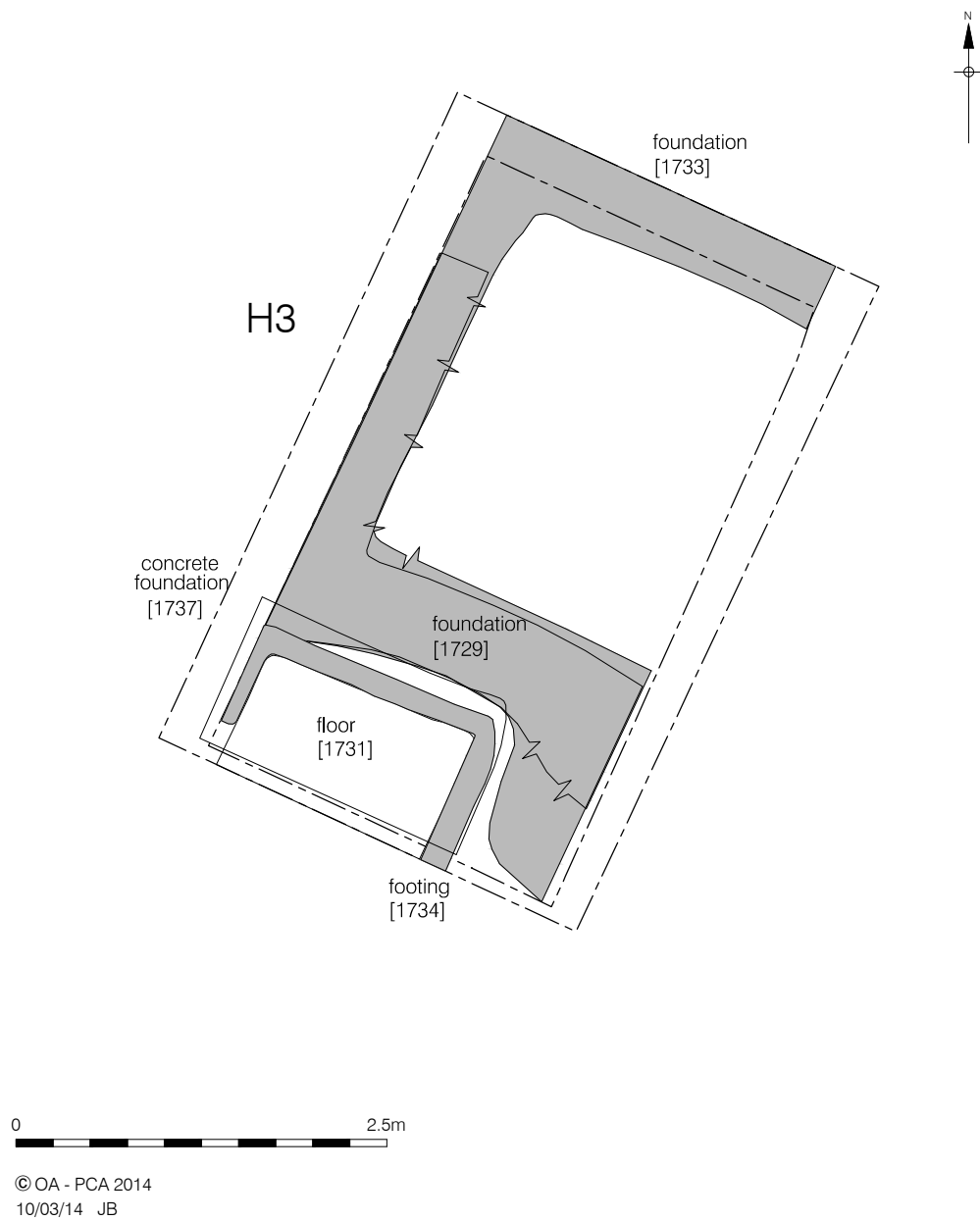
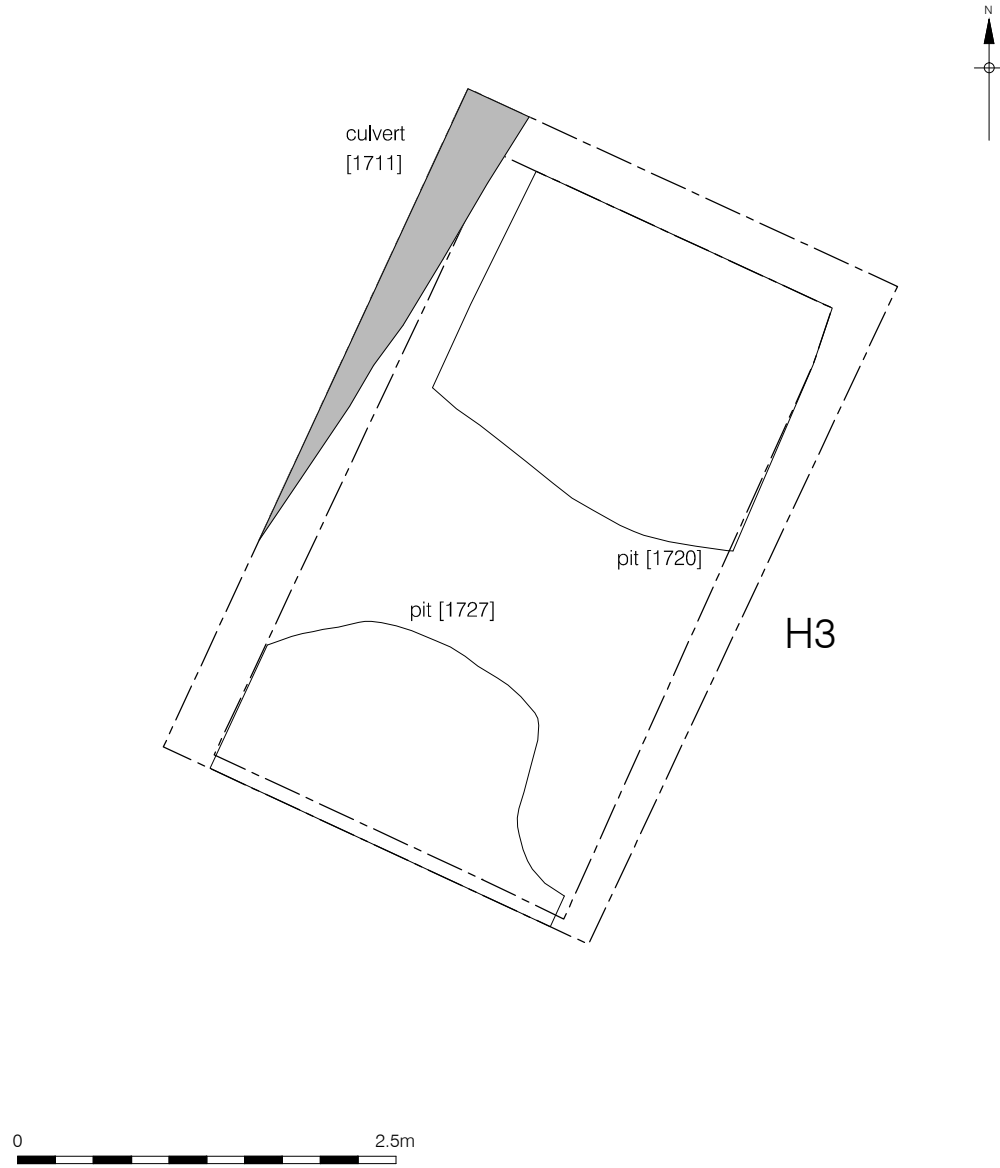


Figure 81  
Phase 6bi: Trench H3  
1:50 at A4



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Figure 82  
Phase 6bii: Trench H3  
1:50 at A4



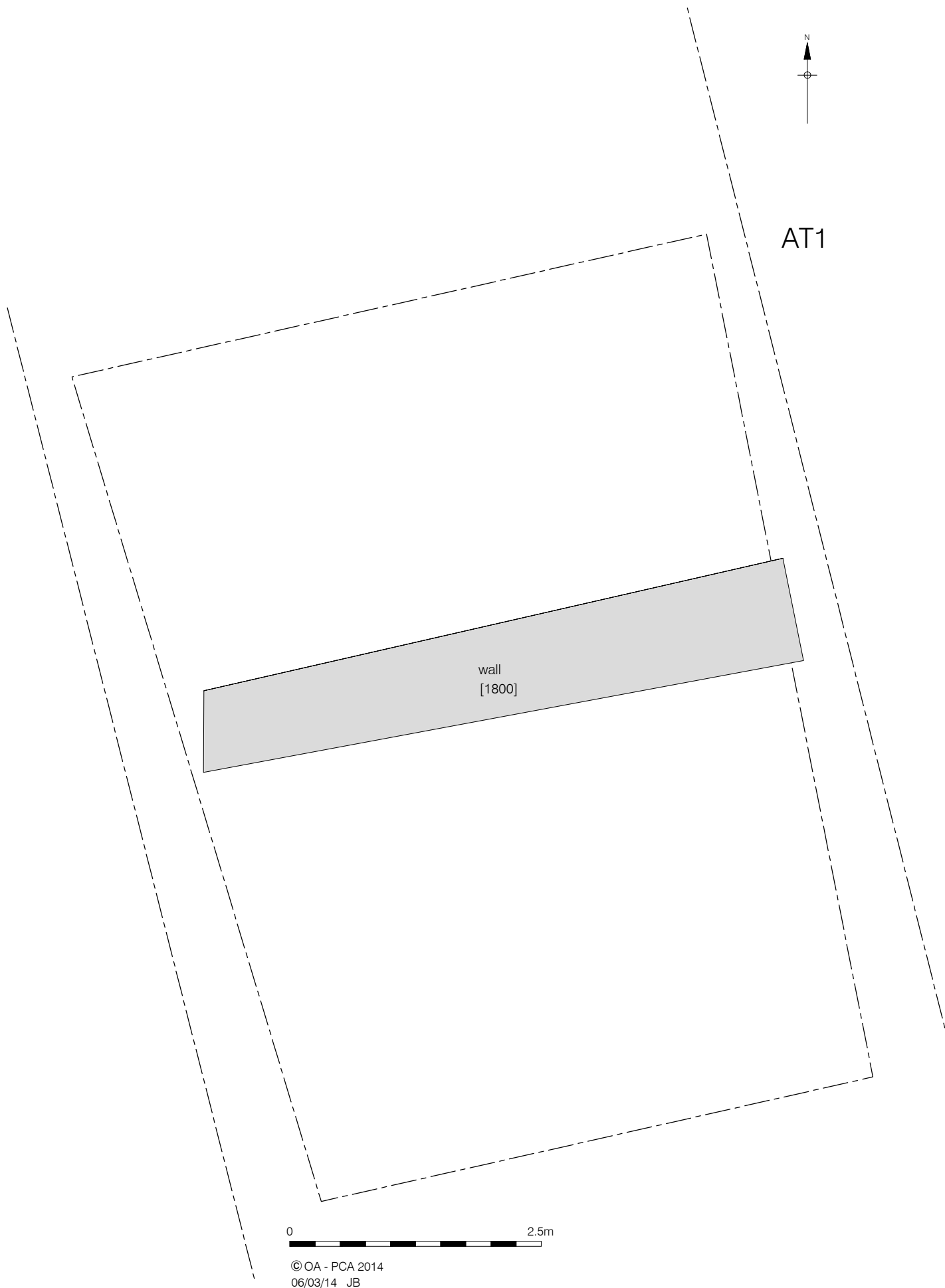
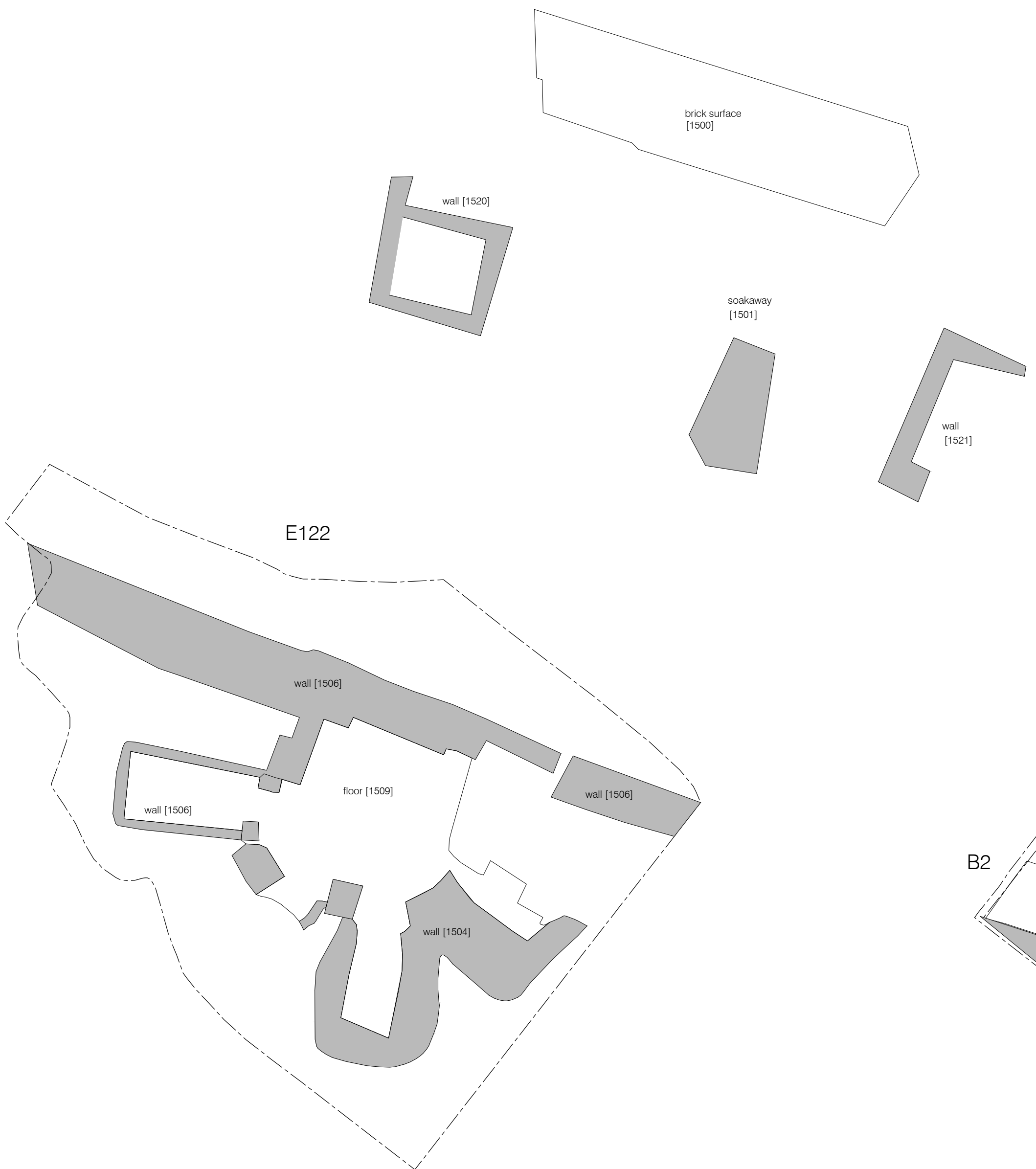
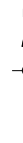
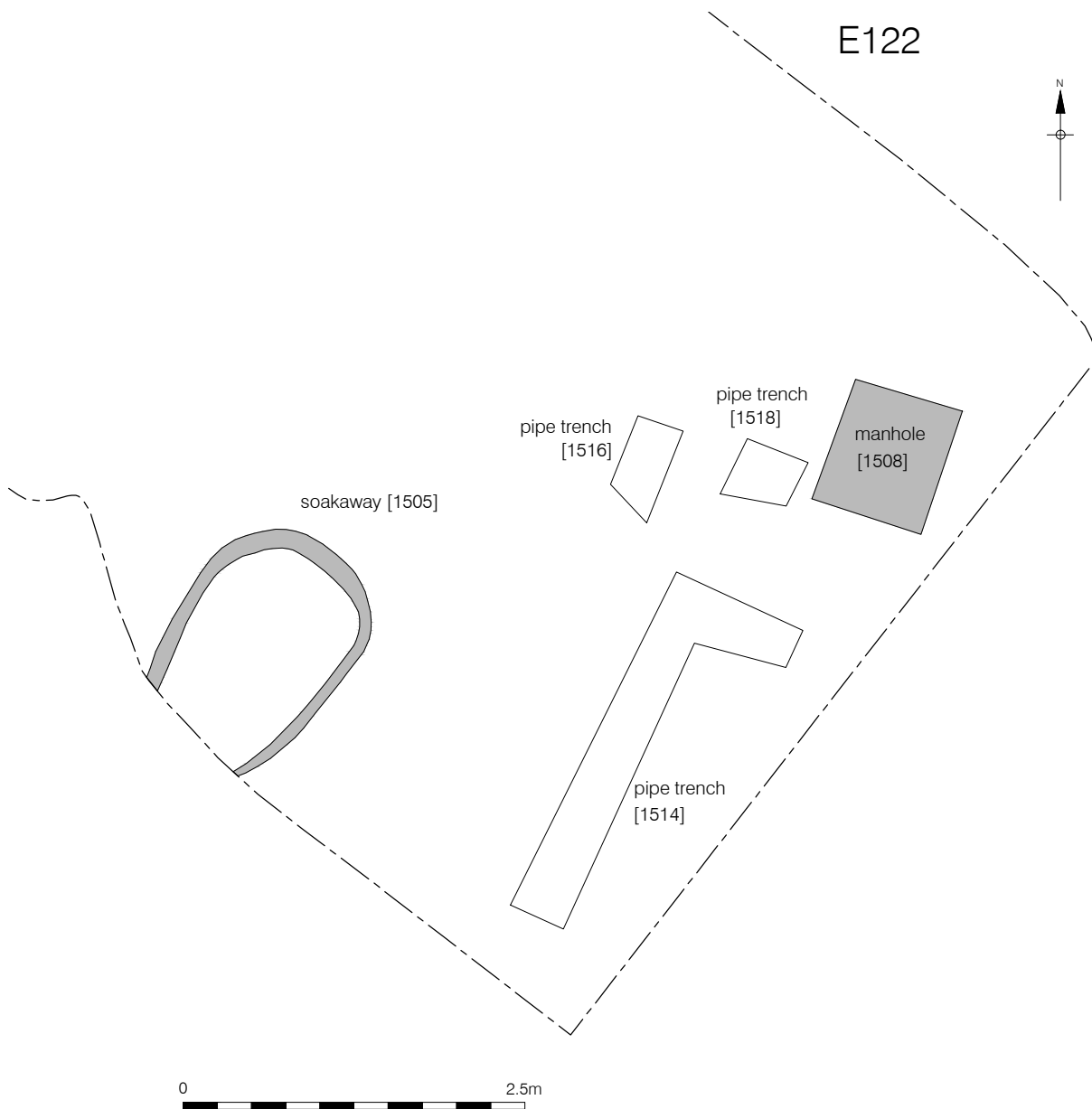


Figure 83  
Phase 6b: Trench AT1  
1:50 at A4



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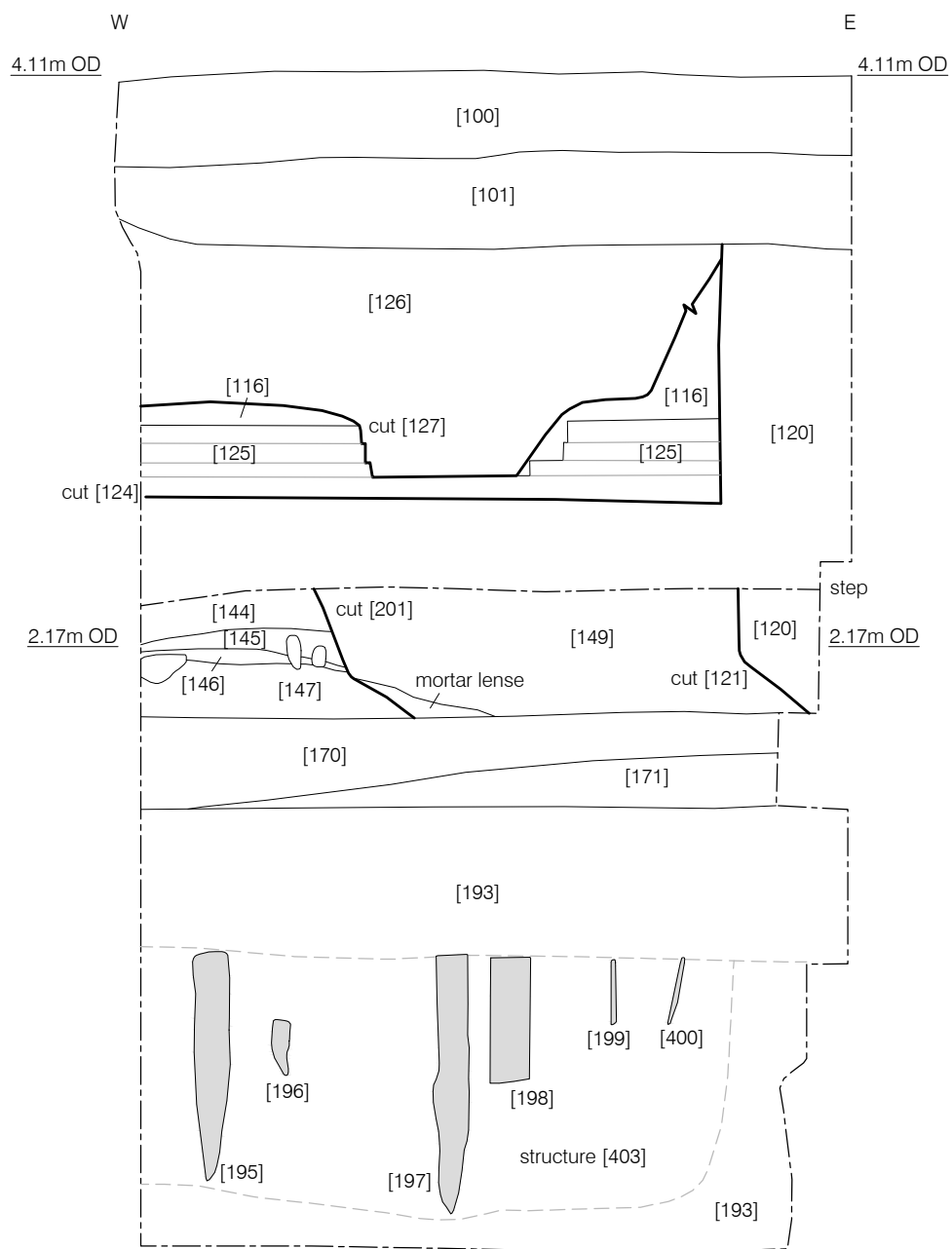
Figure 84  
Phase 6bi: E122  
1:50 at A3



0 2.5m

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Figure 85  
Phase 6bii: E122  
1:50 at A4



Section 3  
Trench A1  
South Facing

timber

0 1m

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Figure 86  
Section 3  
1:25 at A4

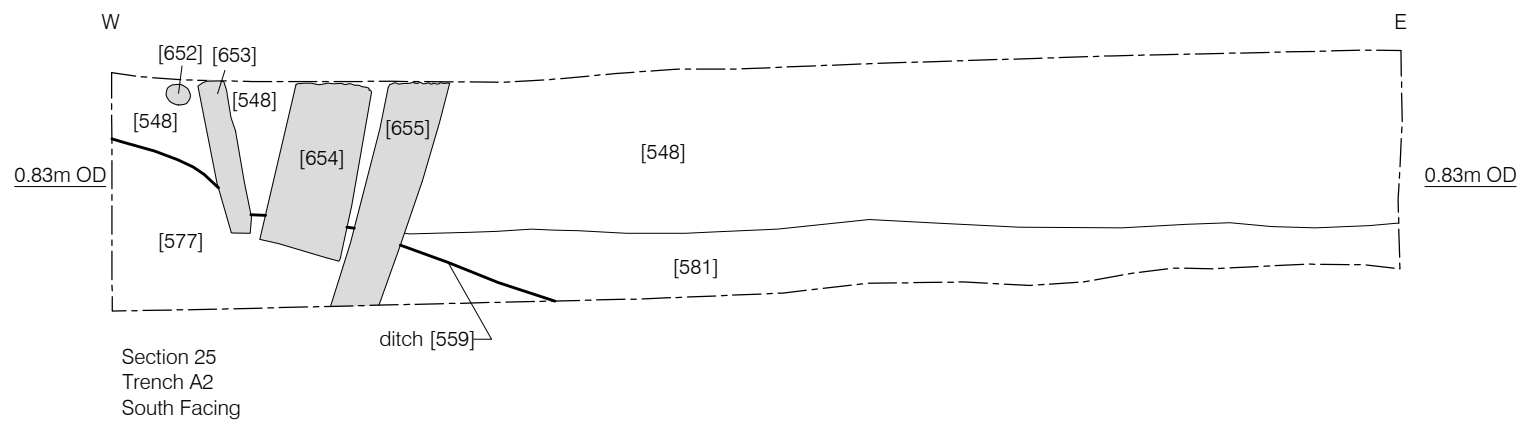
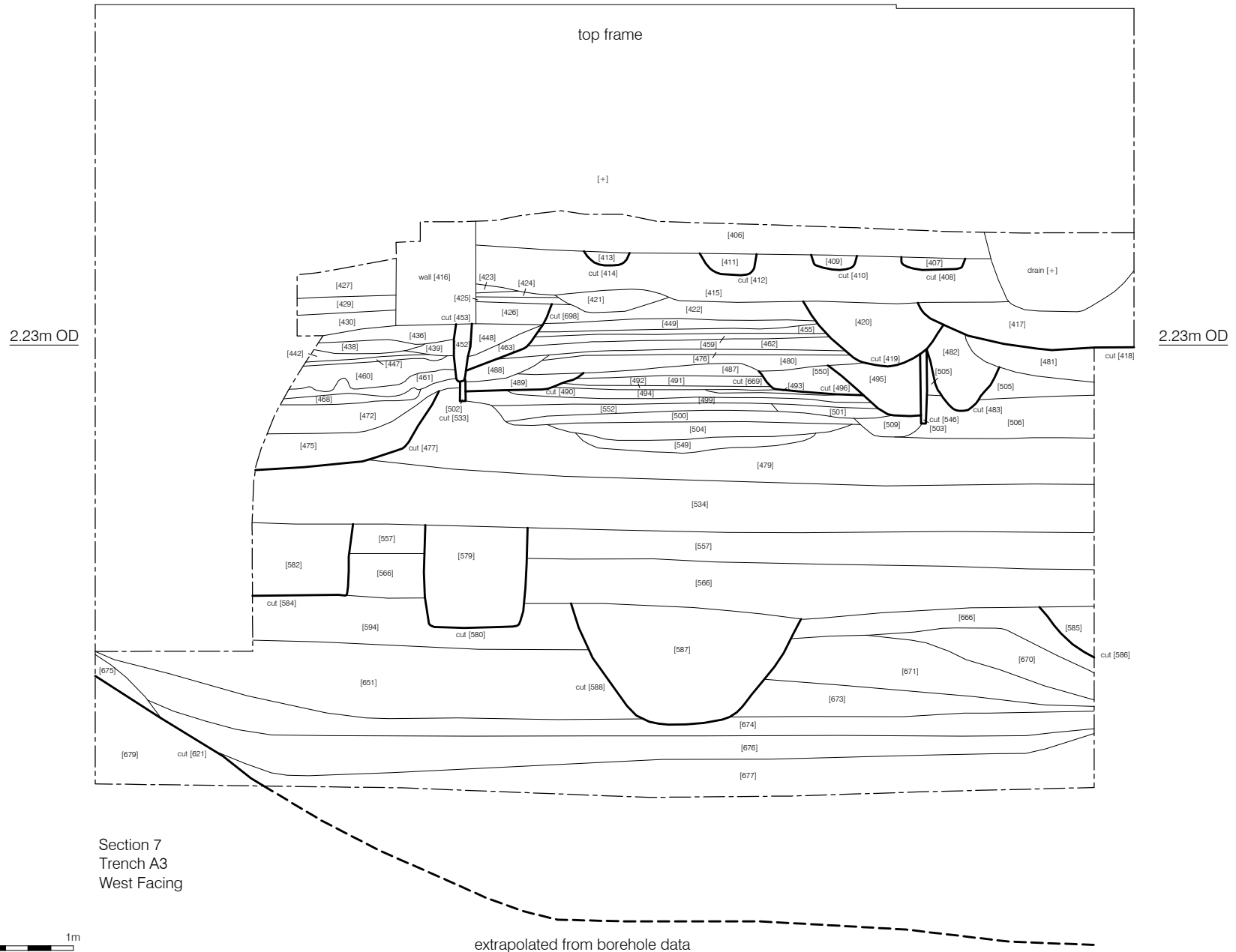


Figure 87  
Section 25  
1:25 at A4

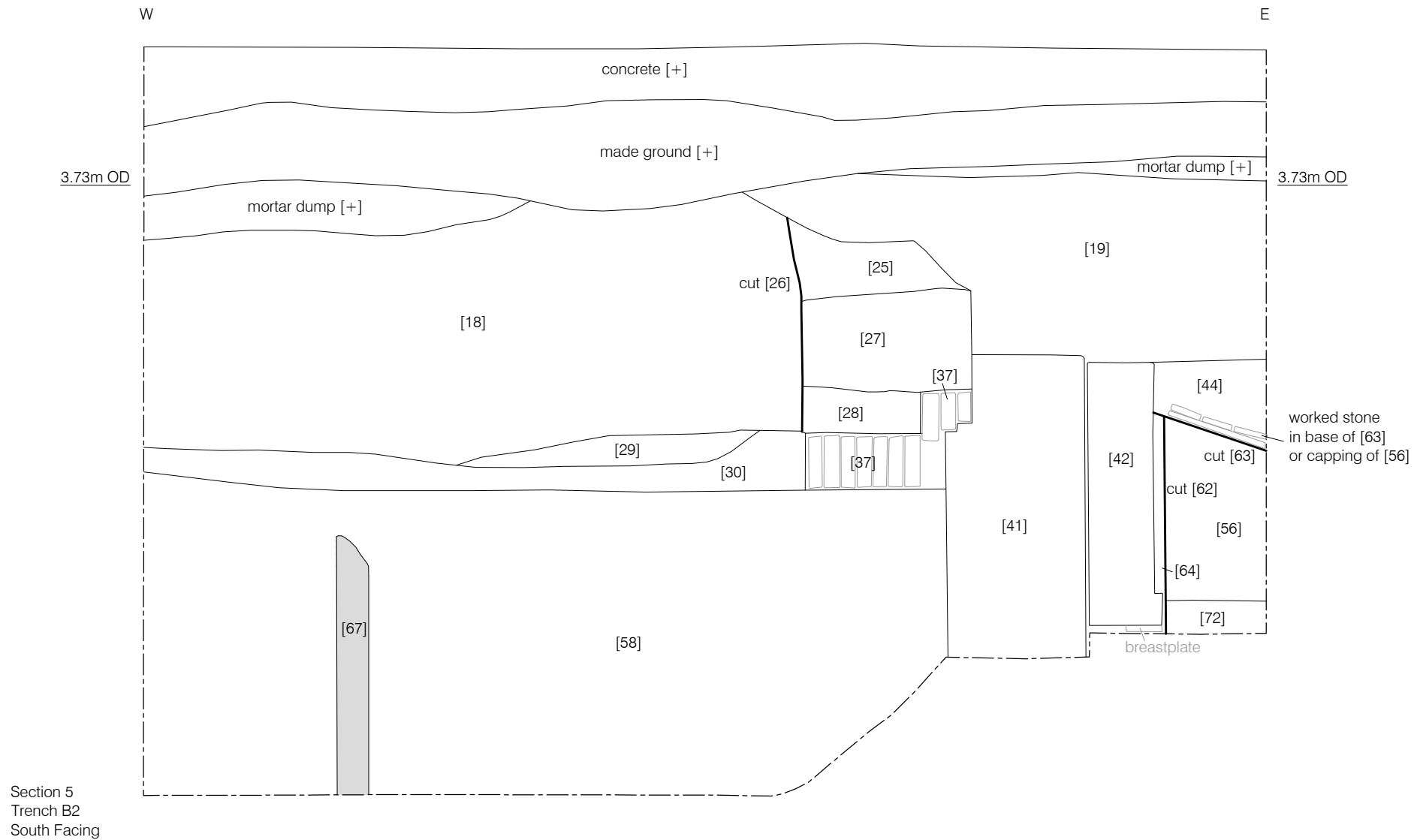
N

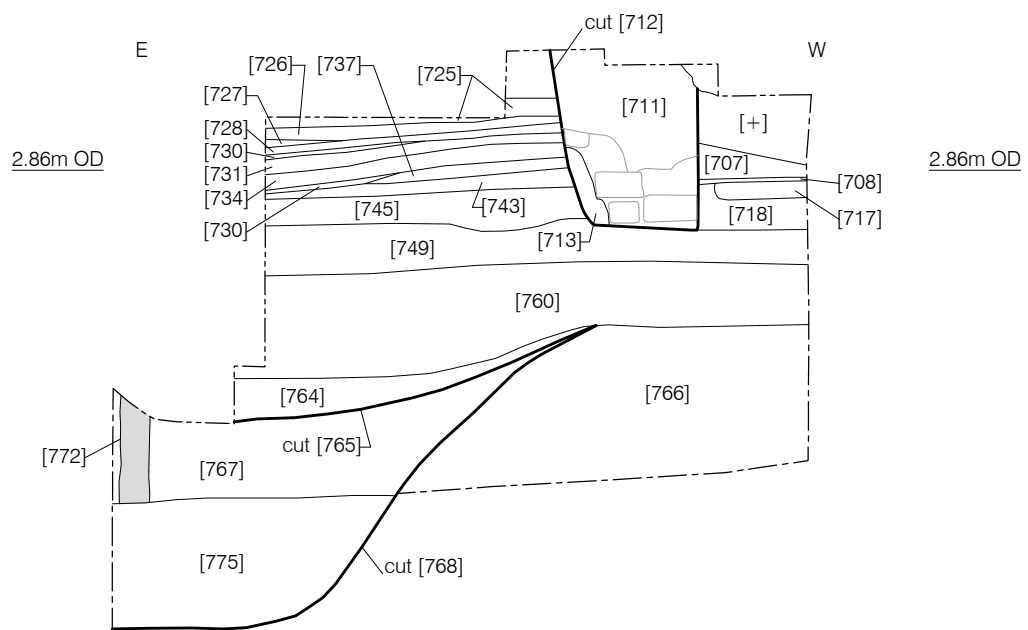
S



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Figure 88  
Section 7  
1:25 at A4





Section 30  
Trench E2 South  
North Facing

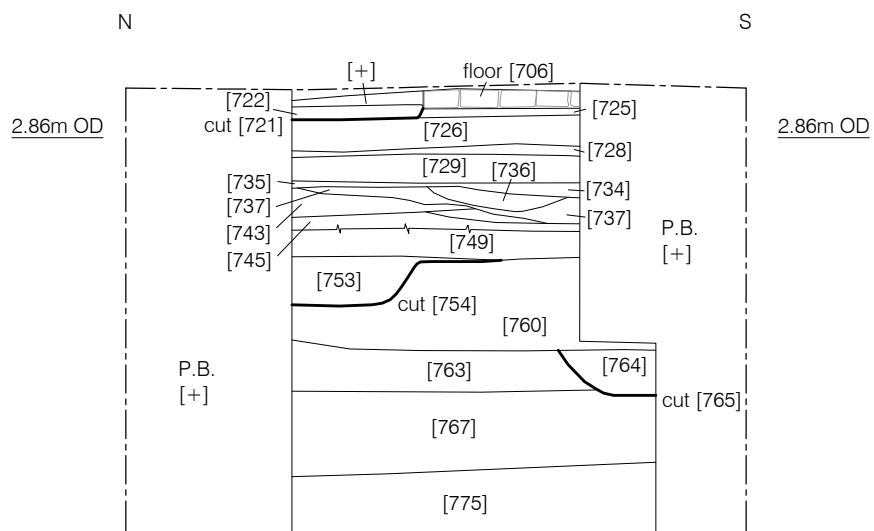
timber

0 1m

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Figure 90  
Section 30  
1:25 at A4



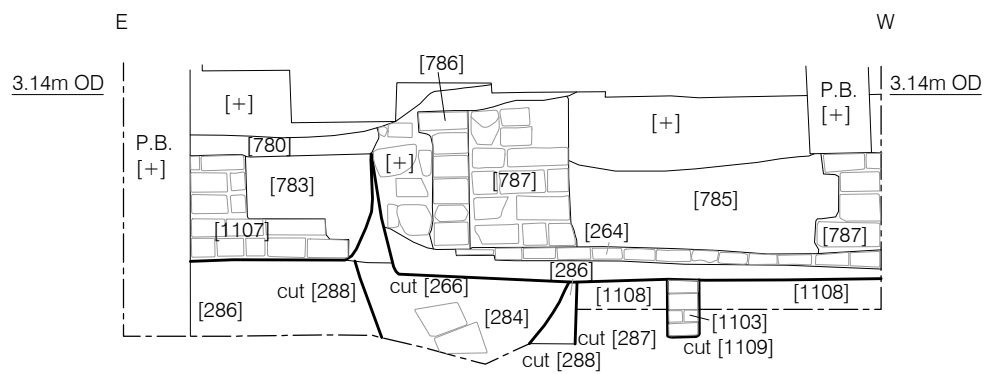


P.B. - piling board



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Figure 91  
Section 32  
1:25 at A4



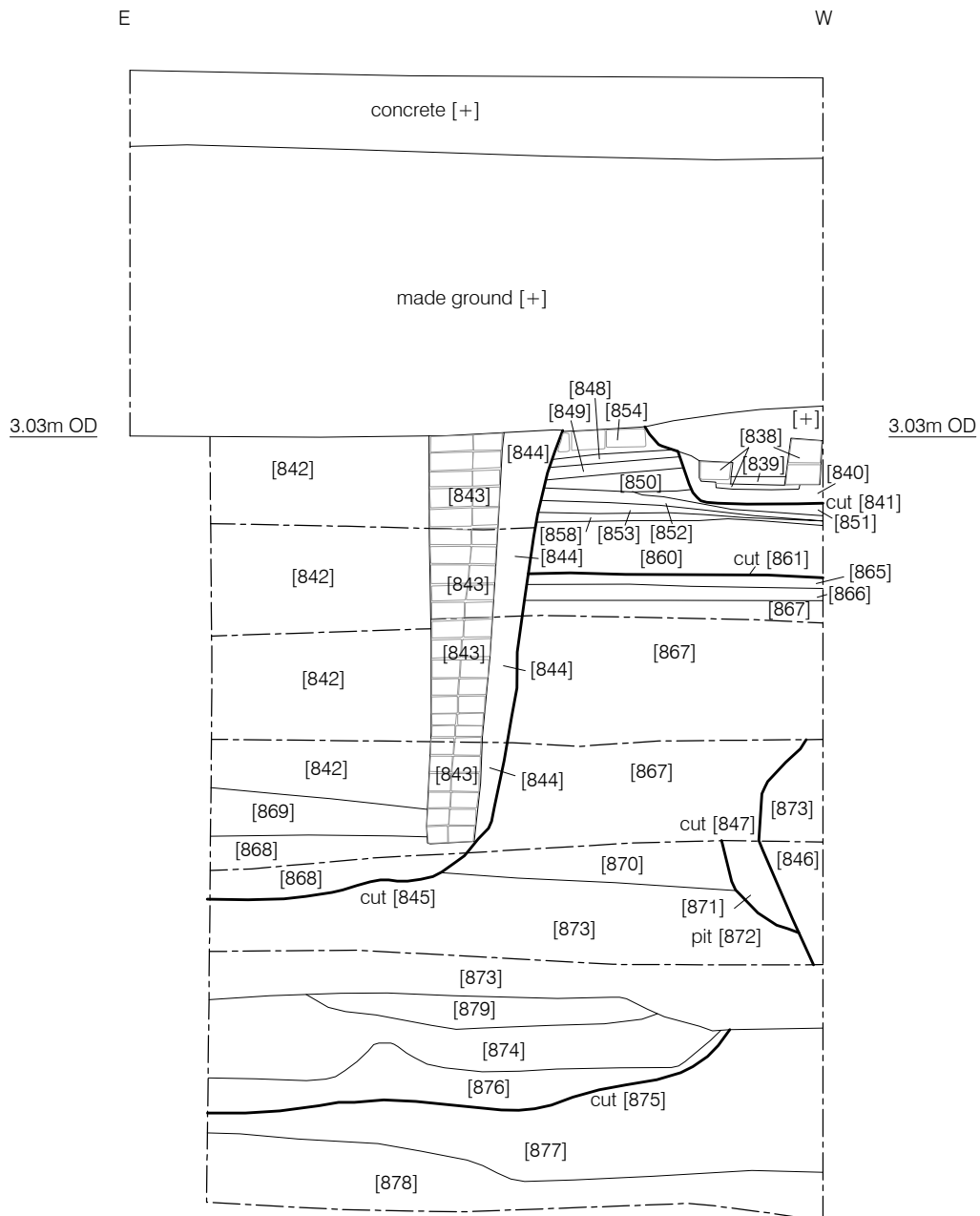
Section 47  
Trench E2 North  
North Facing

P.B. - piling board



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Figure 92  
Section 47  
1:25 at A4

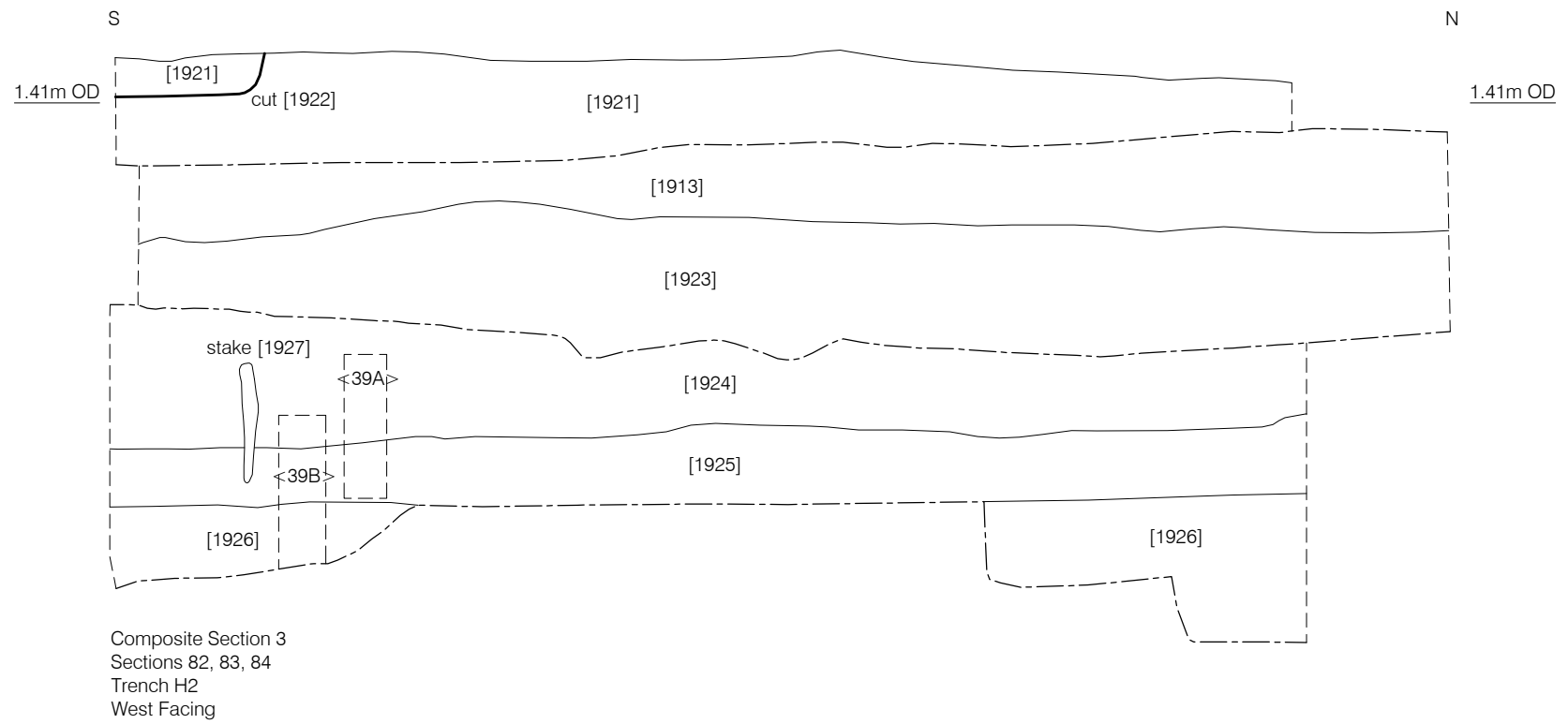


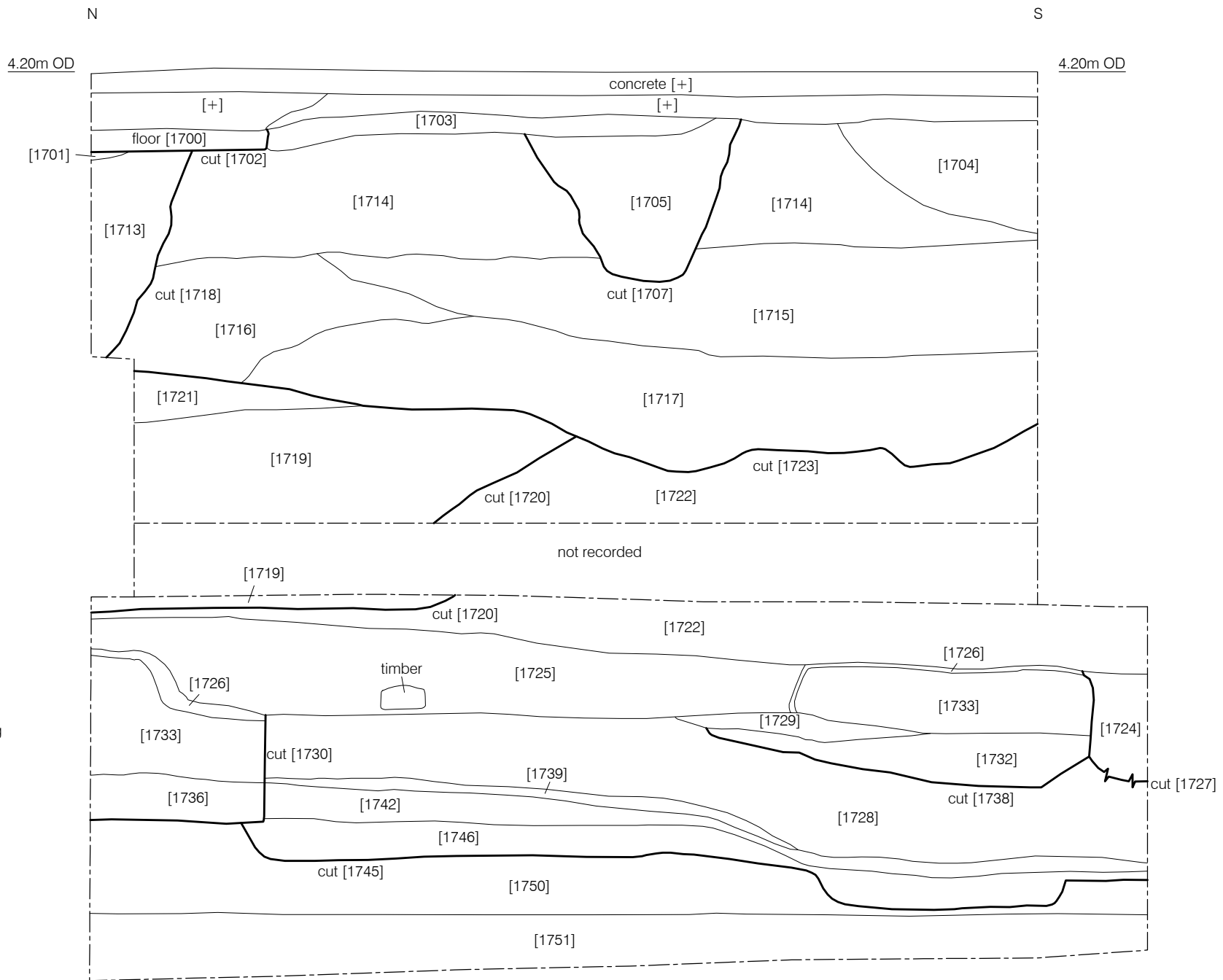
Section 34  
Trench F  
North Facing

0 1m

© OA - PCA 2014  
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Figure 93  
Section 34  
1:25 at A4





0 1m



Plate 1: Displaced Roman timbers (potential land-tie) [907], Trench A5 (view to south-west, 0.5m scale, Phase 3)



Plate 2: Revetment [665], view to west, Trench A2 (0.5m scale, Phase 4b)





Plate 3: View to south of northern workshop boundary, postholes [444] and [446] in foreground, Trench A3 (1m scale, Phase 5bi)



Plate 4: Tiled floor surface [293] illustrating re-used medieval tile, Trench E2 (view to west, 0.5m scale, Phase 5b)





Plate 5: View to west of revetement [390], Trench D1, (1m scale, Phase 6a)



Plate 6: Wall foundations [911] and [920], Trench E1, view to north (0.5m scale, Phase 6aii and 6aiii)





Plate 7: Cobbled surface [705] associated with clay tobacco pipe kiln, Trench E2 (view to north, Phase 6bii)



Plate 8: Selection of chamber pots recovered from fill of cess pit [842], Trench F (Phase 6b)

## **8 PHASED DISCUSSION**

### **8.1 Phase 1: Natural**

- 8.1.1 Natural Pleistocene gravels were recorded within the majority of all trenches by augering beyond project level. These were recorded between –3m OD and –1.75m OD. On the basis of previous studies of the Thames terraces (Appendix 20) these gravels can be correlated with the Shepperton gravel formation. These were overlain by late Pleistocene/early Holocene sands and fluvial sands which exhibited an initial drop and then rise up towards the north of the site. These start in the former foreshore location and then dip in the base of a channel before gradually rising to form the edge of the eyot (see Appendix 20, Fig 3). The eyot edge was observed at project level at the base of Trench H2 in the north of the subject site, an identification supported by the pollen analysis which indicated an eyot edge environment. The latter sequence reflects fluvial deposition within part of the Neckinger channel sequence. Deposits recorded within this sequence with a higher clay content potentially represent channel edge environments subjected to greater channel flow. A second trench to yield evidence of a possible eyot edge was Trench G, in which the gravel profile indicated a possible eyot edge slope.
- 8.1.2 A thin peat horizon was identified in a number of trenches (A1-3, B, C, AT1) between –1.70m OD and 0m OD. Dating of the horizon within Trench A4 yielded a Bronze Age date. These represent the development of fen and alder carr deposits over the early prehistoric floodplain sequence. A deepening of the water levels and beginnings of estuarine inundation over the site were identified by organic silty-clays overlying the peat.

### **8.2 Phase 2: Prehistoric**

- 8.2.1 Despite the identification, as detailed above, of potentially Bronze Age peat, no indications of anthropogenic activity or modification were recorded across the site dating to the prehistoric period. A very small assemblage of worked flint was identified in isolated areas, all of which was recovered from later features. This suggests that either the prehistoric presence on the site was minimal, or alternatively that subsequent, and repeated, episodes of flooding and channel migration have since removed these traces.

### **8.3 Phase 3: Roman**

- 8.3.1 The site revealed limited evidence of Roman occupation/activity. The earliest indications of activity comprised a series of land/foreshore reclamation dumps, identified during augering works at numerous trench locations between –1m OD and 0.50m OD. A concentration of cobbles, gravels, and pebbles suggests reclamation surfaces in some areas. The material culture recovered from these Roman dump/consolidation layers was all of a domestic nature, and included vessels for the storage, production and consumption of foodstuffs (Appendix 3).

The mixed date of the assemblage suggests some longevity of occupation in the Roman period, but with the immediate vicinity of the site representing the extent rather than the foci of the settlement (Appendix 3).

- 8.3.2 Channel deposits were identified within the vicinity of Trench A4/A5. Further evidence of water management was identified in Trench A5 and comprised the remnants of a possible revetment with associated tie back. This would have lain on the western bank of Guy's Channel and is potentially dated to the mid/late 2nd to 3rd century AD. The borehole and augerhole data suggested that Guy's Channel flowed between Trenches A4 and A5 during the Roman period, with Trench A5 representing the limits of the channel during the late 2nd/early 3rd century. The very degraded remains of a stake was identified within Trench H2 and considered to be Roman in date. This, similarly, would have lain on the western bank of Guy's Channel and may relate to a short-lived ephemeral structure or fence line.
- 8.3.3 A sequence of Roman estuarine silts was also identified across the site and sealed the structural timbers within Trench A5. These deposits may reflect the collapse of the Roman drainage systems and waterfronts in the late/post Roman periods. A dump layer overlying the stake in Trench H2 was dated between the late 2nd century AD and AD 350 and may either represent deliberate ground consolidation or relate to the collapse of drainage systems. This was followed by a period of alluviation over Roman reclamation surfaces indicating a renewed phase of estuarine flooding. These deposits were likely to have formed within salt marsh to mudflat environments.

#### **8.4 Phase 4: Medieval**

##### Phase 4a – 11th to 13th century (Fig. 96)

- 8.4.1 Undifferentiated alluvial silts were identified at project level for the majority of the trenches (A1-4, C, D1-2, E2, F, H1-3, G). These deposits are likely to represent a combination of the sequences of 'Post-Roman estuarine silts' and late medieval channel deposits, as identified within the geoarchaeological assessment (Appendix 20). In the absence of further dating evidence with which to refine this sequence, these deposits have tentatively been ascribed to a generic phase of medieval flooding. The relative levels of these across the site illustrated some variation, generally ranging between c. 0.50m OD and c. 1.50m OD, and are likely to represent a combination of varying degrees of horizontal truncation/ground consolidation and underlying topography of the braided channels. The material culture recovered from the upper horizons of these deposits varied between 1080 to 1350 in the more southerly trenches, up to 1240 to 1350 in northerly Trench H2. The latter is likely a result of increased activity and ground consolidation due to the trench's location adjacent to Tooley Street.
- 8.4.2 Limited activity dating to this period was encountered in the north-east of the study site. Ground consolidation layers, an isolated posthole and timber stakes were recorded within

Trench G. These may represent activity on the periphery of a larger structure, such as may have existed fronting the medieval alignment of Tooley Street. The recovery of a larger assemblage of material culture, and specifically more small metal items within the ground consolidation layers, by comparison to other trenches, might support this.

*Occupation and Development:*

- 8.4.3 Property boundaries dating to this period were identified in the west of the excavation area, within Trenches C and H3. In the latter trench, a potential shift in property boundaries was evident within this phase and was indicated by the replacement of an earlier floor surface by a beamslot with associated postholes. These features were superseded by refuse pitting in the north of the trench.
- 8.4.4 More substantial remnants of occupation were encountered within Trench H3 and comprised at least two internal spaces within a north-west south-east aligned building. With the exception of a compacted gravel surface within one of the spaces, no traces survived with which to establish the function of either space. The survival of only the foundation courses of the property may also suggest that this was heavily robbed in later periods. The alignment of this property was however mirrored in the heavily truncated concreted foundation attributed to this phase within Trench H2. Similarly, this appears to have been robbed and abandoned within a relatively short period of time. The discovery in this vicinity (the former location of the eyot edge) of a large accumulation of Roman building materials within levelling deposits might suggest that a Roman structure within the immediate vicinity was robbed and demolished prior to or in tandem with early medieval construction.

*Water Management:*

- 8.4.5 A possible north-north-east south-south-west aligned channel was identified in the eastern part of the site between Trenches D1 and D2. These features could represent parallel drainage features, or alternatively the respective eastern and western limits of a single, large (c. 14m wide) channel. Further work involving map regressions and documentary research could be used to refine this interpretation further. Alluvial deposits within this feature in Trench D2 were initially interpreted as reflecting the abandonment of the channel. However, if this were part of a larger watercourse, such deposits may reflect the silting up, and narrowing of the channel rather than the complete abandonment.
- 8.4.6 Refuse pits were identified as pre- and post-dating the silting of the channel edges within Trench D2. These were subsequently truncated by a second linear feature in the same vicinity as the earlier channel cut and may indicate a continuity or intermittent maintenance of property boundaries. The material culture recovered within the fill of the earlier channel was indicative of tanyards waste, and may infer that industrial activities were taking place within the immediate vicinity.

Phase 4b – Late 15th to early 16th Century (Fig. 97)

*Development and Water Management:*

- 8.4.7 An increase in activity post-dating 1480 was evident across the site and may indicate wide scale attempts at ground consolidation/reclamation and development. Numerous features were recorded relating to water management and drainage and suggest that flooding remained a problem into this period. In the south of the site two roughly parallel lines of revetted channels were identified within Trenches A1-3. Isolated timbers within Trench B2 follow this alignment and may correspond to an eastern continuation of this feature. Modifications to the channel/ditch were inferred by a localised narrowing defined by timber revetting at an oblique angle to the main ditch within Trench A2.
- 8.4.8 It appears that the earlier channel identified between eastern Trenches D1 and D2 had either been abandoned or had narrowed beyond the footprint of the trenches by the late 15th century. Some continuity of this feature or property boundary was suggested however by the presence of a wattle revetment within Trench D1. This was only recorded within the southernmost area of the trench and may relate to a localised reinforcement. Further evidence of water management was identified within Trench D2 with two phases of drainage channels, cut along parallel alignments and a drainage ditch of a similar alignment within Trench E2. The former would have lain to the immediate west of the earlier channel, and similarly along the same orientation. The disuse of these features was indicated by a series of intercutting refuse pits and overlying ground consolidation layers. Demolition material utilised to raise the ground level within Trench E2 contained pieces of a Reigate stone mould and may suggest the demolition of earlier medieval buildings within the immediate vicinity. In this area, this ground raising was followed by a second phase of localised drainage, as represented by a timber drain on a perpendicular alignment to the earlier ditch.
- 8.4.9 Extensive efforts at water management were also identified in the eastern limits of the study site, adjacent to Bermondsey Street. In this area, two roughly parallel channels were identified, both of which were reinforced by pile and plank revetments. A channel this size may have been navigable, if not blocked by northern sluices (Appendix 15). At a raised level above, and between these revetments were the remains of a substantial building, of which at least five internal spaces could be identified. It is likely that these foundations related to a property that formerly fronted onto Bermondsey Street. Little evidence preserved however with which to establish function of the individual spaces.
- 8.4.10 The only other trench to yield firm evidence of construction was Trench G, which was located to the west of the former structure. In this trench, two phases of development were identified. The earlier comprised a series of ground consolidation layers, into which a barrel well had been set. The dump layers and a later pit contained a noteworthy assemblage of material, including a floor tile decorated with a fleur-de-lys design, a rotary key and signet ring

potentially indicative of trade and merchandise. These were subsequently truncated by the construction of a building, of which only the south-western corner was identified within the trench. It is possible that this formed part of a complex or property that fronted onto the medieval alignment of Tooley Street. The discovery of a bone stylus within the internal area of this building might suggest this to have been part of a high status property. A large group of 12th to 13th-century fabric types were recovered from this trench and may support the interpretation that earlier medieval properties in this area were demolished/robbed prior to new development.

- 8.4.11 Evidence related to this phase within Trench F, like many of the trenches, comprised a sequence of ground raising deposits and pitting. However, the material culture recovered from this area included building materials such as glazed Flemish floor tile, decorated tile and rare fabric types, and numerous metal small finds, which might suggest the presence of a high status building in close proximity. The trench would have lain some distance from the ribbon development likely to have existed along both Tooley Street and Bermondsey Street. It is therefore unclear where such material would have derived from; the former precinct of St Thomas's Hospital to the west is one possibility.

*Industry:*

- 8.4.12 The distribution and nature of the material culture from this period inferred that industrial activities were taking place in specific areas. The infill of the northerly channel south of Trench A2 had been backfilled with material of an industrial nature, and indicated that smithing activities were taking place within the immediate vicinity. It is perhaps related to these activities that prompted the management and narrowing of the revetted channel and waterways. Pits to the south of this feature in Trench A2 and further south in Trench B3 contained additional material indicative of smithing. A large squared industrial pit to the north of the channel contained large quantities of leather and animal bone indicative of leather working, potentially relating to shoemaking or translators waste. Also concentrated within this pit and in features from Trench A2 was a large group of dumped peg and floor tile, some of which was decorated. It is likely that these related to Dissolution structures and associated with the precinct of St Thomas's Hospital that would have lain to the immediate west of these trenches.
- 8.4.13 The animal bone assemblage was particularly revealing across the trenches (Appendix 12). This highlighted a spatial divide between activities taking place in the east and west of the excavation areas. Heavily butchered bones were generally associated with the western trenches whereas a concentration of sheep/goat metapodials were recovered from the eastern trenches and were indicative of tawyers waste. Tawyers waste was previously identified in Trench D2 in Phase 4a and represents the beginnings of a long standing local industry documented historically for the area. Craft waste was also represented predominantly in the eastern trenches, and may offer further support for specific working areas. Some of these

examples included bone working waste within Trench B3, a pinner's bone of cattle metatarsus from Trench A2 and pins carved from pig fibulae (Trench D2 and Trench G). It is noteworthy that alongside the assemblage of butchered bone within Trench E1 was leather working waste (comparable to that recovered from Trench A3) and may indicate that butchery and leather working took place in close proximity to one another. Fragmentary traces of a tanning pit in the south-east of Trench E1 might be related to these practices.

#### Phase 4c – Early to Mid 16th Century

- 8.4.14 Only one trench yielded evidence of a firm division between activities relating to the late 15th centuries and those dated to the early 16th century. Two initial phases of grave cuts were identified in Trench A3, overlain by dumped debris and followed by a third phase of grave digging. These graves, most likely associated with a burial ground attached to, or within the precinct of St Thomas's Hospital.
- 8.4.15 It is, however, possible that the disposal of industrial waste also took place in close proximity. The backfill of a pit adjacent to the graves contained bone working waste, a smithing hearth bottom and slag, potentially derived from the same origin as the smithing waste noted here within Phase 4b. Furthermore, there was a continued presence within this phase of leather working waste.

### **8.5 Early Post-Medieval**

#### Phase 5a – Mid to Late 16th Century (Fig. 98)

- 8.5.1 A slight decrease in evidence was noted relating to this period of activity by comparison to Phase 4b. A number of trenches presented no evidence for this phase (A3-5, B1, C, D1-2, E3, F, G, H1-3). This may reflect a lack of development in particular areas or reflect a greater degree of horizontal truncation by later development and construction. In the northern areas, such as Trenches H1-3 and G for example, this is likely to reflect the later ribbon development associated with the medieval alignment of Tooley Street. In other areas (D1-2) this may reflect a continued presence of the roughly north-south aligned channel, which therefore made development either unsustainable or impossible.
- 8.5.2 South-easterly Trenches B2 and B3 offered limited evidence of this period, and only comprised a series of levelling deposits which raised the ground level to c. 2.80m OD. It is possible that predominant environmental features and conditions made settlement and inhabitation of these areas unsuitable. The recovery of a rare fragment of *vetro a reticella* glass within these reclamation deposits, amongst an assortment of domestic debris, is however seemingly out of place as a high status item. This, and the discovery of a cess pit in the south of Trench B3, could infer that these trenches lay to the rear of or adjacent to settlement/development at this time. This might relate to one of the parallel, subsidiary roads south of the former alignment of St Thomas's Street.

*Water management:*

- 8.5.3 In the south-western extent of the study site, an alteration of property boundaries was evident within the vicinity of Trench A2, by the identification of the northern boundary of a channel or ditch in this trench. This could infer the abandonment of the earlier ditch/channel which spanned both Trenches A3 and A2, or the southern migration of this. It is possible that the revetted southern bank of this channel was that identified in the northern limits of Trench A1. The higher level of this Phase 5a channel (c. 0.60m higher) in Trench A2 by comparison to that in Trench A1 could suggest the latter feature had been cut down and potentially robbed for materials. This could therefore be equally interpreted as a change in environmental conditions, as a change in property boundaries.
- 8.5.4 The presence of a tie back within Trench E1 inferred the presence of a north-south aligned channel to the west of the trench. Revetting previously identified in Phases 4a and 4b also suggested the presence of a channel in this area passing, as stated previously, through Trenches D1/D2 and west of Trenches E3 and E1. The lack of an identifiable cut for a watercourse dateable to this period in other trenches may suggest that either the phasing of the channel needs to be refined (although associated elevations do suggest that earlier features were overlain by ground raising deposits since then), or that the channel in question, despite localised modifications and revetting was part of a larger feature prone to natural deviations and meandering.
- 8.5.5 A cut in the north of Trench E1 indicative of a tributary or channel diversion running perpendicular to the main channel described above was dated to this period. This follows a comparable alignment to the revetted channels identified to the east in the Attenuation Tank area (AT1) and may indicate a continuity of property boundaries being maintained into the early post-medieval period. It is possible that this would have fed into the main channel to the west.

*Industry:*

- 8.5.6 Evidence of butchery, previously identified within Phase 4b, continued into this period. Large quantities of animal bone, numerous cattle skulls and the presence of a tanning pit in Trench E1, suggested butchery within the vicinity continued at a similar scale. It is possible that water management features identified in the north of the trench, may be related to the requirements of these industries. The necessity for access to water sources, transport links and waste disposal, may explain the continued management of the waterways in these areas. It remains possible that the channel in the north of the trench was utilised at an earlier period, and therefore was in existence during the medieval period, but re-cut at this time thereby leaving no archaeologically identifiable traces.



- 8.5.7 The majority of all animal bone recovered for this phase derived from Trench E1. A large proportion of the sheep/goat bones exhibited unfused distal ends by comparison to both earlier and later assemblages. These age differences may suggest some variation in the types of sheep leather produced at this time, or relate to the general age of animals arriving at the City abattoirs which would then become available for tawyers (Appendix 12). The assemblage also demonstrates that tails as well as foot bones accompanied the skins to the tawyer.

*Development and construction:*

- 8.5.8 The only trenches to yield evidence of development were Trenches E1 and E2. The corner of a timber framed building was identified in the south of the former trench, adjacent to a timber tie back, described above. The lack of impact upon the tie back by the building might suggest that both structures functioned together. No evidence was recovered from the internal area of the structure with which to firmly establish a function. However, evidence of the continued presence of butchery, particularly for this trench, could suggest that the building was of an industrial rather than residential nature. The proximity to a managed waterway, and tie back could therefore relate to transport links associated with these industrial activities.
- 8.5.9 A second property was identified in Trench E2. This brick structure appeared to extend beyond the western and southern limits of excavation and followed a slightly different orientation to that of the structure within Trench E1. The ephemeral traces of a later beamslot, south of the initial construction infers later modifications indicative of a multi-phase property. The nature or full extent of this building was not established. If the proposed watercourse identified west of Trench E1 is correct, the property here might have lain on, or near to the western bank of this feature. The differences in alignment may therefore reflect a development which grew in relation to, and respective of, the predominant natural features, such as this channel.

Phase 5b – Late 16th to 17th Century (Fig. 99)

- 8.5.10 A greater amount of activity was evident across the study site during the later 16th and 17th centuries. This included additional construction, expansion of pre-existing properties and an increase in industrial activities. By contrast, Trenches H3 and B2 exhibited very little evidence of activity. The only features attributed to this phase included levelling/consolidation deposits, which raised the respective ground levels to 1.68m OD and 2.80m OD.

*Water Management:*

- 8.5.11 By comparison to earlier periods, there was less direct evidence within this phase for the previously identified watercourses and channels which bisected the area. This might indicate a combination of altering environmental conditions, wide scale successful land reclamation, and more efficient management strategies. A number of features were identified however

which could represent structures on the periphery of a larger channel. One of these included a possible timber tie back within Trench D1. The channel formerly identified to the west of this trench may therefore have remained in use. The lack of other evidence attributable for this period within the remainder of the trench might infer that ground conditions remained too waterlogged or prone to flooding to allow further development.

- 8.5.12 No evidence for the western limits of the channel described above was identified within Trench D2 (south of D1). Levelling and construction in this trench indicated that the channel had either been infilled in this vicinity, had migrated, narrowed or been diverted further east. The continued functioning of one of the subsidiary channels in Trench E1 however would suggest that the watercourse had not completely fallen out of use by this time. In Trench E1 this smaller channel in the north of the trench ran perpendicular to the main course of the channel, and was identified from at least Phase 5a. This remained in use for at least the early part of the late 16th century and was reinforced by wattle or pile and plank revetting on both northern and southern banks. Multi-phase repairs and modifications to this suggested some longevity of use. Potentially towards the early 17th century this fell out of use or was abandoned. This might have been a natural process as numerous pieces of collapsed timbers were found within the upper channel fills.

*Industry:*

- 8.5.13 The most prolific amount of industrial activity attributed to this phase was identified within Trench A3, in the south-west of the subject site, with the majority of all slag and iron flakes recovered during this phase recovered from Trench A3 (Appendix 9). Three 'spaces' were defined in this trench, representative of at least two internal areas. These could be grouped into three broad sub-phases of activity. The central part of the trench was defined by timber partitions and later brick walls. Within the internal area was evidence of repeated resurfacings and alterations to modify and reinforce the northern and southern boundaries. These modifications included the reinstatement of boundaries and excavation of possible drainage gullies. Within the material attributed to both phases of use for the central area, were industrial waste deposits indicative of smithing, slag residues on the building material and irregular bricks representative of kiln furniture. The upper occupation horizon contained over 5kg of slag and ten smithing hearth bottoms in one deposit alone. Other finds of note included pinner's bones which may suggest bone working or pin making within the vicinity as well.
- 8.5.14 Only the northern area exhibited evidence of all three sub-phases, which may indicate the main focus for activity lay here. Activity in this area could be divided into two phases of pitting with associated postholes indicative perhaps of localised support for the boundary wall/partition or the remnants of internal installations or partitions. The final phase of activity comprised the excavation of an additional drainage gully, robbing of the southern partition and the installation of a hearth in the east of the space. Detritus associated with smithing was recovered from the fills of pits in both phases of use and included significant quantities of

microslags and flakes derived from the shaving/shaping of iron, and similarly to the central area, fragments of building material with slag adhering to the surfaces. Numerous smithing hearth bottoms were also recovered, and in many instances had been utilised as post pads, potentially to protect the posts from water.

- 8.5.15 It is noteworthy that a particular concentration of medieval floor tiles were recovered within Trench A3 during this phase. This is likely a result of the trench's proximity to the precinct of St Thomas's Hospital (Appendix 10) and suggests recycling of available resources. Further examples of recycled ecclesiastical material within industrial premises were recovered from Trench F, described below.
- 8.5.16 The southernmost area of Trench A3 did not appear to be such a focus for activity. Little evidence of industry was recovered from any of the features. Furthermore, the features attributed to this phase comprised only a few refuse pits, possible garden soil and a possible mortar surface. This area would have been the closest in proximity to the channel previously identified in Phase 5a. It is possible that either the channel/boundary remained in use at this point, or the ground remained sufficiently waterlogged to prevent more intensive construction and expansion.
- 8.5.17 Additional evidence of smithing was recovered from Trench F. Numerous iron objects plus hammerscale and iron spheres were recovered from a sequence of dump layers. The scale of production did not appear to be quite as intense as in Trench A3 and may indicate smithing within the near vicinity rather than in this location specifically.
- 8.5.18 Other industries represented during this period included leather working, butchery and bone working waste. This was specifically encountered within Trench E1, representing a continuation of a known practices first identified during Phase 4b. Cattle butchers waste was recovered within a refuse pit and within the upper horizons of channel in fill. Antler working waste within the latter deposits also suggested the presence of bone working. A particularly large assemblage of animal bone was recovered from this trench and the domesticate abundance patterns illustrate the importance of sheep/goat in the local diet as well as being an important source of raw material for the local tawyers (Appendix 12).

*Construction and Maintenance of Property Boundaries:*

- 8.5.19 Construction, either relating to new features, or expansion/modifications to pre-existing properties was recorded within a number of trenches. The most substantial remains were recorded within Trench G in the north of the site. The corner of a building was found within the south-eastern corner of the trench and bound an internal area with evidence of a fragmentary and worn mortar surface. A number of postholes within this area might relate to a small internal installation. It is likely this property was part of a complex or larger structure associated with the ribbon development along Tooley Street. It is noteworthy that the earlier

alignments, and boundaries noted for the medieval architecture (Phase 4b) were respected by this later property, albeit at a higher elevation. A significant quantity of Flemish glazed silty tile fabrics were also recovered from this trench which may represent recycled material from a 15th or 16th-century ecclesiastical structure.

- 8.5.20 Property boundaries within Trench E1 were initially observed and defined by a channel, as described above, which extended throughout the northern limits of the trench. These boundaries continued to be respected by a later building following the disuse of the channel. Remnants of a wall and beamslot within the footprint of the channel, respected the alignments of the boundary and represented the first evidence of development and encroachment into this part of the trench.
- 8.5.21 Construction was also noted in the southern limits of the trench which similarly respected these alignments. Numerous surfaces and bedding/occupation layers suggest some longevity of use for this property. Each episode of re-surfacing was preceded by pitting and may suggest periodic localised repairs or changes of function for the space. These features suggest that potential changes in land use occurred during this period, but pre-existing property boundaries were maintained. It is impossible, due to the location of these properties, to determine whether the southern building was in existence and functioned with the revetted channel, or was contemporary with the later construction following its abandonment.
- 8.5.22 The two properties identified in Trench E1 were sub-divided by a 0.58m strip of land. The function of this area is unclear, and was occupied by a series of upright posts. These may have offered structural support to either property or defined a fence line. Following the disuse of the channel, it is possible that a lack of prominent, visible features in the landscape existed with which to suitably define or maintain this boundary.
- 8.5.23 Construction within Trench E2 also demonstrated a maintenance of pre-existing boundaries and alignments. Masonry attributed to Phase 5a remained in use with additions to the northern boundary and the installation of numerous surfaces, both within the pre-existing boundaries and external to these. The surfaces recorded in the south of the trench might suggest the masonry in this area represented internal walls within a larger complex rather than belonging to a separate property. The presence of beaten earth floors and bedding layers suggested this area was repeatedly modified, re-surfaced and perhaps subjected to a greater amount of activity and use. Demolition rubble found within the levelling deposits infers that the demolition of older buildings within the vicinity coincided with these modifications.
- 8.5.24 Construction within previously undeveloped trenches was also noted for this period. The basement associated with a multi-phase property was recorded within the south-eastern corner of Trench D2. These remains were too fragmentary and limited to be able to make wider inferences regarding layout, size or function of the building. The presence of a possible tanning pit to the north of this might suggest that the two were related.

8.5.25 A number of linear cut features were identified across the site of uncertain function. A single linear feature was identified in Trench C and parallel cut features recorded within Trench F. These may represent ephemeral traces of former boundaries or relate to localised drainage associated with an adjacent property. Evidence of smithing within the vicinity of Trench F might suggest the drainage trenches or gullies here to have served an industrial function. The use of mortar as a capping material may therefore be explained as being used to seal noxious industrial waste products. Occupation debris overlying these features might suggest that both domestic and industrial premises were both located in the immediate area.

## **8.6 Phase 6: Post-medieval**

### Phase 6a – 17th to 18th Century (Fig. 100)

8.6.1 Development of the wider area increased during the 17th to 18th centuries. Many of the structures and features however appeared to be of a more domestic rather than industrial nature by comparison to earlier periods. Similarly to other periods, not all areas of the study site exhibited the same intensity of occupation or development. Some trenches exhibited no evidence relating to this period (Trenches A2, A4, A5, B3, B2, D2, E3, H2) and others contained limited evidence of activity, such as ground consolidation layers and refuse pitting (Trenches A1, H1, H3) that may suggest these lay adjacent to domestic properties.

#### *Water/waste management*

8.6.2 Only Trench D1 yielded evidence of a revetted channel during this period. This may reflect an alteration in water management strategies, with channels diverted, infilled or culverted by this time. In Trench D1 however, a multi phase timber, pile and plank revetment was documented along the western limits of excavation. This correlates well with earlier periods of use within this trench (Phases 4a, 4b, 5b), which all inferred the presence of a roughly north-south aligned channel passing through this area. Due to the limited exposure and location of the revetting, there was some uncertainty regarding which was the landward side of the revetment. The feature was originally interpreted as reinforcement for the western edge of a channel. However, the location of a hollowed log pipe within the projected course of this would perhaps argue that the location for the channel lay beyond the western limit of excavation instead. The lack of firm evidence to confirm the precise location of the channel this related to is likely a result of both sporadic recutting of the feature and natural processes of silting up. As suggested previously, this may reflect a meandering water course.

8.6.3 The timbers utilised in the construction of the revetment were noteworthy for the large percentage of timbers being re-used boat fragments. The use of such materials may reflect the availability of local resources and the proximity to ship breaking yards.

8.6.4 Additional attempts to manage water and waste were documented within Trench B1. A large, roughly east-west aligned brick culvert was recorded as running across the full length of the

trench. Numerous ground consolidation layers were associated with this feature. Earlier evidence of a watercourse in this vicinity was inferred in Phase 4b with the discovery of a potential fragment of a revetted edge of a channel which extended south of Trench B2. It is therefore possible that an earlier watercourse was culverted and exploited for waste management.

### *Industry*

8.6.5 Features encountered within Trench A3 continued to be of an industrial nature during this period, and were predominantly associated with metal working. Evidence for such activity was first recovered from this trench dating from the late 15th century, with a particular intensity of activity taking place during the early post-medieval period (Phase 5b). The three distinct spaces of a possible workshop (boundaries formalised in Phase 5b) continued to be used and respected. The northern limits of the central space were defined by a later brick and stone wall, and the extent of the internal surfaces strongly suggests that the southern boundary also remained in use. The numerous working surfaces recorded for this central space would also suggest some longevity of use. Large quantities of slag were recovered from the surfaces, associated levelling deposits, and also adhering to building material. The latter might suggest that the superstructure was also modified sporadically and demolition rubble utilised as levelling material. A noteworthy cluster of Tudor red bricks (late 15th to early 16th century) were recovered from Trench A3 in floor surfaces dated to this (and earlier Phase 5) which appear to represent kiln furniture or specialist brick associated with industrial processes. Examples were recovered that had been burnt or reinforced with copper residue (Appendix 10; Appendix 9).

8.6.6 Smithing microslags were also recovered from Trench D1. These were recovered from levelling deposits capping the first phase of revetting, described above. It is unclear where such waste would have derived from, and it may either relate to a functioning industrial premises within close proximity or to the disposal of waste following the abandonment of such a place. A cache of over 70 copper alloy pins (sf 138) was also recovered from this trench and may reflect pin manufacture on or near this location (Appendix 8).

### *Development*

8.6.7 New properties were recorded within Trenches C and F dating to this period. In both cases the evidence was extremely truncated and limited in exposure. The remains of parallel walls and a brick floor were encountered within the south-western corner of the trench. The floor level of 2.39m OD might suggest this to have been part of a basement. Similarly within Trench F, a poorly preserved brick floor was recorded at 2.67m OD with associated levelling deposits. The full extent or nature of either property remains unknown. Redevelopment within the vicinity of Trench A4 was inferred by the recovery of disarticulated human remains within

levelling deposits dated to this period. It is likely that the disturbed cemetery soil was originally associated with a graveyard within the precinct of St Thomas's Hospital.

- 8.6.8 Expansion or modifications to pre-existing properties was found within Trenches E1, E2 and G. Within the latter trench, these modifications included the construction of new boundary walls over the earlier foundations, with some alterations to the internal layout indicated by an internal wall and new brick floor. A pre-existing brick chamber (Phase 5b) in Trench E2 was also expanded at this time, and brick floor laid. Pieces of collapsed masonry were used as levelling material, and may suggest that other properties, or parts of them, were demolished to make way for new construction schemes in this area.
- 8.6.9 A greater amount of activity was recorded within Trench E1. This initially involved the installation of a timber-lined drain, presumably related to the Phase 5b properties, followed by an episode of pitting and levelling. The latter was associated with a new construction scheme which removed all traces of the earlier property boundary. The alignments of earlier features were however respected, which may indicate the expansion of one of the earlier buildings into an adjacent plot. Associated brick and cobble surfaces were installed, presumably at a basement level, and subsequently sub-divided.
- 8.6.10 The assemblage of building material indicated that this part of Southwark and extensive evidence of builds and rebuilds was associated with a combination of residential, commercial and municipal construction. Such widescale development is illustrated on historic maps since at least the 1550s (Appendix 10). Furthermore, the large numbers of pan tile (both fresh and sooted) suggest that these roofed much of the slum, better quality housing inns, commercial and industrial premises in this part of Southwark and therefore may suggest the importance of Regency/Victorian social housing in this area (Appendix 10). This may support the analysis of the animal bone assemblage that revealed a greater use of veal from the 17th century, whereas other London sites exemplify this change earlier from the 16th century (Appendix 12).
- 8.6.11 A particularly concerted phase of building is documented for Southwark during the mid to late 17th to 18th century, and has been noted in other excavations, e.g. Stoney Street (TAA6) and Western Approach (TAA9) (Appendix 10). The red bricks recovered from investigations on the study site, associated with the later 17th to 18th-century structures (particularly found in Trenches B2, E1, E2 and G) presumably relate to the housing alignments along the Maze prior to the railways. Furthermore, those built towards the second half of the 17th century are potentially associated with rebuilding works following the documented 1676 Great Fire of Southwark (Appendix 10).

#### Phase 6b – 18th to 19th Century (Fig. 101)

- 8.6.12 Activity recorded across the site during this phase relates to the last phase of use for the land immediately prior to the construction of the extant arches for the railway. A slight decline in

industrial practices was noted by comparison to earlier periods and widescale efforts and drainage/sewage management noted by the construction of numerous brick culverts which clearly bisected the site.

*Industry/Commerce:*

- 8.6.13 Only three areas (Trench E2, Trench F, E122) yielded firm evidence of industrial or commercial activities. The former metal working or smithing noted within Trench A3 had ceased by this time. A significant amount of rebuilding was noted within Trench E2 and may relate to the production of clay tobacco pipe. Features within this phase were grouped into three broad sub-phases of activity, and comprised an initial phase of construction, the construction of a clay tobacco pipe kiln and finally the demolition of this structure and levelling of the area. The primary phase walls represented a combination of irregular features and those associated with drainage and waste disposal. It is possible that these might represent the fragmentary remains of a pre-cursor to the kiln. The kiln itself is likely to be associated with the workshop of James Minto, known to have produced pipe in this area between 1809 and 1834, and is documented as working on Tooley Street (Appendix 6). Numerous modifications and repairs to the central structure/chamber of the kiln would indicate some longevity of use. The quantities of waste products associated with pipe manufacture and kiln furniture found within demolition debris suggests that following the abandonment of the workshop the structure was collapsed in on itself. This is likely to correspond with widescale levelling prior to the construction of the railway arches.
- 8.6.14 The presence of a tavern or ale house was indicated in the vicinity of Trench F. A large square cess pit contained a wide assemblage of material mostly associated with the consumption of alcohol. Specific mention was also made of premises along Tooley Street (King's Head) and Bermondsey Street (St John's Coffee House) on inscriptions of pewter tankards. Further analysis of historic maps and documentary sources may be able to locate these.
- 8.6.15 An irregularly, slightly cruciform, shaped construction was identified during ground reduction within E122. The ashy infill and evidence of heat exposure to surrounding deposits would suggest an industrial function for this. The exact function however remains unknown and further work may help to elucidate further. Brick constructions in the north of the arch were potentially related to this complex.

*Drainage/waste disposal*

- 8.6.16 Widescale efforts to improve drainage and sanitation during the 19th century were evident within numerous trenches. Approximately 3kg of material associated with Victorian drain pipes were recovered from this phase. Such material was manufactured in large quantities



and supplied by boat and train to the capital to meet the demand for improved sanitation after the 1850s (Appendix 10).

- 8.6.17 Roughly east-west aligned brick culverts were identified in Trenches A1, A4 and B2. Those within Trenches A1 and A4 ran parallel to one another and that within Trench B2 terminated in the east of the trench. The combination of domestic refuse and garden soils used as levelling material following the construction of the culvert in Trench A1 suggests that domestic gardens were truncated during these works. Numerous repairs and modifications to the structure within Trench B2 would suggest some longevity of use for these features.
- 8.6.18 It is possible that the culverts returned along a north-east south-west alignment north of Trench B2. Brick culverts were recorded running centrally through Trench D2 and continuing north within Trench E3. In the latter trench this feature replaced an earlier storm drain, and again illustrates multiple phases of drainage. Subsidiary channels fed into the culvert within Trench D1 and may suggest that these features were part of a wider scheme or network of drainage features. These works were overlain by a possible road or yard surface within Trench D1.
- 8.6.19 The earlier culvert recorded within Trench B1 had fallen out of use and been robbed for materials by this time. The abandonment of the culverts within Trenches B2 and E3 was dated to the later 19th century and may therefore coincide with construction schemes relating to the extant arches for the railway. However, the placement of these features centrally within the arches might also argue that they initially functioned with the new station.
- 8.6.20 Additional features associated with drainage included a soakaway and numerous pipe trenches recorded within the E122 ground reduction works. It is possible that these functioned with the industrial premises described above. The fragmentary traces of a north-east south-west aligned culvert was also identified along the western limit of excavation in Trench H2.

*Development:*

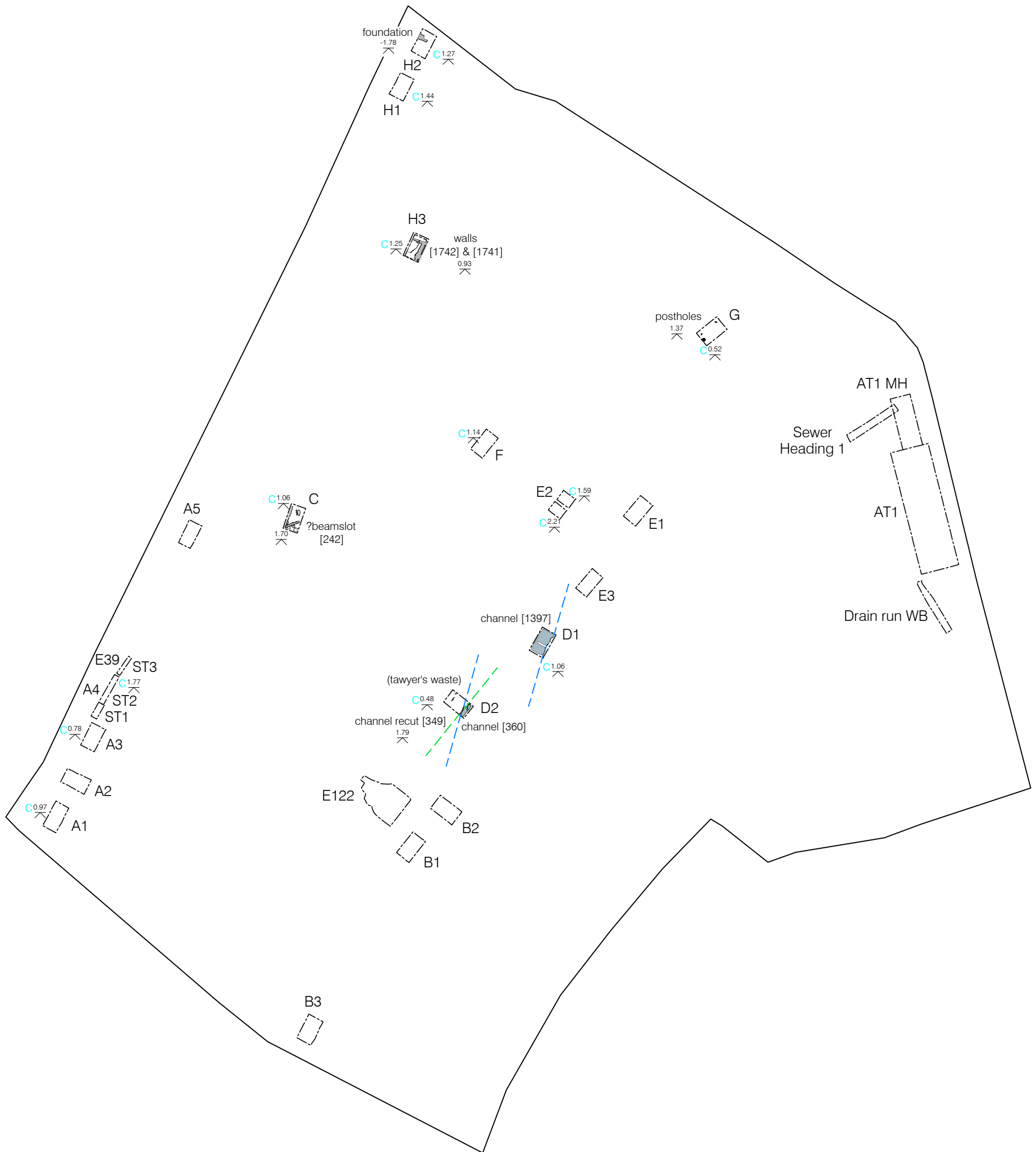
- 8.6.21 Numerous additional constructions or additions to pre-existing properties were recorded during this period. New builds were recorded within Trenches A2 and A4 in the south-west of the study site. These comprised the eastern limits of a basemented property and a large square concrete construction. The latter may be associated with the railway arches. It is noteworthy that the property identified in Trench A2 incorporated a large proportion of recycled materials, which may have derived from St Thomas's Hospital to the west. No evidence of construction was recorded within Trench A3, however, for this period. The land use appears to have changed from industry to garden features. The property boundaries from earlier phases were therefore no longer respected, but the alignments were maintained.

- 8.6.22 Further evidence of basemented properties were encountered within Trenches D2, B1 and H1/H2. The masonry within Trench B1 was only exposed in the far north-western corner and therefore was only tentatively interpreted as a boundary wall. Features within Trench D2 related to the north-west corner of a property with associated brick surface and drain, which may have fed into the culvert identified within adjacent Trench D1. The property here underwent at least one additional phase of modification with a second floor installed along a different alignment.
- 8.6.23 The boundary of a larger property, which presumably fronted Tooley Street, extended across Trenches H1 and H2. Within the bounding walls were a series of multi-phase drainage features, including a culverted drain which appeared to run to the north. It is unclear how these functioned with the southern boundary wall however. Associated with these constructions was a concrete basement slab.
- 8.6.24 The alignments of the property within Trenches H1/H2 were respected by features within Trench H3. A concreted basement surface was recorded in this trench but had fallen out of use by the mid 19th century and overlain by demolition and levelling material. A very large bat brick recovered from this trench (within pit fill) was potentially related to heating or a furnace. This might suggest that these features were related to the functioning of London Bridge Station rather than pre-dating it (Appendix 10).
- 8.6.25 Pre-existing property boundaries (Phase 5b, and Phase 6a) within Trench G were maintained and modified at the start of this phase with the installation of a new brick surface. Development then began to encroach upon the areas to the north and east of this. This encroachment into previously undeveloped areas and subsequent subdivision of the space may reflect the population expansion of the 19th century. These areas were abandoned by the early/mid 19th century and area levelled off prior to the construction of a new boundary wall. This continued to respect the central boundary of earlier property divisions.
- 8.6.26 A similar sequence was encountered within Trench E1. Earlier properties were demolished and the debris used as a construction horizon for a later structure. The differing alignment of this suggested that former property boundaries and alignments were not maintained during the 19th century. Further research and analysis of historic maps and documentary sources may shed further light on the extent and function of this feature.
- 8.6.27 The material culture associated with these properties illustrated that a notable proportion of domesticated bones were from large individuals (Appendix 12). These may relate to the import of 'improved' types to London meat markets dating from the late 18th and early 19th centuries (Appendix 12). Other indications of diet were suggested by range of plant macrofossils assessed from cess pit fills. Fruits and seeds potentially consumed to help with digestive problems were recovered from Trenches B2 (S3) and F (S28). These varieties could be used as laxatives (Psyllium and flax) or to settle the stomach (Fennel). Further imports included

Chinese porcelain which may reflect a lower socio-economic community that could 'only afford oriental porcelains when they become affordable to everyone' during the late 18th century (Appendix 4). A single piece of marble slab was recovered from levelling deposits in the south of the site (Trench B2). This may also reflect prevailing trends for this period, in the increased demand for white marble, both for fireplaces and for funerary objects (Appendix 10).

## **8.7 Modern**

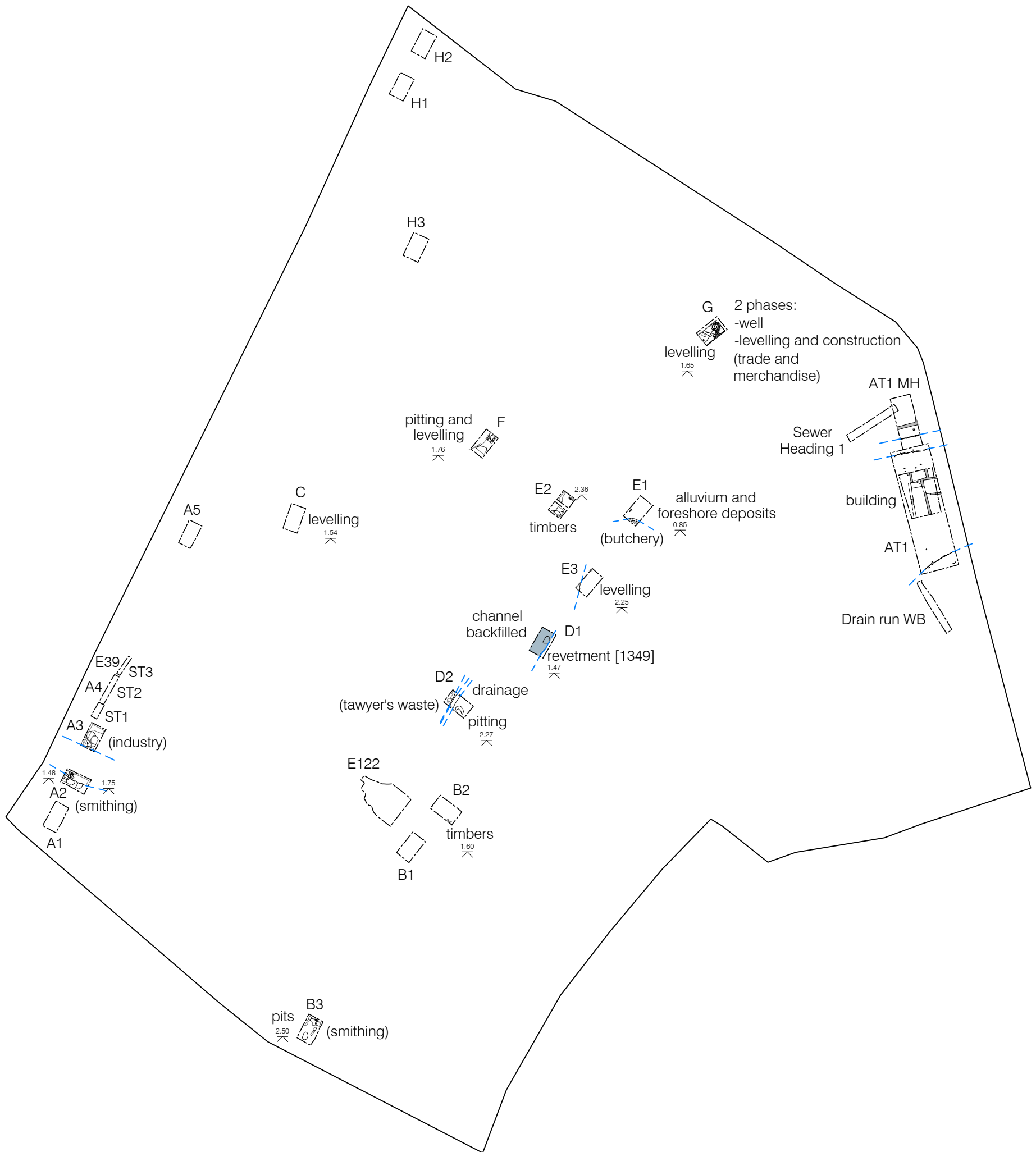
- 8.7.1 Extensive deposits of made ground and demolition material considered to represent levelling associated with the construction of the extant railway arches was noted across the site. The construction of the arches exhibited extensive, but localised impact upon the underlying archaeological horizons. Furthermore, the different phases of building exhibited differing levels of impact, with the archaeology preserving at a high level in certain trenches.



C Consolidation:  
C: 11th - 14th C  
D2: 1080 - 1350  
E2: 1135 - 1220  
H2: 1240 - 1350  
H3: 1175 - 1225

0 50m

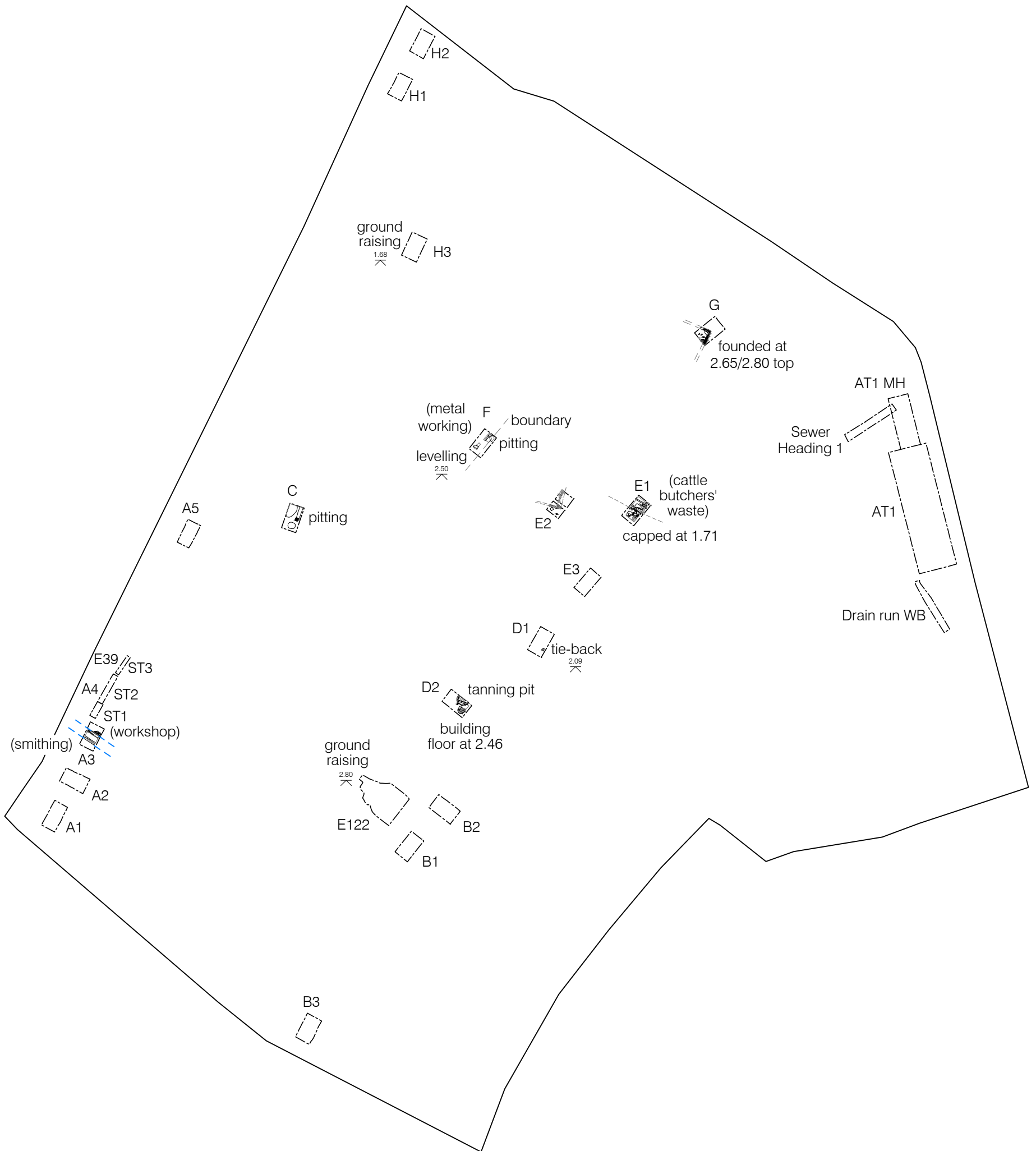
Figure 96  
Site Overview - Phase 4a  
1:800 at A3

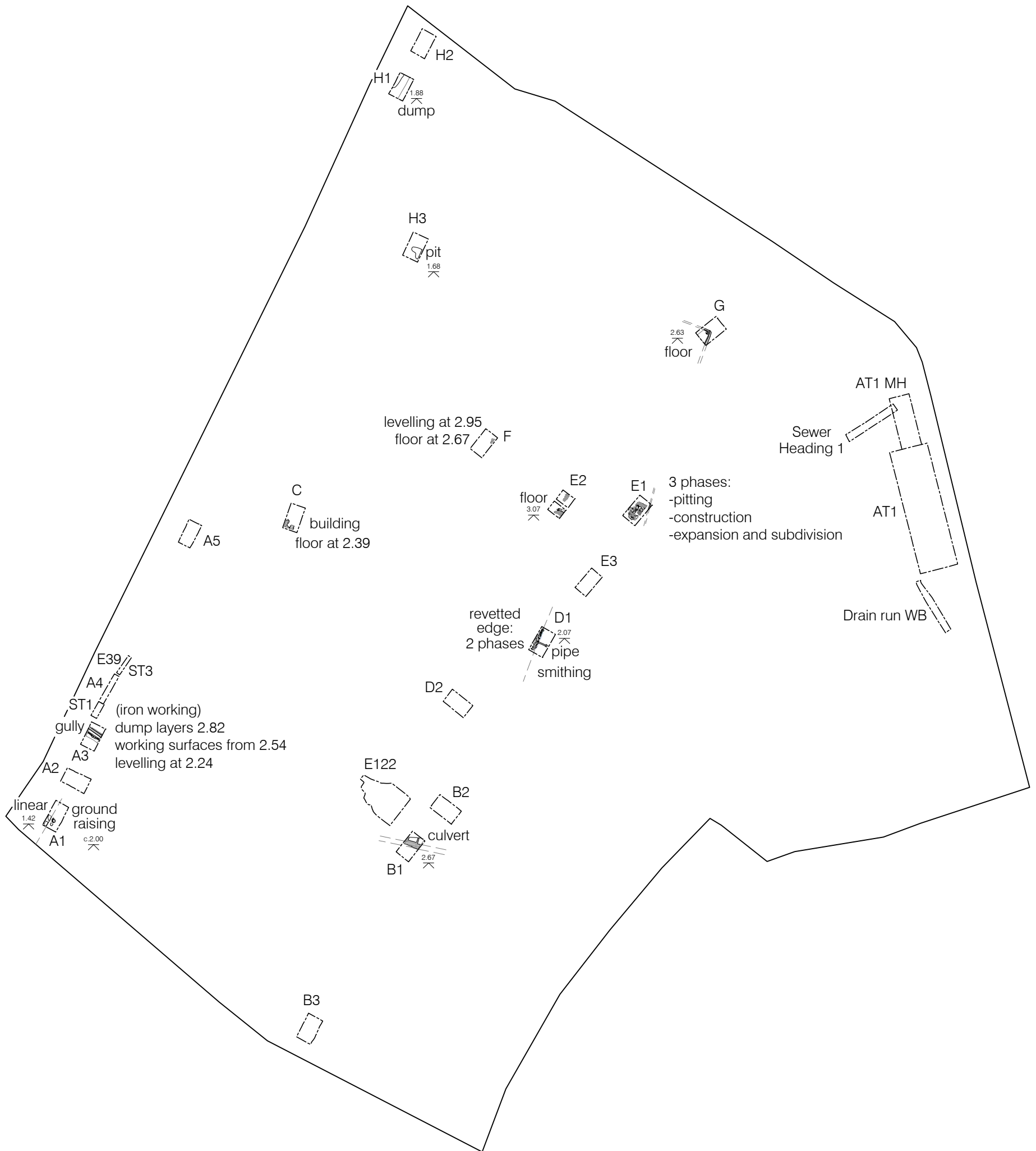




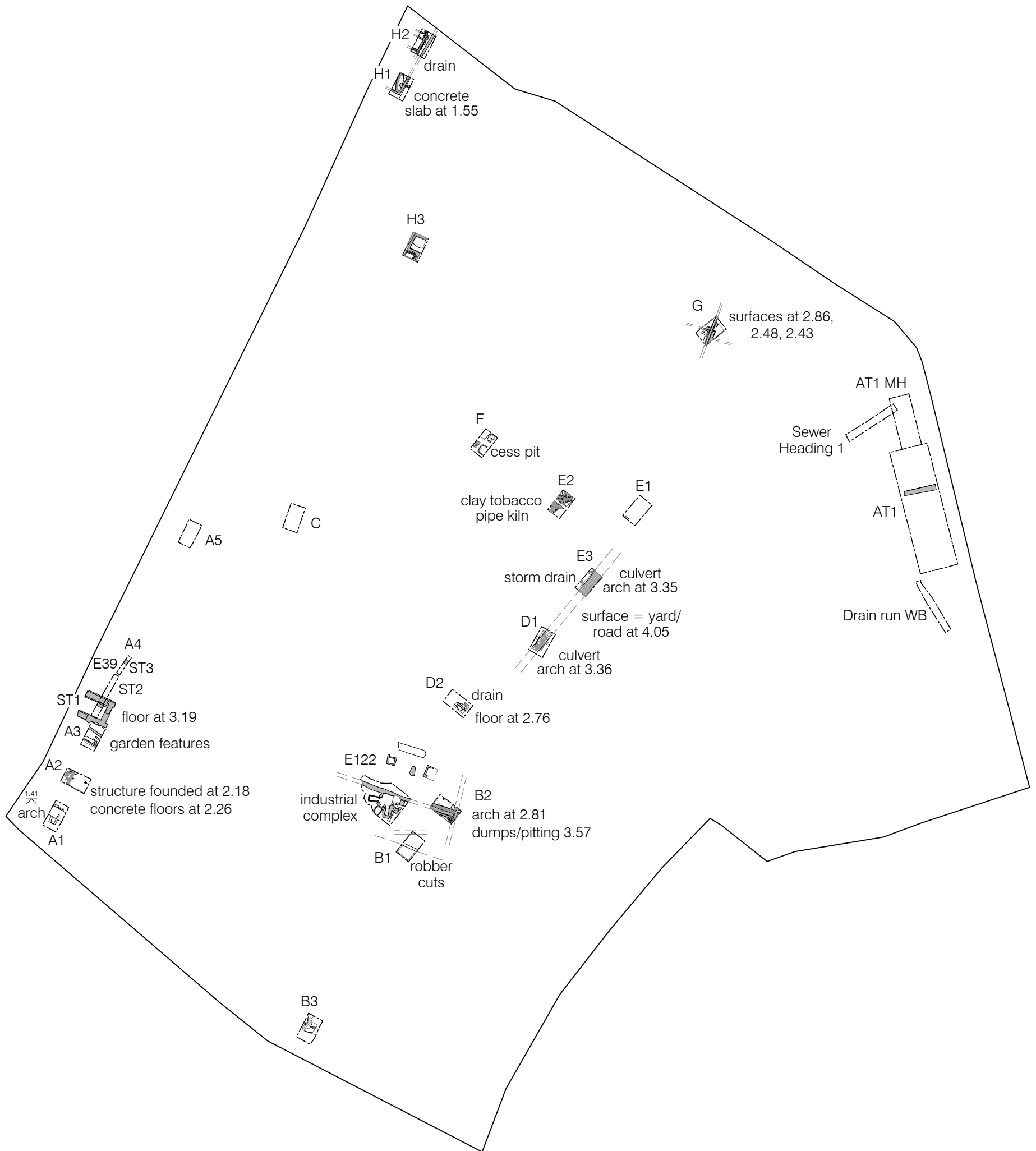
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Figure 98  
Site Overview - Phase 5a  
1:800 at A3









## 9 RESEARCH OBJECTIVES

### 9.1 Original research objectives - General (NWR 2012b)

9.1.1 The WSI (NWR 2012b) specified that the fieldwork be targeted to address the following broad areas of research:

- The immediate post-glacial topography and environment;
- Palaeoenvironmental change from the prehistoric to medieval periods;
- Utilisation of the area during the prehistoric period and human adaptation to environmental change;
- Utilisation of the channel edge during the Roman period, including evidence for waterfront structures/boats;
- Initial medieval development and land use, especially the potential for town houses of important clerics;
- Later medieval and post-medieval development and changing use and economy of the area

9.2 The WSI identified the following research questions within these broad areas of research:

#### Natural topography and the prehistoric environment

- Does the site provide further information which can be used to refine the existing topographical map of the area?

The excavations and augering identified a broad sequence of sandy gravels overlain by Late Pleistocene/early Holocene sands, freshwater fluvial sands and Prehistoric peat respectively. This revealed a complex sequence of an active fluvial environment with multiple channels and foreshore environments. The edge of the eyot was most clearly identified within northerly Trench H2, in which this was visible at the base of the trench at project level. This information therefore does refine previous topographic models, but more information gleaned from additional dating and the infilling of spatial gaps in the sequence is likely to refine this further. Only a broad model of the sedimentary sequences is therefore available at present.

- Can the information be used to extend the existing profiles across the Guy's Channel area?

Sequences through Guy's Channel were most clearly identified in the area of Trenches A4/A5. The level of basal gravels within Trench F, in the middle of the subject site, is however consistent with the depth of Guy's Channel as established in previous excavations. To refine the profile and extent of the channel further work is required to correlate the data sets from all trenches and boreholes examined.

- What are the characteristics of the channel at different times in the past?

The late Pleistocene/early Holocene sands overlying natural gravels exhibited a gradual rise from west to east, indicative of the profile of the channel. These exhibited signs of weathering consistent with high energy deposition within a fluvial environment potentially subjected to sub-aerial processes. The accumulated deposits reflect a reduction in river energy at the end of the last glaciation when glacial ice was retreating northwards and there was a transition to more stable anastomosing channel conditions. These may also represent polymorphic deposits formed by both windblown and fluvial processes that would have helped form the eyots. The land surfaces these deposits represent formed the palaeotopography of Southwark with its network of eyots and associated channels.

Fluvial sands sealed the earlier sand horizons and the identification of interbedded sands and sandy-clays indicated periods of varying river flow. A general increase in the sand content of the channel profile may infer shifting channel activity across the area. The channel sequence represented by these sands suggests lateral migration across the floodplain. Deposits within this wider horizon of activity with greater percentages of clay are likely to represent channel edge environments by comparison to the sandy deposits indicative of greater channel flow.

The pollen, diatom and ostracod analysis indicated that the prehistoric Thames channel was exclusively freshwater, with no indications of any marine or brackish conditions. This may indicate that this sequence pre-dated the tidal incursions within this area of Southwark or that it was protected by the local topography, perhaps by the formation of a shingle spit or bars.

- Are there surviving environmental remains for past environmental reconstruction and indirect evidence of human activity from the late glacial to post-medieval periods?

Following the deposition of the basal fluvial gravels and sands under cold climate river conditions, the drier and raised areas of the floodplain including the eyots of Southwark would have been subject to weathering and encroachment of vegetation during the onset of warming during the Holocene.

Fluvial sands overlying the gravels are representative of the freshwater Thames sequence associated with increased alluviation of the Thames floodplain. This was potentially a result of increased erosion from widespread woodland clearance during the Bronze Age. The evidence from the study site revealed occasional episodes of drying-out of the floodplain, possibly seasonally, or during periods of drought. The dominance of grasses, aquatics and sedges suggest that the immediate vicinity was a wet meadow environment on the floodplain during this period. An analysis of the pollens also suggested the potential for cereal cultivation on the higher ground of the eyot.

The accumulation of peat across areas of the site were correlated to the mid to late Bronze Age, due to reduced river-levels and a decrease in the rate of sea-level rise. The beginnings of tidal inundation were represented by a transition to organic silty-clay which sealed the peat horizon.

- Is there evidence for *in situ* prehistoric activity on the site? If so, what is its nature and date?

No *in situ* prehistoric activity was revealed on the site.

- Are peat deposits of late prehistoric date (Bronze Age & later) with potential for the preservation of organic artefacts present on the site?

Thin layers of peat were identified in the areas of Trenches A4/A5, C, D2 and in AT1; the horizon within Trench C was dated to 1404-1207 cal BC. This accumulation is taken to reflect the development of alder/fen carr on the floodplain, with oak and hazel woodland growing on the higher ground. This was overlain by estuarine silty clays, indicative of tidal conditions, present during the Iron Age onwards. The previous carr and fen deposits were therefore replaced by tidal mudflats and salt marsh.

### Roman

- What evidence is there for consolidation/control of natural channels throughout the Roman period? e.g. timber revetments, wharves (A1-3, H2)

No direct evidence for the control of natural channels was encountered within the investigations. Collapsed structural elements of a possible revetment with a land-tie beam within Trench A5 however, does suggest that attempts had been made to manage Guy's Channel. The overlying dumped deposits suggest that these fell out of use by the 2nd to 3rd centuries. Only a single isolated timber believed to be of Roman date was recorded within Trench H2 at the edge of the eyot. It is unclear what this related to.

Extensive ground consolidation deposits were however recorded across the site within augerholes. In some areas compacted debris suggested potential reclamation surfaces. Very little dating evidence was recovered from these horizons however with which to refine the dating. The extent of these deposits does however indicate that a concerted effort was made during the Roman period to raise the ground level and therefore facilitate occupation and development of the wider area.

- Is there other evidence of water management such as drainage? (A1-3)

n/a

- What evidence is there for the utilisation of the channel edge during the Roman period? E.g., fish traps, possible boats (A1-3, H2)

n/a

- Is there further evidence to confirm the southern extent of the Cotton's Wharf eyot on the northern limit of the site?

n/a

- Are there any structures or features relating to activity further north on the eyot during the Roman period? (H2, G)

Only an isolated timber upright was recorded within Trench H2. This would have lain at the periphery of the northern eyot and development may therefore have been hindered by environmental conditions and recurrent flooding.

### Medieval

- What is the nature, extent, character and identification of medieval buildings or structures on the site?

The only firmly identified masonry structures on the site lay to the east of the excavation area, adjacent to Bermondsey Street and to the north, adjacent to Tooley Street. These are likely to reflect the medieval ribbon development along both these thoroughfares. The material culture recovered from a number of trenches infers the presence of high status properties. These are likely to include both early medieval properties demolished in advance of redevelopment and material derived from the precinct of St Thomas's Hospital.

Other structures identified comprised timber revetting related to water management schemes. These are likely to correspond with a wider network of channels which

extended across the site in both a north-south and east-west alignment, some of which may have been navigable by boat.

- Can any structures or features (e.g. high-status buildings, outbuildings, gardens) be linked to known clerical town houses, mansions and associated tenements on the south side of Tooley Street, such as the 14th-century manor, the Maze? (H1-3, G)

Further map regressions and analysis of documentary sources are required to establish such details with any certainty. However, evidence of masonry buildings within Trench H3 and Trench G could potentially be associated with the Maze complex.

- Can environmental evidence from pit assemblages be used to reconstruct dietary and economic details?

Little evidence was recovered from pit assemblages with which to make inferences about diet. However, a large number of pit fills did relate to prevalent industrial practices. One of these included butchery and tawyers waste. The prevalence of sheep/goat might suggest these to have been an important dietary component in addition to providing raw materials for local butchers, leather workers and tawyers.

The distribution of material culture suggests that higher status properties, with links to trade and merchandise lay to the north of the site, presumably associated with the development of Tooley Street. Industrial activities by contrast were located in the south of the site.

- What evidence is there for reclamation and maintenance of the tidal area during the medieval period? (E1, B1-3)

A large number of the trenches investigated to the east, such as Trenches A1-3, C and H1-3, would have lain within the former course of Guy's Channel. Numerous modifications to revetted channel edges identified during this period and alluvial deposits suggest that these areas were still prone to flooding, but the channels were maintained. However, this may have been intermittent, as ground raising and development continued to expand throughout the medieval and into the early post-medieval period.

- In particular, is there any further evidence relating to the late medieval timber revetment recently discovered on the south side of the junction of Weston Street/St Thomas Street (site code WEQ10)?

n/a

- Does it support the interpretation of the structure as part of a tidal dock inlet possibly built over a natural channel? (B3)

n/a

### Post-medieval

- Is there evidence for post-medieval ground consolidation over earlier flood deposits?

The only trenches to illustrate ground consolidation layers of this date directly over flood deposits were southernmost Trenches B2 and B3. The majority of the other trenches however exhibited evidence of repeated episodes of ground consolidation overlain by flooding sealed by further ground consolidation deposits, and so forth. It appears that flooding remained a problem throughout the majority of the post-medieval period.

- What is the nature and date of post-medieval structures pre-dating the station viaduct?

The post-medieval structures recorded across the site represent a combination of domestic premises, industrial premises and features relating to drainage, waste management or sanitation. Some of the industrial processes reflect a continuity of activities from the late medieval period. The majority of potential industrial properties however date to the late 16th to 17th centuries. Potential domestic premises in the area first were identified during the early to mid 16th century, but gradually increase towards the later 18th century as industries decline. Features relating to drainage were recorded for all periods of activity with either localised drainage for specific properties, or larger scale revetted channels. By the 19th century these area largely replaced by a series of brick culverts. These later constructions are likely to be related to both an increased demand for improved sanitation during the mid 19th century and to facilitate in the construction of London Bridge Station and viaduct.

- Are there any surviving remains of post-medieval tenements within the Maze manor, particularly on Tooley Street, in Maze Lane (now Weston St) and Rose Alley (in the eastern part of the site)? (H1-3, F1, G)

Trenches H1-3 exhibited very little evidence of development during the post-medieval period until construction schemes dated to the later 18th to 19th centuries included basemented properties and drainage. Some development was apparent within Trench F, but this comprised a large brick-lined cess pit and drainage which infers that this was likely to have lain to the rear of a property rather than within the footprint of one. Further analysis of historic maps is required to establish whether this property fronted Maze Lane or was one of a number along the smaller alleys leading off of this.

Trench G however did exhibit extensive development with later sub-divisions and expansion. It is noteworthy that alignments and property boundaries identified first during the medieval period were maintained.

- How does the archaeological evidence compare with the cartographic evidence? Is there evidence for any change in the alignment of Weston Street (formerly The Maze) associated with the construction of the railway viaduct?

The property alignments illustrated very little change throughout the post-medieval period, even where property boundaries exhibit some change or expansion. Further research and map regressions will be necessary to examine which properties are represented archaeologically, and whether any alterations in alignment can be traced.

- In particular, is it possible to locate major topographical features such as the channels/ditches shown crossing the site on Morgan's Map of 1682? (A3, B1, B2, D2, E3, H1, H2)

Further work, map regressions and analysis of historic maps is required to establish these details with any certainty. However, the two parallel channels to the immediate east of 'The Maze' would appear to correlate with identified channel alignments across Trenches D1, D2 and E3. The north-west south-east aligned channel depicted to the immediate south-east of St Thomas's Hospital may also represent the revetted channels identified across Trenches A2 and A3 and potentially extending eastwards into Trench B1. A full map regression is required to elucidate further on whether any of the other water courses identified archaeologically can be identified cartographically.

- Is there evidence of continuity of layout from the medieval period?

Continuity in the layout, alignment and property boundaries was most clearly visible within Trench G. The medieval alignments were clearly respected by those used in the post-medieval period. Other trenches with structural remains also exhibited continuity in layout from the medieval period. Exceptions to this were the modifications recorded within Trench E1, in which boundaries were initially respected and then superceded by new development. The post-medieval period also saw increasing sub-divisions and expansion into areas previously undeveloped.

- Do the archaeological remains provide any information on the use and relative status of the properties represented?

The majority of the material recovered suggested that the properties comprised both domestic and industrial premises, or possibly mixed purpose units. The building material assemblage was particularly insightful and large numbers of pan tile



suggested that these derived from the slum, better quality housing inns, commercial and industrial premises. This may suggest the importance of Regency/Victorian social housing in this part of Southwark. Very little high status material culture was recovered and may support this notion.

- What evidence is there for post-medieval industrial activity on the site?

Industrial activities recorded include a number of areas associated with metal working or smithing. Butchers, bone working and tawyers waste was also represented. The clay tobacco pipe kiln identified in Trench E2 provided the most direct evidence of industrial processes taking place on site, and is likely to represent the workshop of James Minto. Smaller scale production of possible pin manufacture and leather working was also inferred within the area of Trench D1.

### **9.3 Additional Research Questions**

#### General - Roman

- Can the lack of evidence relating to the Roman period be explained by prevalent environmental conditions and topographic modelling?

#### General - Late Roman, post-Roman and early medieval

- What evidence is there to indicate when Guy's Channel ceased to exist as a watercourse?
- Can the channel identified between Trenches D1 and D2 be identified in historical sources/map regressions?

#### General - Medieval

- What was the impetus behind the reclamation of the floodplain during the medieval period?
- Can the reclamation be related to population growth and urban expansion requirements?
- Is there a documented shift in industrial activity to peripheral areas during the medieval period?
- Can further research and integration of specialist data be used to resolve the date and function of the south-eastern group of timber piles within Trench E1 (Phase 4b)? Are these structural foundation piles for a later build? Similarly can the dating of the wattle structure recorded within Trench D1 (Phase 4b) be refined?

#### General – Early post-medieval

- Can changes in the alignments of channels/ditches evident in Trenches A1-3 be related to alterations in environmental conditions? Or are these a product of changing land boundaries? Can the geoarchaeological record/historic map regressions or topographic modelling assist in refining these interpretations?
- The presence of a possible meandering channel was suggested extending across the western area of the site, across Trenches D1/D2 and passing west of Trenches E3/E1. Can the continuity and migration of this channel be confirmed or refuted with the geoarchaeological evidence and/or historic map regressions? To what extent was this feature modified or re-cut and managed?
- Can the features and layout of a possible workshop associated with smithing (Trench A3) be compared or related to known smithing premises, either alluded to in documentary sources or identifiable from historic maps? Can any of the features, such as the numerous gullies filled with metal working detritus, be related to known smithing processes from the early post-medieval period?
- Can the geoarchaeological record and/or historic maps explain the lack of development within particular trenches during this period? (Trench D1 in particular) Is there anything in the environmental record to suggest stagnant, boggy or waterlogged conditions?

#### General - post-medieval

- Can historic and cartographic sources elucidate on the nature of building use, e.g. domestic, industrial, commercial etc., during the post-medieval periods? Is this evidence supported by the archaeological evidence? Can owners and occupants be identified?
- Little evidence of activity or development was encountered within Trench H2 between the early medieval and later post-medieval periods. Can any other reasons for this other than extensive truncation be established through the use of cartographic and documentary sources? i.e. was this former eyot edge environment also the location of a water inlet that remained in use throughout these periods?
- Can any of the properties dated to the second half of the 17th century be correlated with rebuilding works following the documented 1676 Great Fire of Southwark? Did the fire impact upon the study site? And if so, to what extent?
- Large quantities of re-used boat timbers were utilised in the construction of a revetment within Trench D1. Are any boat breaking yards, or other potential sources

for these materials documented from the immediate vicinity? Are there other examples of such practices documented from the wider area?

- The presence of a tavern or ale house was suggested by the material culture recovered from Trench F. Can any possible sources for this material be identified using historic maps or trade directories?
- Inscriptions on pewter tankards found within Trench F refer to the 'King's Head' on Tooley Street and St John's Coffee House on Bermondsey Street. Can these premises be traced using trade directories or historic maps? Can 'Dark-House-Lane' as inscribed on one of the plates from the same context be identified? Was this within close proximity to Trench F?
- Traces of a possible road or yard surface were encountered within Trench D1 as capping a brick culvert. Can this be identified and related to a known road or yard using historic map or documentary sources? Can it be established whether the wider network of culverted drains identified across the site functioned with, pre-dated or were contemporary to the construction of the extant arches?
- Can further research and specialist integration be utilised to refine the phasing of timber revetments [390] and [1370] in Trench D1? Which was installed first?

## **10 CONTENTS OF THE ARCHIVE**

### **10.1 Paper Records**

- Context Sheets 1542 Sheets
- Environmental sheets 38 Sheets
- Registers 93 Sheets
- Plans & Sections c.1100 Sheets

### **10.2 Finds**

- Animal Bone 77 boxes
- Ceramic Building Material 3 boxes, 42 crates
- Clay Tobacco Pipe 7 boxes
- Glass 8 boxes
- Human Bone 6 boxes
- Leather 85 bags
- Lithics 1 box
- Roman Pot 1 box
- Post-Roman Pot 65 boxes
- Small finds 400 items
- Slag 5 boxes
- Stone 5 crates
- Timber 203 pieces

### **10.3 Photographic Record**

- Digital (jpegs) 41 (988) Folders
- Black & White (medium format) 4 Films

## **11 IMPORTANCE OF THE RESULTS, FURTHER WORK & PUBLICATION PROPOSAL**

### **11.1 Importance of the Results**

- 11.1.1 The geoarchaeological data gleaned from numerous investigations across the site provided a unique opportunity to investigate the natural, prehistoric and early Roman buried landscapes. The results of this work are of intrinsic value and importance to a wider understanding of the changing landscape and boundaries of the eyots throughout these periods. The value of the results lies in their potential through comparative studies, and the potential identification of the limits of the northern eyot and impact of Guy's Channel upon the development of this part of Southwark. The identification of freshwater conditions within the Neckinger channel provides valuable insights that not all areas of the floodplain experienced tidal conditions prior to the late 2nd century BC. The site therefore provides an important reminder of the complexity of these foreshore environments and that extrapolation of environmental conditions from one site to another must therefore be viewed with some caution within such a complex environment.
- 11.1.2 Limited evidence of Roman activity was identified across the site and indicated that the areas investigated were at the periphery rather than within the main foci of Roman settlement. However, the site has the potential to address key aspects of Roman foreshore development, modification and management. Widespread reclamation deposits recorded across the site represent the height of Roman settlement expansion. Furthermore, the discovery of a displaced revetment, abandoned in the late 2nd or 3rd century supports the documented collapse of Roman drainage systems. The evidence that reclamation surfaces were inundated by estuarine conditions during the late/post-Roman period also coincide with the decline of Roman Southwark, and collapse of its drainage systems and waterfronts. Such details provide important insights into the use and management of the peripheral areas of Roman Southwark. Further examination of the sequences observed across the site and comparisons to other revetments located along Guy's Channel should be made and could contribute to the wider understanding of the extent, and management of Guy's Channel.
- 11.1.3 Evidence pertaining to the medieval period comprised ground consolidation and land reclamation, management of channels with timber revetting, and development related to both domestic and industrial premises. Evidence of butchery and tannery waste may predate the documented arrival of the City tanners and represent some of the earliest archaeological evidence for tanning activities in Southwark. As such the extent and location of such industries and their associated assemblages offer significant insights into the origins of what would become a long standing tradition of tanning/leather working in this part of Southwark. The leather recovered for example will provide valuable dating evidence for each assemblage following further research. The correlation of documented practices with

archaeological evidence is of undoubted significance. Furthermore the spatial distribution of such practices and industrial premises offers important insights into the impact that the underlying topography and prevalent water channels had upon the location of these premises.

- 11.1.4 The location of potential high status properties dating to the medieval period is also of significance. Further documentary and cartographic research could highlight whether these represent known clerical town houses along the south side of Tooley Street. The location of a large complex adjacent to Bermondsey Street is also of importance and may help shed further light on the character and development of Bermondsey Street at this time.
- 11.1.5 Iron working continued into the early post-medieval period and it appears that this took place either on or very close to the site. The pottery assemblage included numerous industrial forms which have the potential to demonstrate what metallurgical industries were occurring in Southwark. This is particularly significant as this subject has been previously poorly reported upon. Crucible fragments recovered from the site and other assessment areas (TAA6 and TAA9) after XRF analysis will make important contributions to the understanding of industry in Southwark. Other significant finds included a form of flask used to make nitric acid, a type of vessel usually found north of the river around Gresham Street and Cripplegate but a rare find in Southwark.
- 11.1.6 A number of other rare finds were recovered within early post-medieval features dated to the 16th to 17th centuries. Imported wares (Spanish Isabella polychrome ware and Valencian late lustre ware) and glass including some in a Facon de Venice style and a *vetro a reticello* would appear to be out of place as high status items within a supposed area of low economic status. Whether these derived from an offsite source or from a higher status property are important avenues for further investigation and may aid in our understanding of the socio-economic status of this part of Southwark.
- 11.1.7 The maintenance and continued installation of revetting along water channels during the early post-medieval period can offer valuable contributions to our understanding of the vast network of waterways which bisected the area and the ways in which these were managed. Furthermore the materials utilised in the construction can also provide important insights into the availability of raw materials and the ways in which these were recycled. In one example the timbers had derived from a roof and represent rare examples of timber vernacular roofs in London during the 16th century.
- 11.1.8 Development of the site continued throughout the post-medieval period. Many earlier properties were expanded and sub-divided and industrial practices associated with leather working, smithing and potentially pin making located within the immediate vicinity. Two possible sugar refining vessels recovered from the site were of particular interest and may relate to small scale industrial activity. Additional noteworthy material included Italian oil jars,

which with the aid of documentary evidence may be used to suggest the location of known oil or colour shops. The variety of industries represented across the site can make a valuable contribution to understanding the nature of this part of Southwark immediately prior to the mass redevelopment by the railways.

11.1.9 The discovery of a clay tobacco pipe kiln associated with master pipe maker James Minto is of particular significance. This is one of only six so far recorded in the Greater London area, and an analysis of the bowls will allow for an understanding of the range of the products he made and manufacturing techniques employed. The firing faults recorded on the bowls will also help to understand the problems in the firing of the kiln. These remains therefore have important potential for understanding the technology of this industry in London. Other known local makers included James Critchfield, William Williams (1-3) and John Jewster. The construction of London Bridge railway station may therefore represent an important *terminus ante quem* for some of the 19th-century bowl type decorations. An incorporation of the documentary evidence concerning the local inhabitants within the immediate vicinity of the excavation area, their professions and socio-economic status may complement the interpretation of the clay tobacco pipe assemblages recovered. Such research would contribute to the history of leisure in London.

11.1.10 The presence of an ale house or tavern was implied in the glass and pottery assemblage within a cess pit. These finds would make a good comparison with other comparable assemblages, such as those at TAA4 to determine whether those on the subject site were of a differing socio-economic status.

11.1.11 Timber utilised in the construction of the numerous revetments dating to the post-medieval period, similarly to previous periods, is also significant. The rare find of a reused barge timber has the potential to shed further light on little known aspects of the construction of local vessels in this period. The reuse of this example and a second piece from the same structure provide powerful evidence of the stretching of materials to great lengths indicative of either poverty or corruption by local carpenters. The comparison to other examples of similar practices either within Southwark or further afield might be used to examine precedents for such recycling. The role of local ship breaking yards and proximity to such premises might be an additional factor to consider.

11.1.12 The presence of other timber structures also sheds light on the use and development of this low lying area, the alignments of now extinct watercourses and the expansion of Southwark throughout the post-medieval period. The woodwork is also significant for what this can reveal about various historic woodworking trades, regional woodland management and timber supply. As such, this is of clear local importance.

7.11.13 The 'snapshot' of this part of post-medieval Southwark immediately prior to the construction of the railways can offer valuable contributions to the understanding of the urban development of

this area. Further documentary research and use of historic maps and street/trade directories may elucidate further on the occupations and identities of these displaced populations.

## **11.2 Further work**

### General

Archaeological evidence for the Roman, post-Roman and medieval periods will be compared with other sites in the vicinity and cartographic and documentary study will be undertaken. Cartographic and documentary study will also be made to determine which post-medieval buildings the structural remains belong to. A particular emphasis will be placed on identifying occupants and areas of industry and commerce.

Further consideration of the environmental and geoarchaeological borehole data will be made, with particular consideration given to the changing nature of this part of Southwark's landscape during the prehistoric, Roman, post-Roman, medieval and post-medieval periods.

### Roman Pottery

All of the pottery has been fully recorded and therefore does not require any further analysis, with the exception of two decorated Samian sherds, which may require investigation by a Samian specialist. With the possible exception of these two vessels, it is not recommended that any of the material is illustrated.

### Post-Roman Pottery

Elements of the assemblage from this excavation should be published in a monograph on the London Bridge Thameslink excavations. Up to 26 vessels require illustration and the group of pottery recovered from soak away [843] requires photographing. It is recommended that three fragments of the crucibles and one sherd of the distillation flask be analysed by x-ray fluorescence in order to understand what industrial processes they were involved in.

### Lithics

There is no requirement for further work with this assemblage.

### Clay Tobacco Pipes

A publication report should be written for the clay tobacco pipes from the site, relating them where possible to activities on the site and if there are correlations to documented activities. Comparison of this assemblage should be made with material from other sites, particularly those associated with the Thameslink Borough Viaduct project, to determine how well the local clay tobacco pipe industry is represented. Approximately twenty bowls and ten items of kiln furniture and kiln muffle require illustrating or photographing to supplement the text.



Documentary research is required into the clay tobacco pipe makers to achieve a better understanding of the working period of the master pipe makers, especially James Minto. It is recommended that Peter Hammond undertakes the documentary research.

### Glass

It is recommended that a publication report is produced on the glass and seven vessels require illustrating and one vessel needs photographing. The glass assemblage will be analysed in conjunction with the pottery, glass, clay tobacco pipes from such features as [783] and [843] in order to determine if the finds groups can be assigned to a household or profession.

### Metal and Small Finds

The metal and small finds form an integral component of the finds and should, where relevant, be included in any further publication of the site. Particularly significant finds include the Roman pitchfork (sf 45), the late medieval signet ring (sf 94) and iron arrowhead (sf 69), and the two early modern pewter spoons (sf 76 and sf 80); as assemblages, however the finds represent important elements both of households and, for the medieval phases in particular, small scale industries in the area. These aspects should be explored further and publication, as recommended in the TAA9 report, should include also finds from The Western Approach Viaduct (BVC12). A number of finds will require further study and in some cases x-ray to aid identification. Following publication, iron nails and indeterminate fragments may be discarded.

### Iron Slag & Related High-Temperature Debris

The assemblage requires further analysis before it can be written up for inclusion in any publication. Detailed plans showing all features with slag (particularly in phases 5 and 6) will be required so the spatial distribution of the assemblage can be examined. Information on any tools, whetstones, grinding stones or iron objects relevant to the activity would be helpful in gaining an idea of the ironworking process and what was being made.

### Ceramic Building Material and Stone

The importance of this the second largest assemblage of building material (1400kg) from the Thameslink excavations lies with dating a range of early and later post-medieval brick and stone structures, most of which pre-date the 1830 construction of London Bridge Station. Most of the fabrics are typical of other Thameslink assemblages in Southwark.

Like the adjoining Thameslink Assessment TAA9 the post-medieval building material dominate by number and weight 1179kg (82%) with Roman (<5%) and medieval ( >10%) proportionally low. Also like the adjoining Thameslink Assessment TAA9, there are a large group of late 17th century early 18th-century brick fabrics, notably 3032nr3033 with its narrow

date range (1664-1725). These all may relate to rebuilds following the documented Great Fire of Southwark in 1676.

### *Roman Monograph*

Compared to the Thameslink sites closer to or alongside the major Southwark Roman roads at TAA2, TAA4 and TAA6, the Roman assemblage at TAA10 is unremarkable in terms of quantity or quality. No decorative or sculptural stone items were identified whilst the ceramic building material contains an admixture of broken up standard fabric types for London with very little in the way of cavity walling material. Only passing comment on the assemblage is necessary.

### *Medieval and Post-medieval Monograph*

Medieval building material does however contain examples of Westminster, Chertsey and Penn decorative floor tile particularly from areas adjoining medieval St Thomas's Hospital e.g. Trench A3 which require illustration. Although it is possible that some of the material identified from trenches closer to the river may relate to the Norman St Olave's Church dismantled in 1746.

Brick surfaces from Trench A3 contain a set of fabrics that would indicate a late medieval or early post-medieval (post Dissolution) date. Domed, flanged and shaped (kiln furniture?) burnt, vitrified brick with copper residue would indicate an industrial surface, merely backing up the evidence provided from the slag and hammerscale. These industrial brick features are rare for medieval/early post-medieval London and it would be a worthwhile exercise to identify what may have been manufactured here and what parallels there may be elsewhere in Southwark and the City. One possibility is that they form part of hard blacksmith's surface. The need for travellers to reshoe their horses at this important nodal point would have been great.

Only one or two items of worked stone warrants further analysis, and illustration including one intricate Caen moulding and a Norwegian ragstone hone.

Very few items from the enormous post-medieval brick and roofing tile assemblage are of any great intrinsic interest. From Agas's map in c. 1562 up to and including the pre-1830s London Bridge Station maps the area demarcated by modern day London Bridge Station and its approach was heavily populated.

### Human Bone

The assemblage of articulated human remains from BVM12, although small, is in good condition and has the potential to yield useful information. While the low level of completeness exhibited by two of the remains has limited their osteological potential, certain biological and palaeopathological information may still be gained by analysing them in detail, and would

provide significant information about the group, particularly in terms of demography and health.

The excellent surface condition of the remains will enable a good level of palaeopathological and biological analysis to be achieved, despite the low completeness of two of the individuals. Preliminary observations of non-metric traits indicates that they were present on the majority of the skeletons and may yield useful data.

The disarticulated bone has limited potential to further knowledge of the group, especially as the majority of it was recovered from the overburden in Trench A3. A full inventory of the disarticulated remains, their condition, along with age and sex estimations where appropriate was made during the assessment. Due to this no further work is recommended for the disarticulated remains.

It is recommended that all of the articulated human remains ([521], [578], [583] and [590]) are fully analysed and a publication report compiled in accordance with national guidelines. This would involve a formal inventory of each skeleton, and where possible age, sex and stature estimation. In addition, non-metric traits will be scored as present, absent or not recordable, and any lesions of pathology (skeletal and dental), will be fully recorded, including differential diagnoses.

#### Animal Bone

The potential value of the various collections from this site is essentially related to the medieval and post-medieval evidence for local butchering and, especially, tanning activities. There is certainly scope regarding the analysis of meat use and following on from the two principal concerns, further analysis should include a description of the butchery techniques within the described butcher's waste collections while a review of the size evidence taken from the sheep metapodials will be a useful addition to the information so far compiled concerning changes in sheep stature moving from the medieval through to the early post-medieval era.

This collection will not be looked at in isolation, it will be compared and contrasted to the collection from the nearby site at the Western Approaches (TAA9 and the rest of the Thameslink borough Viaduct sites). Notably, the collections from this site were largely derived from the post-medieval era and they appear to be largely composed of household waste. These can certainly be compared to similar collections from the present site, the combined collections offering sufficient data to examine meat usage in this area in some detail. Other comparisons will also be included, in particular the nearby evidence for medieval and postmedieval occupation described from Winchester Palace and Tabard Square respectively, as well as the somewhat removed but nonetheless significant contribution from post-medieval Bermondsey Abbey.

Finally, it is of importance to realise that these recommendations are based on the present stratigraphic and dating evidence and that these will need to be revised if any major changes occur following further site analyses.

#### Fish Bone

The bones recovered to date have been fully recorded, although several identifications remain to be checked. Not all recovered sediment has been processed, however, and given the relatively small assemblages and small volume of processed sediment wet sieving any surplus retained sediment from secure and well-dated deposits should be a priority (small finds and fruit stones could also be extracted). Since this site has also produced 19th-century fish the recommendations made for London Bridge Western Approach (BVC12) sample 5, also 19th century, should be revised since material extracted from this sample could usefully be considered alongside that from similar deposits from BVM12 with the aim of investigating to what extent fish availability and consumption reflected known changes in water quality in the Thames. Sorting and analysis of bone from BVC12 sample 5 would therefore be worthwhile in this context.

#### Leather

It is highly recommended that the leather assemblage is conserved for more detailed analysis and handling prior to completing a final publishable report. The fungal mould requires immediate attention by a trained archaeological conservator. A belt fragment from Context [1227] is currently stored wet but it still retains its iron buckle that will need to be dried by a conservator. Also several shoe elements still exhibit either hobnails or iron lasting pins, as described before these are kept wet but need to be dried by a trained conservator. A publication text with illustrations of the more interesting items is recommended.

#### Timber

Some of the more decayed and isolated elements of the woodwork found have relatively little potential for useful detailed analysis but the better preserved structures such as the main revetments [390], [1370] and [1445] are clearly worthy of more analysis. Several groups of reused timbers are also information rich and will repay further study, shedding light on areas still relatively little known such as local barge building, the recycling of ship timbers for local buildings, and a small group of later medieval building timbers. The well recorded wattle hurdles of revetment [1445] also have the potential to shed light on the nature of local woodlands and woodland crafts in the c. 16th-century period. Some more liaison with the project stratigraphic team and other specialists in connection with the interpretation of some of the timber structures may also help to develop a more detailed understanding of the development of the site.

#### Charcoal

Using wood charcoal data it may be possible to address questions relating to the following research areas:

Preferred fuel woods in use at the site in different periods

Preferred fuel wood for particular industrial or domestic activities

Exploitation of local environment and its possible character

Patterns of importation of fuel woods

Changes in fuel wood preferences over time

Further work is recommended on 6 samples (3 full and 3 rapid).

#### Waterlogged/Mineralised Plant remains

The results of a scan of the samples indicate that six samples are worthy of fully recording and reporting, and an additional five samples should be subject to a detailed scan to provide a basic record of taxa present.

#### Shells

Given the relatively small numbers of shells in each sample, their variable condition and date of the contexts (late medieval – late post-medieval) no further work is warranted and the shells can be discarded.

#### Geoarchaeology

The geoarchaeological survey at London Bridge Station has helped develop a detailed understanding of the buried early prehistoric landscape, sequence of floodplain/foreshore environmental change and evidence of foreshore modification and management. The importance of the geoarchaeological mapping and environmental assessment of the foreshore sequence means that the evidence of changing archaeological patterns can be understood in terms of the changing foreshore landscape. Certainly periods of significant archaeological activity at the site coincide with evidence of foreshore modification and management.

The following research questions can be added to those already proposed within the project research design and those that developed out of Assessment 9. The additional aims are:

- Investigate the nature of the channel management during the mid-late Roman period, including evidence for waterfront structures, land preparation (e.g. drainage) and land reclamation;
- Investigate the nature of the late 2nd and 3rd-century AD reclamation deposits identified on the foreshore to address the nature of activity on this surface
- Investigate the relationship of late medieval and post-medieval waterfronts, channel structures and reclamation deposits represented at the site and consider these in a wider context.
- Investigate evidence of post-medieval industrial activity along the banks of channels, associated features and the impact on the channels.
- Consider the wider human questions raised by this work associated with foreshore constructions projects, their organisation, responsibility for maintenance and landownership. What factors governed how and who was able to access and manage the foreshore and channel edges.

#### Radiocarbon Dating

A series of five radiocarbon dates will also be selected in order to help refine the floodplain/foreshore sedimentary model. These dates will be selected to address key research questions that develop out of the preliminary sedimentary and palaeoenvironmental analyses.

#### Pollen

It may be worth analysing the upper part of S39 (Trench H2), to confirm and detail the potential palaeoenvironments. Analysis of sediments from the upper part of S39 may help to confirm the possible evidence for cereal-type pollen in this section, which, combined with other data, for example, plant macrofossil data, may contribute to an understanding of land-use or potential processing activities at the site. Counts of up to 200-300 TLP (total land pollen, including pollen of trees, shrubs, herbs and fern spores) should be possible, at analysis stage (the lower than usual counts due to mixed preservation and relatively sparse assemblages). There is no suggestion that sediments deeper than 0.24m depth from the monolith sample should be analysed, as none of these deeper sub-samples yielded viable pollen counts at assessment.

The sediments between and adjacent to sub-samples 4.4-4.5m and 4.7-4.8m in Trench C could be analysed for pollen, with the expectation of achieving counts of up to 200-300 TLP (due to mixed preservation and relatively sparse assemblages). Such analysis would help to clarify the various types of palaeoenvironments suggested from the assessment and, in particular, may provide additional data to support or not support potential proximity to marine influences. These data could be integrated with results from other palaeoenvironmental

proxies, for example, from diatom and foram/ostracod analysis. Sub-samples any deeper than 4.8m may not yield sufficient pollen to achieve a statistically robust assemblage.

The sediments adjacent to 4.33-4.34m and 4.94-4.95m in borehole 4.7 (Trench A5) could be analysed for pollen, with an expectation of achieving counts of between 200-300 TLP. Analysis may provide information to show if the possible trend towards a less open and more wooded palaeoenvironment, between 4.94-4.95m and 4.33-4.34m, is valid and to examine the possibilities of the incidence of cereal-type pollen at the site. Analysis would also be useful to explore more fully the possible indications for proximity to marine palaeoenvironments.

Although only one sub-sample (5.23-5.24m, Trench E1) yielded a reasonable pollen assemblage, the assemblage itself is very interesting and potentially informative. It should be possible to count between 200-300 TLP grains at analysis stage from this level and it could be that adjacent levels may also be productive. This single sample provides a snap-shot of a potentially medieval or post-medieval landscape, that appears to show evidence for possible cultivation and a largely open palaeoenvironment.

It may be important to analyse pollen from Trench A4 (borehole A4.12), as the assessment suggests a distinct change in the palaeoenvironments between the deepest productive sub-sample at 5-5.01m and the upper productive sub-sample at 3.40-3.41m. The upper sub-sample at 3.40-3.41m is strikingly similar to that described from Trench E, at 5.23-5.24m (above). It should be possible to achieve pollen counts of between 200-300 TLP.

Many of the sub-samples assessed during this study have proved to be of marginal potential only; reasonable pollen sums may be counted from those identified as having potential and/or marginal potential for full analysis but counts greater than 300 TLP and spores may be unrealistic. Analysis of pollen from this site at London Bridge has the potential to inform our understanding of the palaeoenvironmental history at this site, particularly during Roman to post-medieval times. The data generated from such analysis could be compared with pollen data from the nearby Blackfriars site. This analysis would add to and enhance the present understanding of environmental changes documented from the Thames valley.

#### Waterlogged/Mineralised Plant remains

No further recommendations for waterlogged or mineralised plant remains. But the assessment results should be incorporated into the main environmental discussions.

#### Diatoms

Analysis of the diatom assemblage of the Roman channel edge sequence from A5.7 will provide an indication as to the Roman foreshore environment. Three samples from the Saxon floodplain sequence from Trench C1 also have good potential to inform about the changing post Roman environment. Three samples from augerhole E1.2 are also well preserved and

have good potential for percentage diatom analysis. These samples will provide an indication as to the nature of the late medieval and post-medieval waterways. All the recommended diatom assemblages from this sequence provided evidence for tidal, estuarine influence at the site.

#### Ostracods and Foraminifera

No further work is recommended for the Ostracod and foraminifera samples but the results should be incorporated within the general environmental and sedimentary discussions of the London Bridge foreshore sequence.

#### Mollusca

Although shell was well preserved in the samples the numbers of identifiable individuals were generally quite low and the assemblages of low diversity. It is unlikely further detailed work in terms of absolute counts on the current sample residues will provide significant additional information. If possible, however, larger volumes of sediment should be processed for the molluscs to help ascertain whether the absence of brackish water species is genuine or a reflection of small sample sizes. For larger volumes absolute counts may be considered worthwhile. In addition the identification of the bivalve shells to species (mostly *Pisidium* spp) should also be attempted as this should provide additional data on hydrology.

### **11.3 Publication Proposal**

- 11.3.1 It is proposed that the publication of the results of this archaeological investigation at London Bridge Station should be split between two publications. The prehistoric and Roman geoarchaeological results together with the Roman archaeological results will be published in Monograph 1 which will report on the Prehistoric and Roman remains and finds from the Thameslink project in Southwark as a whole, including the prehistoric and Roman landscape in Guy's Channel as revealed in the geoarchaeological investigation at London Bridge; The post Roman geoarchaeological and archaeological results will be published in Monograph 2 which will report on the medieval and post-medieval remains and finds from Southwark including the post-Roman landscape in Guy's Channel as revealed in the geoarchaeological investigation at London Bridge;
- 11.3.2 A more detailed publication proposal is laid out in a separate document (Thameslink Publication Proposal, Butler 2014), which outlines synopses of the Monographs and includes a detailed breakdown of tasks.



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## 13 BIBLIOGRAPHY

Alan Baxter, 2009. *London Bridge Station Historical Study*.

Butler, J., 2014. Thameslink Publication Proposal. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.

Carlin, M., 1996. *Medieval Southwark*, London & Rio Grande: The Hambledon Press.

Cohen, N., 2009. *Human remains found at the London Bridge Experience, Southwark SE1*, Southwark Borough Council Archaeology Service Unpublished Report.

Cowan, C., Seeley, F., Wardle, A., Westman, A. & Wheeler, L., 2009. *Roman Southwark: settlement and economy. Excavations in Southwark 1973-91*. Museum of London Archaeology Monograph 42.

Dawson, G. J., 2011. 'Saxon Defences of Southwark'. *London Archaeologist* 13/1, 3-8.

Dawson, G. J., 2012a. 'Letter to the editor: Saxon Southwark', *London Archaeologist* 13/4, 7-8.

Dawson, G. J., 2012b. 'Letter to the editor: Delftware production sites', *London Archaeologist* 13/5, 131.

Drummond-Murray, J., Thompson, P. & Cowan, C., 2002 *Settlement in Roman Southwark, Archaeological excavations 1991-8 for the London Underground Limited Jubilee Line Extension Project*. Museum of London Archaeology Service Monograph 12.

Fairman, A. & Taylor, J. 2013. Thameslink Archaeological Assessment 2: Archaeological Excavations at 11-15 Borough High Street, London Borough of Southwark. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.

Grosso, I., 2010. *An archaeological Evaluation at 40-46 Weston Street, London borough of Southwark SE1 3QD*. Pre-Construct Archaeology Unpublished Report.

Hughs, V. & Taylor, J. 2012 *Thameslink Archaeological Assessment 1: Archaeological Excavations at Railway Approach, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.

Langthorne, J. & Taylor, J., 2013. *Thameslink Archaeological Assessment 4: Archaeological Excavations at 2-4 Bedale Street, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report

Malden, H. E., 1912 'The Borough of Southwark', in VCH, *A History of the County of Surrey: Volume 4*.

MoL, 1994 (3rd edition). *Archaeological Site Manual*: Museum of London Archaeology Service. Museum of London.

MoLAS/EH, 2000. *The archaeology of Greater London: an Assessment of archaeological evidence for human presence in the area now covered by Greater London*, Museum of London Archaeology Service Monograph.

MoLAS, 2003a (Knight, H.). *Thameslink 2000 Borough Viaduct, London, SE1, London Borough of Southwark: Detailed Desk-Based Assessment (Archaeological Impact Assessment)*. Museum of London Archaeology Service Unpublished Report (P\SOUT\1228\na\tda05.doc).

MoLAS, 2003b (Drummond-Murray, J). *Borough Viaduct, SE1: A Report on the Watching Brief - Site Code: BVK02*. Museum of London Archaeology Unpublished Report.

MOLA, 2009. *London Bridge Phase 1A, St. Thomas' Street/Bermondsey Street. Watching Brief Report*. Unpublished Client Report Museum of London Archaeology 2010. Historic Environment Assessment.

MOLA, 2010. *The Roman Boat Adjoining New Guy's House, London SE1*. Museum of London Archaeology Unpublished Report.

MOLA, 2011a. *Thameslink Programme – London Bridge Station, London SE1. Historic environment assessment, Geoarchaeological assessment. Report on the monitoring of geotechnical work*. Museum of London Archaeology Service Unpublished Report.

MOLA, 2011b. *Map of Londinium*: Museum of London.

NWR, 2004a. 'Section 4: Archaeology' In: *Thameslink 2000: Environmental Statement*. Network Rail: Unpublished Report.

NWR, 2012a. *Scope of Archaeological Investigations (Draft)*. Network Rail; Unpublished Report.

NWR, 2012b. *London Bridge Station Improvements: Written Scheme of Investigation (Archaeology)*. Network Rail; Unpublished Report.

OA, 2011. *Desk Based Assessment: London Bridge Station*. Oxford Archaeology Unpublished Report.

Taylor, J. & Butler, J., 2014. *Thameslink Archaeological Assessment: Updated Project Design - Archaeological Assessments 1-7*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.

Parsons Brinckerhoff, 2011. *London Bridge Station Environmental Statement Chapter 7 Archaeology*.

Sheldon, H., 1978. 'The 1972-74 Excavations: Their Contribution to Southwark's History' in J. Bird, A.H. Graham, H. Sheldon & P. Townsend (eds.), *Southwark Excavations 1972-74*, London and Middlesex Archaeological Society / Surrey Archaeological Society Joint Publication 1, 11-49.

Sidell, J., Rayner, L. & Cotton, J., 2002. *The Prehistory & Topography of Southwark & Lambeth*. Museum of London Archaeology Service Monograph 14.

Sturlason, S., 1225. *Heimskringla or The Chronicle of the Kings of Norway*. Project Gutenberg Ebook; <http://www.gutenberg.org/files/598/598-h/598-h.htm>.

- Taylor, J., 2013. *Thameslink Archaeological Assessment 6: Archaeological Excavations at 6-7 Stoney Street, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.
- Taylor, J. & Brown, G., 2009. *Operations Manual I*. Pre-Construct Archaeology.
- Taylor, J. & Champness, C. 2013. *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.
- Taylor-Wilson, R., 2002 *Excavations at Hunt's House, Guy's Hospital, London Borough of Southwark*. Pre-Construct Archaeology: Monograph 1.
- Teague, S. & Taylor, J., 2012. Thameslink Archaeological Assessment 7: Archaeological Excavations to the rear of Park Street/Hop Exchange, London Borough of Southwark. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.
- Thomas, C. & Rackham, J. (eds.), 1996. Bramcote Green Bermondsey: a Bronze Age trackway and palaeoenvironmental sequence, *Proc. Prehistoric Society* 62, 221-53.
- TWA, 2006. No. 3117 Transport & Works, England: The Network Rail (Thameslink 2000) Order 2006. Transport & Works Act.
- Watson, B., Brigham, T. & Dyson, T., 2001. *London Bridge: 2000 years of a river crossing*. Museum of London Archaeology Service Monograph 8.
- Watson, B., 2009. 'Saxo-Norman Southwark: a review of the archaeological & historical evidence'. *London Archaeologist* 12/6, 147-152.
- Watson, B., 2011/2012. 'Letter to the Editor: The defences of Saxo-Norman Southwark'. *London Archaeologist* 13/3, 65.
- Yule, B., 2005. *Prestigious Roman building complex in Southwark*. Museum of London Archaeology Service Monograph 23.

## APPENDIX 1: CONTEXT INDEX

Site Code	Context	Trench	Arch	Plan	Section	Type	Description	Details	NS	EW	Depth	High	Low	Prov Date	Assessment Phase	Summary Phase
BVM12	100	A1	E39	n/a	3; 4	Layer	Concrete	Concrete slab over trench	n/a	n/a	0.3	4.11	n/a	Modern	7	7
BVM12	101	A1	E39	n/a	3	Layer	Made Ground	Brick and mortar rubble	n/a	n/a	0.2	3.86	n/a	Modern	7	7
BVM12	102	A1	E39	n/a	4	Layer	Made Ground	Silty sand and sub-rnd pebbles	n/a	n/a	0.23	3.65	n/a	Modern	7	7
BVM12	103	A1	E39	n/a	4	Layer	Made Ground	Clayey-sand with mortar below concrete	n/a	n/a	0.3	3.84	n/a	Modern	7	7
BVM12	104	A1	E39	n/a	4	Layer	Made Ground	Compact, dark brown, sandy clay with chalk flecks	n/a	n/a	0.35	3.22	n/a	Modern	7	7
BVM12	105	A1	E39	pre-ex; 105a; 105b	4	Fill	Fill of culvert construction cut [137]	Compact, grey-brown silty-clay, occa pot/glass	1.32	2.06	1.1	3.08	n/a	Post-med	6b	6b
BVM12	106	A1	E39	n/a	4	Structure	Manhole	Yellow brick manhole	0.61	n/a	1.09	3.85	n/a	Modern	7	7
BVM12	107	A1	E39	n/a	4	Fill	Fill of construction cut [108]	Loose, grey-brown clay-sand	0.4	n/a	0.9	3.65	n/a	Modern	7	7
BVM12	108	A1	E39	n/a	4	Cut	Construction cut for manhole [106]	Squared cut, vertical sides, stepped base	1.28	n/a	1.09	3.67	n/a	Modern	7	7
BVM12	109	A1	E39			VOID	VOID	VOID								
BVM12	110	A1	E39	n/a	4	Fill	Fill of pit [111]	Loose, brown, silty sand with clay lenses, mod CBM/rnd pebbles	0.96	n/a	0.88	3.61	n/a	Modern	7	7
BVM12	111	A1	E39	n/a	4	Cut	Pit	Rounded pit, near vertical sides, flat base	0.96	n/a	1.11	3.61	2.24	Modern	7	7
BVM12	112	A1	E39	n/a	4	Layer	Dump layer	Compact, brown-grey silt, freq crushed chalk and CBM	n/a	n/a	0.21	3.06	n/a	Post-med	6b	6b
BVM12	113	A1	E39	n/a	4	Layer	Dump layer	Friable, dark brown-black silt, mixed garden soil	n/a	n/a	0.87	3.05	n/a	Post-med	6b	6b
BVM12	114	A1	E39	n/a	4	Fill	Fill of pit [115]	Modern rubble	1.24	n/a	0.8	3.44	n/a	Modern	7	7
BVM12	115	A1	E39	n/a	4	Cut	Pit	Rounded pit, steep sides, flattish base	1.24	n/a	0.8	3.44	2.7	Modern	7	7
BVM12	116	A1	E39	n/a	3	Layer	Dump layer	Loose, dark brown clay-silt and rubble	n/a	n/a	0.55	3.43	n/a	Modern	7	7

BVM12	117	A1	E39				VOID	VOID								
BVM12	118	A1	E39	118	n/a	Cut	Linear cut, unknown function	N-S aligned cut, vertical sides and flat base	1.5	0.28	0.34	2.82	2.48	Post-med	6b	6b
BVM12	119	A1	E39	pre-ex	n/a	Fill	Fill of linear [118]	Soft, mid red-brown clayey-silt, sm rnd pebbles and mortar lenses	1.5	0.28	0.34	2.82	n/a	Post-med	6b	6b
BVM12	120	A1	E39	n/a	3	Fill	Fill of linear [121]	Loose modern rubble	4.56	0.94	1.56	3.52	n/a	Modern	7	7
BVM12	121	A1	E39	121	3	Cut	Linear cut, drainage	N-S aligned cut, near vertical sides to concave base	4.56	0.94	1.56	3.52	1.93	Modern	7	7
BVM12	122	A1	E39				VOID	VOID								
BVM12	123	A1	E39	n/a	n/a	Fill	Fill of construction cut [124]	Loose, dark brown, clay-sand, occa CBM flecks	0.18	2.55	0.3	2.98	n/a	Modern	7	7
BVM12	124	A1	E39	124	3	Cut	Construction cut for culvert [125]	E-W aligned linear cut, near vertical sides, sloping base towards west	0.18	2.55	0.3	2.98	2.68	Modern	7	7
BVM12	125	A1	E39	125	3	Masonry	Brick culvert	E-W aligned brick culvert, red/purple shallow frogged bricks bonded with grey lime mortar	0.18	2.55	0.3	2.98	n/a	Modern	7	7
BVM12	126	A1	E39	n/a	3	Fill	Fill of robber cut [127]	Loose, dark brown, clayey-silt	0.15	2	0.77	3.53	n/a	Modern	7	7
BVM12	127	A1	E39	n/a	3	Cut	Robber cut	Linear (?) robber cut, stepped sides to flattish base	0.15	2	0.77	3.53	2.75	Modern	7	7
BVM12	128	A1	E39				VOID	VOID								
BVM12	129	A1	E39				VOID	VOID								
BVM12	130	A1	E39	pre-ex; 130	3	Layer	Dump layer	Loose, dark brown, charcoal-rich sandy-silt, occa bone/glass, freq oyster	0.9	1.69	0.3	2.78	n/a	Post-med	6b	6b
BVM12	131	A1	E39	pre-ex; 131	n/a	Layer	Dump layer	Compact, dark brown clay-silt, freq CBM, occa med sub-ang pebbles	0.66	1.65	0.12	2.94	n/a	Post-med	6b	6b
BVM12	132	A1	E39	pre-ex; 132	4	Layer	Dump layer	Compact, dark brown-black clayey-silt, mod mortar lenses	0.72	2.2	0.31	2.91	n/a	Post-med	6b	6b
BVM12	133	A1	E39	pre-ex	n/a	Fill	Fill of linear cut [134]	Rubble backfill	0.58	1.56	0.7	2.76	n/a	Modern	7	7
BVM12	134	A1	E39	pre-ex; 134		Cut	Linear cut	E-W aligned cut, vertical sides to flat base	0.58	1.56	0.7	2.76	2.06	Modern	7	7
BVM12	135	A1	E39	pre-ex; 135		Layer	Burnt debris	Loose, dark brown-black clay-silt, mod crushed mortar, occa lg CBM frags	1.55	1.55	0.1	2.76	n/a	Post-med	6b	6a
BVM12	136	A1	E39	pre-ex;		Layer	Mortar Layer	Loose, grey-white mortar spread with gravel, occa charcoal flecks	0.94	1.34	0.08	2.7	n/a	Post-med	6b	6a

				136												
BVM12	137	A1	E39	post-ex; 137	3	Cut	Construction cut for sewer [434]	E-W aligned cut, vertical sides, base unseen	1.16	2.2	1.83	2.58	0.98	Post-med	6b	6b
BVM12	138	A1	E39				VOID	VOID								
BVM12	139	A1	E39	n/a	n/a	Fill	Fill of linear cut [140]	Loose, mid grey-brown, silty-clay-sand, occa pot/CBM/bone/CTP	0.4	1.98	0.19	2.51	n/a	Post-med	6b	6b
BVM12	140	A1	E39	140	n/a	Cut	Linear cut	E-W aligned cut, steep sides to flat base	0.4	1.98	0.19	2.51	2.32	Post-med	6b	6b
BVM12	141	A1	E39	141	n/a	Layer	Dump layer	Loose, dark brown-black clay-silt, freq mortar/charcoal/CBM	1.54	1.5	0.21	2.59	n/a	Post-med	6b	6a
BVM12	142	A1	E39	142	4	Layer	Dump layer	Firm, dark brown-grey sandy-silty-clay, mod charcoal	1.79	1.65	0.8	2.59	n/a	Post-med	6b	6a
BVM12	143	A1	E39	143	4	Layer	Levelling/du mp	Loose, grey-brown, sandy/clayey-silt with charcoal, freq charcoal/crushed mortar	0.74	2.24	0.22	2.49	n/a	Post-med	6b	6a
BVM12	144	A1	E39	n/a	3; 4	Layer	Levelling	Loose, dark brown charcoal/organic-rich sandy silt, with clinker	0.66	n/a	0.14	2.36	n/a	Post-med	6b	6a
BVM12	145	A1	E39	n/a	3; 4	Layer	Dump layer	Loose, dark brown ,organic-rich silt with clinker, occa bone	0.66	n/a	0.12	2.22	n/a	Post-med	6b	6a
BVM12	146	A1	E39	n/a	3; 4	Layer	Dump layer	Soft, dark brown-black clayey-sandy-silt, freq charcoal	n/a	n/a	0.09	2.16	n/a	Post-med	6b	6a
BVM12	147	A1	E39	n/a	3; 4	Layer	Dump layer	Loose, dark brown silt, organic-rich, freq CBM/pot/bone/shell, occa crushed mortar	n/a	n/a	0.18	2.12	n/a	Post-med	6b	6a
BVM12	148	A1	E39	n/a	3	Fill	Fill of pit [201]	Compact, dark brown clay-silty-sand, freq mortar/charcoal/CBM	n/a	1.34	0.45	2.37	n/a	Post-med	6b	6a
BVM12	149	A1	E39				VOID	VOID								
BVM12	150	A1	E39	n/a	4	Fill	Fill of pit [111]	Firm, grey silty clay, mod charcoal flecks, freq mortar, occa pot/CBM	n/a	0.26	0.3	2.5	n/a	Modern	7	7
BVM12	151	A1	E39	n/a	4	Fill	Fill of pit [152]	Loose, white-grey, crushed mortar in silty clay matrix, mod brick frags	0.4	0.8	0.2	2.32	n/a	Post-med	6b	6a
BVM12	152	A1	E39	152	4	Cut	Pit	Sub-rectangular cut, vertical sides, flat base	0.36	0.8	0.2	2.32	2.12	Post-med	6b	6a
BVM12	153	A1	E39	n/a	n/a	Fill	Fill of pit [154]	Loose, dark brown clay-silt, freq charcoal / mortar/CBM, occa pot/bone	1.12	0.75	0.4	1.92	n/a	Post-med	6b	6a
BVM12	154	A1	E39	154	n/a	Cut	Irregular pit	Sub-squared pit, steep sides to flat base	1.12	0.75	0.4	1.92	1.58	Post-med	6b	6a
BVM12	155	A1	E39	155	n/a	Fill	Fill of pit [167]	Soft, dark brown-grey silty clay with clay lenses, occa charcoal flecks	1.12	1.22	0.85	1.92	n/a	Post-med	6b	6a
BVM12	156	A1	E39	n/a	n/a	Fill	Primary fill of pit [157]	Firm, dark grey clay-silt, occa charcoal / oyster/ctp/glass, freq mortar flecks	0.9	0.45	0.25	1.86	n/a	Post-med	6a	6a
BVM12	157	A1	E39	157	n/a	Cut	Pit	Truncated sub-rounded pit, steep sides to flat base	0.9	0.45	0.45	2.01	1.59	Post-med	6a	6a
BVM12	158	A1	E39	n/a	n/a	Fill	Secondary fill of pit [157]	Soft, grey-brown clay-silt, freq mortar/chalk/charcoal flecks, occa CBM	0.9	0.45	0.15	2.01	n/a	Post-med	6a	6a
BVM12	159	A1	E39	n/a	n/a	Fill	Fill of pit [160]	Firm, mid green grey sandy-silt, freq chalk/mortar, occa CBM/oyster/charcoal	0.46	0.43	0.16	1.98	n/a	Post-med	6a	6a

BVM12	160	A1	E39	160	n/a	Cut	Pit	Sub-rounded pit, vertical sides to flat base	0.46	0.43	0.16	1.98	1.82	Post-med	6a	6a
BVM12	161	A1	E39	161	n/a	Layer	Dump layer	Soft, dark grey-brown clay-silt, occa oyster/sub-ang - sub-rnd pebbles/pot/CTP/CBM, rare sandstone frags, mod mortar/chalk	0.87	1.82	0.15	1.98	n/a	Post-med	6a	6a
BVM12	162	A1	E39	162	n/a	Layer	Mortar Layer	Loose, white crushed chalk/mortar, poss surface?	0.88	0.44	0.03	1.99	n/a	Post-med	6b	6a
BVM12	163	A1	E39	163	n/a	Layer	Levelling	Firm, yellow-brown fine sandy silt, no inc, poss scorching towards base of layer	0.9	0.44	0.01	1.94	n/a	Post-med	6b	6a
BVM12	164	A1	E39	164	n/a	Layer	Dump layer	Firm, grey-brown clay-silt, occa ang flints	1.4	0.5	0.19	1.92	n/a	Post-med	6a	6a
BVM12	165	A1	E39	n/a	n/a	Fill	Fill of pit [166]	Friable, mid red-brown silty clinker, occa charcoal flecks	0.72	0.45	0.18	1.63	n/a	Post-med	6a	6a
BVM12	166	A1	E39	166	n/a	Cut	Pit	Rectangular pit, vertical sides to flat base	0.72	0.45	0.18	1.63	1.45	Post-med	6a	6a
BVM12	167	A1	E39	167	n/a	Cut	Pit	Rectangular pit, near vertical sides to flat base	1.12	1.48	0.85	1.98	1.13	Post-med	6b	6a
BVM12	168	A1	E39				VOID	VOID								
BVM12	169	A1	E39				VOID	VOID								
BVM12	170	A1	E39	n/a	3; 4	Layer	Dump layer	Firm, dark brown silty clay, freq chalk flecks/sm pebbles/pot/CTP	2.9	n/a	0.32	2.18	n/a	Post-med	6b	6a
BVM12	171	A1	E39	n/a	3; 4	Layer	Dump layer	Firm, light brown-grey sandy-clay, no inc	2.9	n/a	0.32	1.93	n/a	Post-med	6b	6a
BVM12	172	A1	E39	172	n/a	Layer	Dump layer	Friable, red-brown silty sand, mod charcoal flecks, occa pot/mortar/flint	1.43	2.16	0.1	1.73	n/a	Post-med	6a	6a
BVM12	173	A1	E39	post-ex	4	Fill	Fill of sewer cut [137]	Compact, dark grey-brown silty-clay, silt lenses	n/a	n/a	0.75	1.85	n/a	Post-med	6b	6b
BVM12	174	A1	E39	n/a	n/a	Fill	Fill of pit [176]=[167]	Soft dark brown clay-silt, freq CBM/charcoal, occa pot/glass/bone	1.04	0.97	0.4	1.25	n/a	Post-med	6b	6a
BVM12	175	A1	E39	n/a	n/a	Fill	Fill of pit [176]=[167]	Loose, dark orange-brown clay-silt, freq CBM (reused pegtile)/charcoal/mortar	1.04	0.97	0.012	1.24	n/a	Post-med	6b	6a
BVM12	176	A1	E39	176	n/a	Cut	Base of [167]	VOID							6b	
BVM12	177	A1	E39	n/a	n/a	Fill	Fill of pit [178]	Loose, dark brown-black clay-silt, freq charcoal, occa CBM, poss in situ burning	0.53	0.4	0.1	1.16	n/a	Post-med	6a	6a
BVM12	178	A1	E39	178	n/a	Cut	Pit	Sub-circular pit, concave sides and base	0.53	0.4	0.47	1.16	0.76	Post-med	6a	6a
BVM12	179	A1	E39				VOID	VOID								
BVM12	180	A1	E39	178	n/a	Structure	Raised clay and re-used CBM	Circular structure around pit [178], clay and reused CBM, contained in situ burning, hearth?	0.73	0.58	0.1	1.16	n/a	Post-med	6a	6a
BVM12	181	A1	E39	n/a	n/a	Fill	Fill of pit [178]	Firm, blue-grey/black silty clay, freq charcoal flecks	0.53	0.4	0.25	1.08	n/a	Post-med	6a	6a
BVM12	182	A1	E39				VOID	VOID								
BVM12	183	A1	E39	183	n/a	Layer	Dump layer	Firm mid green-grey silty clay, occa	1.4	1.6	0.23	1.63	n/a	Post-med	6a	6a



								oyster/flint/charcoal								
BVM12	184	A1	E39				VOID	VOID								
BVM12	185	A1	E39	185	4	Layer	Dump layer	Firm, dark blue-grey sandy-silty-clay, occa sm sub-rnd flints/charcoal/mortar flecks/oyster/CBM/pot/bone	1.1	2.85	0.2	1.58	n/a	Early post-med	5a	4b
BVM12	186	A1	E39	186; post-ex	4	Layer	Dump layer	Firm, dark blue-grey sandy-silty-clay, occa sm sub-rnd flints/charcoal/mortar flecks/oyster/CBM/pot/bone	1.1	2.85	0.25	1.46	n/a	Early post-med	5a	4b
BVM12	187	A1	E39	n/a	n/a	Fill	Fill of linear cut [188]	Firm mid grey-brown silty clay, mod oyster, occa chalk/charcoal flecks/organic lenses/ragstone frags/pot/CTP/bone	2.24	0.78	0.5	1.4	n/a	Post-med	6a	6a
BVM12	188	A1	E39	188	n/a	Cut	Linear cut	Linear N-S aligned cut, vertical sides to flat base	2.24	0.78	0.5	1.42	0.94	Post-med	6a	6a
BVM12	189	A1	E39	n/a	4	Fill	Fill of pit [190]	Firm, dark brown-grey sandy-silty-clay, occa sub-rnd flints/charcoal flecks / pot / CBM / bone, freq oyster	2.2	0.75	0.4	1.47	n/a	Early post-med	5a	4b
BVM12	190	A1	E39	190	4	Cut	Pit (?)	Heavily truncated irregular pit, concave sides to flat base	2.2	0.75	0.4	1.47	1.05	Early post-med	5a	4b
BVM12	191	A1	E39	191	4	Layer	Dump layer	Firm, dark blue-grey sandy-silty-clay, occa sm sub-rnd flints/charcoal/mortar flecks/oyster	0.3	0.75	0.2	1.47	n/a	Early post-med	5a	4b
BVM12	192	A1	E39	192	4	Layer	Dump layer	Firm, dark blue-grey sandy-silty-clay, occa sm sub-rnd flints/charcoal/mortar flecks / organic lenses	2.1	0.7	0.3	1.3	n/a	Early post-med	5a	4b
BVM12	193	A1	E39	403; post-ex	3; 4	Fill	Fill of channel/ditch [194]	Firm dark brown-grey sandy-silty-clay, occa sm sub-rnd flints/oyster/charcoal frags/humic lenses	0.9	2.8	0.4	1.58	n/a	Early post-med	5a	4b
BVM12	194	A1	E39	403; post-ex	4	Cut	Channel/ditch	NE-SW linear cut, near vertical/steep sides, base unseen	0.9	2.8	1.5	1.58	0.11	Early post-med	5a	4b
BVM12	195	A1	E39	403	3	Timber	Upright post; Structure [403]	Squared, decayed post, poss boxed heart, tapered base	0.54	0.12	0.77	1.13	n/a	Early post-med	5a	4b
BVM12	196	A1	E39	403	3	Timber	Upright post; Structure [403]	Semi-circular post, decayed top, base broken, poor condition	0.23	0.15	0.07	0.9	n/a	Early post-med	5a	4b
BVM12	197	A1	E39	403	3	Timber	Upright post; Structure [403]	Squared post, poss boxed heart?, tapered point, poor condition	0.09	0.43	0.88	1.12	n/a	Early post-med	5a	4b
BVM12	198	A1	E39	403	3	Timber	Upright post; Structure [403]	Squared post, tapered base, poor condition	0.35	0.16	0.42	1.11	n/a	Early post-med	5a	4b
BVM12	199	A1	E39	403	3	Timber	Upright post; Structure [403]	Rounded post, poor condition	0.14	0.14	0.23	1.11	n/a	Early post-med	5a	4b
BVM12	201	A1	E39	n/a	3	Cut	Pit	Rounded pit, concave sides to flat base	n/a	1.37	0.46	2.37	1.93	Post-med	6b	6a

BVM12	400	A1	E39	403	3	Timber	Upright post; Structure [403]	Rounded post, poor condition	0.02	0.02	0.23	1.11	n/a	Early post-med	5a	4b
BVM12	401	A1	E39	403	n/a	Timber	Upright post; Structure [403]	Squared post to south of plan [402]	0.12	0.08	n/a	1.11	n/a	Early post-med	5a	4b
BVM12	402	A1	E39	403	n/a	Timber	Horizontal plank, Structure [403]	Horizontal plank, rectangular, damaged, peg holes	0.02	1.75	0.34	1.09	n/a	Early post-med	5a	4b
BVM12	403	A1	E39	403	3	Structure	Revetment	East-west aligned revetment within channel/ditch [194]	0.6	2.6	0.85	1.11	0.26	Early post-med	5a	4b
BVM12	404	A1	E39	n/a	n/a	Fill	Fill of pit [405]	Firm dark brown/blue-grey silty-clay, occasm sub-rnd flints/CBM	0.6	0.55	0.2	0.98	n/a	Post-med	6a	6a
BVM12	405	A1	E39	post-ex	n/a	Cut	Pit	Sub-circular cut, concave sides and base	0.6	0.55	0.2	0.98	0.76	Post-med	6a	6a
BVM12	431	A1	E39				VOID	VOID								
BVM12	432	A1	E39				VOID	VOID								
BVM12	434	A1	E39	post-ex	4	Structure	Brick sewer	Yellow frogged brick sewer, arched, along E-W alignment	1.5	2.3	0.46	1.47	1.12	Post-med	6b	6b
BVM12	435	A1	E39	Post-ex	n/a	Layer	Alluvium	Soft, light yellow-brown sandy-silty-clay, occasm manganese/chalk flecks	1.98	2.82	n/a	0.97	n/a	Undated	4a	4a
BVM12	454	A1	E39				VOID	VOID								
BVM12	545	A1	E39				VOID	VOID								
BVM12	511	A2	E39	511	9	Masonry	N-S brick wall	N-S boundary wall, red brick, stretcher bond, with E-W projections to form hearth	2.82	0.8	0.45	2.57	2.18	Post-med	6b	6b
BVM12	512	A2	E39	511	n/a	Masonry	N-S brick wall	Single course, sub-rectangular brick pad/base	1.54	0.5	0.065	2.32	n/a	Post-med	6b	6b
BVM12	513	A2	E39	511; 513	n/a	Layer	Make-up layer	Loose, grey-brown sandy-silt/mortar, freq CBM/charcoal/mortar/rubble	2.83	1.17	0.1	2.29	n/a	Post-med	6b	6b
BVM12	514	A2	E39	511; 514	n/a	Layer	Make-up layer	Loose, mixed grey-brown sandy-silt/mortar, freq CBM/charcoal/mortar	1.1	0.4	0.1	2.31	n/a	Post-med	6b	6b
BVM12	515	A2	E39	n/a	n/a	Fill	Fill of posthole [516]	Loose, light brownish/yellow, crushed mortar, occ CBM frags	0.14	0.22	0.06	2.1	n/a	Post-med	6b	6b
BVM12	516	A2	E39	516	n/a	Cut	Posthole	Oval cut, steep to vertical sides, flat base	0.14	0.22	0.06	2.1	2.04	Post-med	6b	6b
BVM12	517	A2	E39	n/a	n/a	Fill	Fill of posthole [518]	Loose, light brownish/yellow, crushed mortar, occ CBM frags	0.28	0.12	0.07	2.08	n/a	Post-med	6b	6b
BVM12	518	A2	E39	516	n/a	Cut	Posthole	Sub-rectangular cut, vertical sides, flat base	0.28	0.12	0.07	2.08	2.01	Post-med	6b	6b
BVM12	522	A2	E39	522	9	Layer	Construction layer for wall [511]	Firm, dark brown-grey sandy/clay/silt, freq CBM frags/mortar patches/flecks	2.82	1.18	0.04	2.26	n/a	Post-med	6b	6b
BVM12	523	A2	E39	523	9	Cut	Construction	Linear cut, vertical sides, flat base	2.8	1.08	0.28	2.25	1.97	Post-med	6b	6b

							cut for wall [511]									
BVM12	525	A2	E39	523	n/a	Masonry	Square base for [511]	Yellow sandstone/ragstone, single course, bonded with crumbly light grey mortar	0.54	0.36	0.18	1.97	n/a	Post-med	6b	6b
BVM12	526	A2	E39	n/a	n/a	Fill	Fill of posthole [527]	Friable, dark brown-grey sandy/silt/clay, Freq. Brick rubble/CBM frags/Occ small sub-rounded flint stones	0.26	0.34	0.2	2.12	n/a	Early post- med	5a	5b
BVM12	527	A2	E39	527	n/a	Cut	Posthole	Sub-square cut, sharp break of slope at top straight/vertical sides, flat base	0.26	0.34	0.2	2.12	1.95	Early post- med	5a	5b
BVM12	528	A2	E39	n/a	n/a	Fill	Fill of posthole [529]	Loose, mid whitish yellow crushed mortar, occa broken brick	0.23	0.24	0.07	1.93	n/a	Early post- med	5a	6b
BVM12	529	A2	E39	529	n/a	Cut	Posthole	Circular cut, vertical sides, flat base	0.23	0.24	0.07	1.93	1.86	Early post- med	5a	6b
BVM12	530	A2	E39	n/a	n/a	Fill	Fill of posthole [531]	Loose, mid whitish yellow crushed mortar, occa crushed brick	0.28	0.28	0.12	2.08	n/a	Post-med	6b	6b
BVM12	531	A2	E39	529	n/a	Cut	Posthole	Circular cut, vertical sides, flat base	0.28	0.28	0.12	2.08	1.96	Post-med	6b	6b
BVM12	532	A2	E39	532	n/a	Masonry	Buttress/pier base	Mid pinkish-red brick, E-W wall/buttress/pier base, 3 courses, header bond, hard grey mortar	0.06	1.34	0.26	2.29	2.04	Post-med	6b	6b
BVM12	535	A2	E39	n/a	10	Fill	Fill of channel [536]	Firm/plastic, dark brown-blue-grey sandy/silt/clay, freq CBM frags/oyster/small sub-rnd sub-ang flint	5.4	2.56	0.39	2.1	n/a	Early post- med	5a	5b
BVM12	536	A2	E39	536	10	Cut	Ditch/chann el	NE-SW Linear cut, sharp top, straight sides, undulating base	5.4	2.56	0.39	2.16	1.77	Early post- med	5a	5b
BVM12	537	A2	E39	537	10; 19	Layer	Dump layer	Soft, dark brown/blue-grey, sandy silt clay, freq oyster/CBM frags/occa charcoal/slag/pot/bone	1.4	4.35	0.4	1.9	n/a	Medieval	4b	4b
BVM12	538	A2	E39	538	9; 10	Layer	Dump layer	Firm, green /mid-brown, clay silt, mod mortar flecks/oyster shell/occa CBM	2.62	4.74	0.38	2.1	1.86	Early post- med	5a	5b
BVM12	541	A2	E39	n/a	9; 10; 19; 20; 23	Fill	Fill of ditch [559]	Plastic, mid-blue brownish grey, sandy silt clay, freq oyster shell/occa CBM/v.occa charcoal flecks	1.2	4.8	0.23	1.75	n/a	Medieval	4b	4b
BVM12	547	A2	E39	n/a	20	Fill	Fill of ditch [559]	Soft, mid dark grey/mid brown-grey, sandy clay-silt, freq CBM/oyster/small sub-rnd flints/occa charcoal flecks/mortar flecks	0.5	3.3	0.18	1.58	n/a	Medieval	4b	4b
BVM12	548	A2	E39	n/a	19; 20; 23; 25	Fill	Fill of ditch/pit [559]	Friable, dark brown-grey coarse sandy silt, freq oyster/CBM frags/occa small sub-rnd flints	1.2	4.3	0.41	1.61	1.37	Medieval	4b	4b
BVM12	555	A2	E39	n/a	n/a	Fill	Fill of pit [556]	Firm, mid greyish-brown clay silt, freq rnd flint/gravel/mod oyster/charcoal flecks/occa mortar flecks	0.8	0.8	0.24	1.44	n/a	Medieval	4b	4b
BVM12	556	A2	E39	556	n/a	Cut	Pit	Sub-circular cut, sloping slightly concave	0.8	0.8	0.24	1.44	1.2	Medieval	4b	4b

								sides, flattish base								
BVM12	558	A2	E39	558	n/a	Timber	Plank	Poorly preserved oak plank lying on base of [559]	0.98	0.27	0.027	1.2	n/a	Medieval	4b	4b
BVM12	559	A2	E39	559a; 559b	19; 23	Cut	Ditch/large pit	Linear cut, sides slightly sloping/concave, base not seen	1.26	4.36	1.32	1.75	0.43	Medieval	4b	4b
BVM12	560	A2	E39	n/a	n/a	Fill	Fill of pit [561]	Firm, mid brown grey silty clay, freq oyster/small sub-rnd flint gravel	1.03	0.87	0.2	1.48	n/a	Medieval	4b	4b
BVM12	561	A2	E39	561	n/a	Cut	Pit	Sub-circular cut, concave sides and base	1.03	0.87	0.2	1.48	1.3	Medieval	4b	4b
BVM12	562	A2	E39	n/a	n/a	Fill	Fill of pit [563]	Firm, light/mid brown-grey, sandy-silty-clay, freq oyster/occa CBM/charcoal	1.13	1.69	0.3	1.47	n/a	Medieval	4b	4b
BVM12	563	A2	E39	563	n/a	Cut	Rubbish pit	Sub-circular pit, concave sides and base	1.13	1.69	0.3	1.47	1.17	Medieval	4b	4b
BVM12	564	A2	E39	n/a	n/a	Fill	Fill of pit [565]	Firm, mid brown-grey, sandy-silty-clay, occa oyster/CBM/bone	1.2	1	0.27	1.43	n/a	Medieval	4b	4b
BVM12	565	A2	E39	565	n/a	Cut	Rubbish pit	Sub-circular pit, concave sides, flat base	1.2	1	0.27	1.43	1.16	Medieval	4b	4b
BVM12	577	A2	E39	577	19; 23; 25	Layer	Alluvium	Firm, yellow-brown, clay-silt, sand lenses, occa CBM/oyster/bone	2.16	4.34	0.87	1.47	0.55	Medieval	4b	4a
BVM12	581	A2	E39	n/a	23; 25	Fill	Primary fill of ditch/pit [559]	Soft, dark brown, highly organic clay-silt, freq plant remains, occa pot/CBM/bone	0.4	3.7	0.3	0.81	n/a	Medieval	4b	4b
BVM12	652	A2	E39	559a	25	Timber	Beam	Decayed oak beam, horizontal, box halved, held in place by [653]	0.35	0.14	0.075	1.19	n/a	Medieval	4b	4b
BVM12	653	A2	E39	559a	25	Timber	Pile	Vertical, squared pile, sawn and hewn elm, tapered base	0.09	0.09	0.545	1.17	n/a	Medieval	4b	4b
BVM12	654	A2	E39	559a	25	Timber	Plank	North-east south-west aligned elm plank, tang faced, decayed	0.25	0.03	0.545	1.12	n/a	Medieval	4b	4b
BVM12	655	A2	E39	559a	25	Timber	Plank	E-W aligned oak plank, 'D' shaped cross section, tang faced,	0.2	0.7	0.02	1.12	n/a	Medieval	4b	4b
BVM12	656	A2	E39	559a		Timber	Plank	North-east south-west aligned oak plank, tang faced, prob waste	0.11	0.76	0.039	1.09	n/a	Medieval	4b	4b
BVM12	657	A2	E39	n/a	n/a	Fill	Fill of stakehole [658]	Loose, yellow-green coarse sandy gravel, no inc	0.1	0.1	0.15	0.7	n/a	Medieval	4b	4b
BVM12	658	A2	E39	559a	n/a	Cut	Stakehole	Circular cut, vertical sides, tapered base	0.1	0.1	0.15	0.7	0.55	Medieval	4b	4b
BVM12	659	A2	E39	n/a	n/a	Fill	Fill of stakehole [660]	Loose, yellow-green coarse sandy gravel, no inc	0.12	0.12	0.24	0.81	n/a	Medieval	4b	4b
BVM12	660	A2	E39	559a	n/a	Cut	Stakehole	Circular cut, vertical sides, tapered base	0.12	0.12	0.24	0.81	0.57	Medieval	4b	4b
BVM12	661	A2	E39	n/a	n/a	Fill	Fill of Stakehole [662]	Loose, yellow-green coarse sandy gravel, no inc	0.1	0.1	0.15	0.81	n/a	Medieval	4b	4b

BVM12	662	A2	E39	559a	n/a	Cut	Stakehole	Circular cut, vertical sides, flat base	0.1	0.1	0.15	0.81	0.65	Medieval	4b	4b
BVM12	663	A2	E39	n/a	n/a	Fill	Fill of Stakehole [664]	Loose, yellow-green coarse sandy gravel, no inc	0.08	0.08	0.14	0.88	n/a	Medieval	4b	4b
BVM12	664	A2	E39	559a	n/a	Cut	Stakehole	Circular cut, vertical sides, tapered base	0.08	0.08	0.14	0.88	0.74	Medieval	4b	4b
BVM12	665	A2	E39	559a	n/a	Structure	Revetment	Pile and plank revetment along western bank of channel [559]	1.04	1.08	n/a	1.19	n/a	Medieval	4b	4b
BVM12	406	A3	E39	n/a	7	Layer	Garden Soil	Loose, dark brown, silty sand, occ cbm, flecks mortar, patches of sand	2.37	n/a	0.14	2.82	n/a	Post-med	6b	6b
BVM12	407	A3	E39	pre-ex	7	Fill	Fill of Lazy Bed [408]	Loose, dark brown, sandy silt, mod frags cbm/charcoal/clinker, occa lg frags mortar/sub-ang flint/pot/bone/slag	0.28	2.36	0.17	2.59	n/a	Post-med	6b	6b
BVM12	408	A3	E39	pre-ex; 408	7	Cut	Lazy bed	E-W Linear, sloping sides, flat base	0.28	2.36	0.17	2.59	2.49	Post-med	6b	6b
BVM12	409	A3	E39	pre-ex	7	Fill	Fill of linear feature [410]	Soft, dark brown, organic wood - rotted timber beam	0.2	0.9	0.1	2.59	n/a	Post-med	6b	6b
BVM12	410	A3	E39	pre-ex; 408	7	Cut	Beamslot	E-W Linear, vertical sides, slightly rounded base	0.2	0.9	0.1	2.59	2.52	Post-med	6b	6b
BVM12	411	A3	E39	pre-ex	7	Fill	Fill of planting bed [412]	Loose dark grey brown, sandy silt, freq charcoal/pot/bone/glass/CTP, mod flint	0.2	1.3	0.1	2.56	n/a	Post-med	6b	6b
BVM12	412	A3	E39	pre-ex; 408	7	Cut	Planting bed	E-W Linear, moderate to gentle slope, rounded base	0.2	1.3	0.1	2.56	2.48	Post-med	6b	6b
BVM12	413	A3	E39	pre-ex	7	Fill	Fill of planting bed [414]	Loose, soft, dark grey brown, slightly sandy silt, mod frags cbm/pebbles, freq frags pot/bone/cbm	0.24	1	0.2	2.56	n/a	Post-med	6b	6b
BVM12	414	A3	E39	pre-ex; 408	7	Cut	Planting row	E-W Linear, steep to mod slope, rounded base	0.24	1	0.2	2.56	2.42	Post-med	6b	6b
BVM12	415	A3	E39	pre-ex; 415	7	Layer	Levelling/du mp	Loose, mid grey brown, silty sand, mod cbm/mortar, occa clinker/oyster/sub-rnd-sub-ang stone/metal/glass/CTP	2.6	2.86	0.21	2.59	2.47	Post-med	6b	6b
BVM12	416	A3	E39	pre-ex; 416	7	Masonry	E-W brick wall	East-west aligned wall. Soft, unfrogged red bricks and limestone rubble, grey, lime-rich mortar bonding with charcoal inclusions	0.4	2.94	0.36	2.7	2.58	Post-med	6a	6a
BVM12	417	A3	E39	n/a	7; 8	Fill	Fill of linear [418]	Loose-mod compact, dark grey, fairly humic clay, freq mortar, mod cbm, occa pot/bone	0.46	2.3	0.25	2.43	2.36	Post-med	6b	6b
BVM12	418	A3	E39	418	7; 8	Cut	E-W Linear cut	Linear, slightly sloping/concave sides, flat base	0.46	2.3	0.25	2.41	2.13	Post-med	6b	6b
BVM12	419	A3	E39	419	7; 8	Cut	E-W Garden feature/ditch	Linear, steep to moderate sides, undulating base	0.8	2.56	0.18	2.41	2.14	Post-med	6b	6b

BVM12	420	A3	E39	n/a	7	Fill	Fill of Garden feature/ditch [419]	Friable, dark blue grey, sandy silt, freq frags/flecks limestone, mod cbm, occa pot/slag/CTP/bone	0.88	2.36	0.2	2.41	n/a	Post-med	6b	6b
BVM12	421	A3	E39	421	7	Fill	Fill of gully [428]	Firm, dark blue black, sandy silt, mod frags/flecks limestone/cbm, occa pot / CTP / bone	0.88	2.36	0.12	2.43	n/a	Post-med	6a	6a
BVM12	422	A3	E39	422	7	Layer	Working surface	Compact, dark brown, sandy silt with freq slag, mod cbm/bone/mortar/oyster, occa pot/coal/CTP	0.8	2.54	0.1	2.41	2.33	Post-med	6a	6a
BVM12	423	A3	E39	423	7	Layer	Occupation deposit	Compact, mid brown, silt, occ/mod mortar, occa cbm	0.4	2.56	0.03	2.49	n/a	Post-med	6a	6a
BVM12	424	A3	E39	424	7	Layer	Mortar Layer	Mod compact, mid whitish-grey, silty mortar, occa cbm/flint, mod frags chalk	0.45	2.5	0.05	2.46	n/a	Post-med	6a	6a
BVM12	425	A3	E39	425	7	Layer	Surface	Compact, white-grey lime mortar, freq red tiles, occa/bone	0.44	2.52	0.1	2.44	n/a	Post-med	6a	6a
BVM12	426	A3	E39	426	7	Layer	Working surface	Very compact, dark grey-blue with patches of black/white grey, silty sand, freq slag, v occa cbm/white mortar, occa sub-rnd stones/copper flakes/coal/pot/bone	0.64	2.56	0.45	2.4	2.39	Post-med	6a	6a
BVM12	427	A3	E39	427	7	Layer	Surface	Friable, grey white lime mortar, lenses black slag, v occa charcoal flecks, occa CTP/bone, mod cbm	0.2	2.28	0.16	2.54	2.53	Post-med	6a	6a
BVM12	428	A3	E39	428	7	Cut	E-W Drainage Gully	Linear, steep N side mod steep and mod shallow, uneven concave base	0.48	2.52	0.12	2.36	n/a	Post-med	6a	6a
BVM12	429	A3	E39	429	7	Layer	Occupation deposit	Soft, black, sandy silt, v occa cbm/pot	0.26	2.28	0.06	2.44	n/a	Post-med	6a	6a
BVM12	430	A3	E39	430	7	Layer	Garden Activity	Soft -friable, black sandy silt, mod cbm frags	0.26	2.24	0.04	2.37	n/a	Post-med	6a	6a
BVM12	433	A3	E39	433	n/a	Layer	Surface	Friable, grey white lime mortar, v occa cbm, charcoal flecks/pot	0.8	2.24	0.08	2.24	n/a	Post-med	6a	6a
BVM12	436	A3	E39	436	7	Layer	Dump layer	Mod compact, dark grey clayey silt, freq flecks mortar, occ-mod oyster, frags, occ cbm/bone	0.5	0.78	0.07	2.29	n/a	Early post-med	5biii	5
BVM12	437	A3	E39	437	n/a	Masonry Wall	N-S brick wall	Light red brick, light greyish white mortar, single skin wall/partition	0.46	0.1	0.06	2.28	2.22	Early post-med	5biii	5
BVM12	438	A3	E39	n/a	7	Fill	Backfill of hearth [442]	Friable, dark greyish/reddish black, silty sand, occ mortar flecks, mod clinker/iron	0.64	0.78	0.05	2.23	n/a	Early post-med	5biii	5
BVM12	439	A3	E39	439	7	Layer	Packing	Soft, mid grey, silty sandy clay, mod frags mortar/oyster/cbm/flecks charcoal, occa pot/CTP	0.62	0.78	0.03	2.22	n/a	Early post-med	5biii	5
BVM12	440	A3	E39	n/a	n/a	Fill	Backfill of Post hole [441]	Friable, greyish brown, silt and lime mortar, freq flecks charcoal, occa CBM/slag	0.26	0.22	0.21	2.19	n/a	Early post-med	5bi	5

BVM12	441	A3	E39	441	n/a	Cut	Posthole	Square, vertical sides, tapered base	0.26	0.22	0.69	2.19	1.5	Early post-med	5bi	5
BVM12	442	A3	E39	442	7	Layer	Base of hearth	Friable, light reddish/yellowish brown, silty sand and burnt cbm, mod flecks charcoal/mortar/chalk flecks	0.5	0.52	0.03	2.19	n/a	Early post-med	5biii	5
BVM12	443	A3	E39	n/a	n/a	Fill	Backfill of Posthole [444]	Friable, very dark brownish grey, very sandy silt, freq lime mortar flecks/small frags chalk, occa pot/CBM/bone/slag	0.34	0.36	0.3	2.21	n/a	Early post-med	5biii	5
BVM12	444	A3	E39	444	n/a	Cut	Posthole	Sub circular, near vertical sides, base slightly concave	0.34	0.36	0.3	2.21	1.97	Early post-med	5biii	5
BVM12	445	A3	E39	n/a	n/a	Fill	Fill of posthole [446]	Soft, mid greyish brown, sandy silt, occ clinker/sub-ang stones/pot/bone, mod mortar/cbm	0.26	0.27	0.15	2.17	n/a	Early post-med	5biii	5
BVM12	446	A3	E39	444	n/a	Cut	Posthole	Oval, near vertical sides, base slopes gently to S	0.26	0.27	0.15	2.17	2.02	Early post-med	5biii	5
BVM12	447	A3	E39	447	7	Layer	Occupation	Firm, dark brown, silty sand, mod frags clinker/mortar, occ oyster/slag/CBM/pot	0.54	1.16	0.02	2.2	2.16	Early post-med	5biii	5
BVM12	448	A3	E39	448	7	Fill	Fill of [698]	Mod compact, mid -dark grey, slightly sandy silt, v occa cbm, mod mortar	0.45	2.5	0.15	2.29	2.25	Early post-med	5biii	5
BVM12	449	A3	E39	449	7	Layer	Surface	Mod compact, mid yellowish brown, freq mortar, occa bone/CBM	1.35	2.46	0.05	2.33	2.29	Early post-med	5bii	5
BVM12	450	A3	E39	n/a	n/a	Fill	Fill of post-slot [451]	Loose, greyish brown, silty sand with occa clay lenses/pot/slag/bone/CBM, freq chalk/charcoal flecks	0.44	0.66	0.23	2.26	2.16	Early post-med	5bii	5
BVM12	451	A3	E39	451	n/a	Cut	Post slot	Linear, near vertical sides, uneven base	0.44	0.66	0.23	2.26	2.03	Early post-med	5bii	5
BVM12	452	A3	E39	n/a	7	Fill	Fill of robbed out partition [453]	Loose, dark brown, sandy silt, occ clinker / charcoal/mortar	0.06	2.54	0.3	2.29	n/a	Early post-med	5biii	5
BVM12	453	A3	E39	453	7	Cut	E-W Robber cut	Linear, vertical sides, flat base	0.06	2.54	0.3	2.29	1.99	Early post-med	5biii	5
BVM12	455	A3	E39	455	7	Layer	Clay dump layer	Mod compact, dark grey brown, sandy clay, mod frags mortar, occa cbm/bone/oyster/mussel/pot	1.36	2.46	0.03	2.27	n/a	Early post-med	5bii	5
BVM12	456	A3	E39	n/a	n/a	Fill	Backfill of Posthole [457]	Soft, dark brown, sandy silt, mod fragments mortar, occa sub-ang/ang pebbles/clinker/oyster/pot	0.18	0.34	0.19	2.25	n/a	Early post-med	5bii	5
BVM12	457	A3	E39	457	n/a	Cut	Posthole	Rectangular, vertical sides, flat base	0.18	0.34	0.19	2.25	2.15	Early post-med	5bii	5
BVM12	458	A3	E39	458	n/a	Layer	Packing	Firm, light yellowish white and mid brown, mortar and sandy silt, occ oyster, worked stone	0.2	0.22	0.18	2.21	n/a	Early post-med	5bii	5
BVM12	459	A3	E39	459	7	Layer	Surface	Compact, dark grey brown/dark orange brown, sandy silt, freq slag/cbm, mod animal bone, occ frags coal / stone / oyster / mortar / copper	1.4	2.4	0.03	2.26	n/a	Early post-med	5bii	5

BVM12	460	A3	E39	460	7	Layer	Surface	Firm, white mortar, freq flecks chalk, occ bands of dark brown silt	0.66	1.42	0.14	2.24	2.14	Early post-med	5bii	5
BVM12	461	A3	E39	461	7	Layer	Occupation	Friable, dark greyish brown silty sand, mod cbm/mortar/charcoal/iron, occa slag/bone	0.72	1.52	0.11	2.14	2.01	Early post-med	5bi	5
BVM12	462	A3	E39	462	7	Layer	Levelling/du mp	Soft-friable, dark grey brown, sandy silt, mod frags shell, occ-mod frags cbm/oyster occ pot/coal	1.55	2.4	0.05	2.21	2.18	Early post-med	5bii	5
BVM12	463	A3	E39	463	7	Fill	Fill of gully [698]	Soft -friable, dark grey brown, sandy silt, mod cbm/oyster, occ-mod slate/glass/pot/bone	0.5	2.4	0.13	2.25	2.18	Early post-med	5biii	5
BVM12	464	A3	E39	n/a	n/a	Fill	Backfill of Posthole	Loose, dark brown, silty sand, mod mortar, occ cbm/iron/flecks charcoal/chalk/slag/bone	0.58	0.78	0.22	2.13	n/a	Early post-med	5bii	5
BVM12	465	A3	E39	465	n/a	Cut	Posthole	Sub circular, north side near vertical, others sloping, base flat	0.58	0.78	0.22	2.13	1.91	Early post-med	5bii	5
BVM12	466	A3	E39	n/a	n/a	Fill	Fill of Posthole [467]	Soft dark brown, organic clay, mod bone, occ mortar/slag/wood	0.23	0.24	0.85	2.21	unseen	Early post-med	5bii	5
BVM12	467	A3	E39	467	n/a	Cut	Posthole	Sub square, vertical sides, base unseen	0.23	0.24	0.85	2.21	unseen	Early post-med	5bii	5
BVM12	468	A3	E39	468	7	Layer	Surface	Firm, white mortar, freq chalk occ cbm/dark brown silt lenses	0.44	0.3	0.04	1.99	n/a	Early post-med	5bi	5
BVM12	469	A3	E39	469	n/a	Layer	Surface	Compact, light grey-white mortar, lenses of dark grey silt, mod chalk, occ frags cbm/oyster/bone/slate /slag	0.6	1.7	0.1	2.03	n/a	Early post-med	5bi	5
BVM12	470	A3	E39	n/a	n/a	Fill	Fill of Pit [471]	Mod compact, mid grey brown, clay-silt, occ-mod, cbm, occ oyster/bone	0.42	0.52	0.3	2.16	n/a	Early post-med	5bi	5
BVM12	471	A3	E39	471	n/a	Cut	Pit	Circular, steep concave slopes, base flat	0.42	0.52	0.3	2.16	1.87	Early post-med	5bi	5
BVM12	472	A3	E39	472	7	Layer	Bedding	Soft, dark grey brown, silty clay, mod chalk/oyster/other shell/clinker/flecks mortar/charcoal, occ pot/bone/slag/cbm	0.74	2.18	0.13	2.12	1.98	Early post-med	5bi	5
BVM12	473	A3	E39	n/a	n/a	Fill	Fill of pit [474]	Friable, dark brown sandy silt, mod frags oyster/coal/clinker/charcoal/mortar/iron/bone/pot/slag/cbm/glass	0.5	0.72	0.15	1.98	n/a	Early post-med	5bi	5
BVM12	474	A3	E39	474	n/a	Cut	Rubbish Pit	Truncated circle, sides gentle slope, base flat	0.5	0.72	0.15	1.98	1.83	Early post-med	5bi	5
BVM12	475	A3	E39	n/a	7	Fill	Fill of pit [477]	Friable, dark brown, sandy silt, mod flecks charcoal/frags oyster/bone, occ frags mortar/clinker/coal/CBM/slag/glass	0.6	0.4	0.36	2.03	1.95	Early post-med	5bi	5
BVM12	476	A3	E39	476	7	Layer	Occupation	Mod compact, dark grey brown sandy silt, occ frags cbm/coal/pot/bone, mod frags oyster/mussel shell	1.34	2.4	0.04	2.2	n/a	Early post-med	5bii	5
BVM12	477	A3	E39	477	7	Cut	Rubbish Pit	Sub rectangular, steeply sloping, flat base, not fully exposed in plan	0.54	0.4	0.36	2.03	1.66	Early post-med	5bi	5



BVM12	478	A3	E39	478	n/a	Layer	Surface	Compact, mid whitish grey, mortar and tile, mod frags oyster/mussel shell, freq frags slag, occ frags coal/pot/CBM/bone	0.9	1	0.03	2.17	2.16	Early post-med	5bii	5
BVM12	479	A3	E39	479	7; 8	Layer	Dump	Soft, mid grey silty clay, mod oyster/flecks charcoal/fmortar, occ chalk/cbm/bone/slag/pot	3.1	2.4	0.03	1.91	1.73	Medieval	4c	4c
BVM12	480	A3	E39	480	7	Layer	Surface	Compact, dark brown to dark grey, clinker and silt, occ small sub-ang/sub-rnd pebbles/flecks crushed lime mortar/pot/CBM/bone, small frags coal/oyster	1.3	2.4	0.07	2.16	2.08	Early post-med	5bii	5
BVM12	481	A3	E39	481	7; 8	Layer	Surface	Firm, light yellowish brown, mortar, freq chalk, mod frags cbm, flecks chalk, frags oyster, occ flecks charcoal, clinker	0.84	1.94	0.11	2.16	2.13	Early post-med	5bi	5
BVM12	482	A3	E39	n/a	7	Fill	Fill of Pit [483]	Loose, mid greyish brown, silty sand, freq frags mortar, mod frags cbm, angular flint, occ oyster, flecks chalk, charcoal, frags degraded wood, pot, fe nail/metal, bone	0.42	0.92	0.97	2.12	n/a	Early post-med	5bi	5
BVM12	483	A3	E39	483	7	Cut	Pit	Rectangular, vertical side on north sloping on south, base irregular	0.42	0.92	0.97	2.12	1.15	Early post-med	5bi	5
BVM12	484	A3	E39	n/a	n/a	Fill	Fill of Posthole [485]	Loose, dark brown-grey, clinker and silt, occ small sub-ang pebbles, small frags coal/shell/flecks lime mortar	0.3	0.22	0.06	2.09	n/a	Early post-med	5bii	5
BVM12	485	A3	E39	485	n/a	Cut	Posthole	Oval, vertical sides, base slopes down towards north	0.3	0.22	0.06	2.09	2.03	Early post-med	5bii	5
BVM12	486	A3	E39	486	n/a	Layer	Surface	Compact, mid red-mid grey, tiles with pebbles and lime mortar, occa pot/metal/CBM/burnt flint/slag/bone	1.42	1.92	0.02	2.12	n/a	Early post-med	5bii	5
BVM12	487	A3	E39	487	7	Layer	Surface/Foundation	Compact, mid whitish grey, frags chalk, yellow brown mortar, clay/silt lenses, occ frags cbm/bone/pot	1.1	0.76	0.08	2.11	n/a	Early post-med	5bi	5
BVM12	488	A3	E39	n/a	7	Fill	Fill of Gully [697]	Compact, mid/dark grey sandy silt, occ frags chalk/mortar/small cbm/pot	0.4	1.5	0.09	2.1	n/a	Early post-med	5bii	5
BVM12	489	A3	E39	n/a	7	Fill	Fill of Gully [490]	Compact, dark black-grey, sandy silt, occa bone/shell/CBM/burnt flint/slag, freq frags copper	0.4	2.4	0.05	2.04	n/a	Early post-med	5bii	5
BVM12	490	A3	E39	490	7	Cut	E-W Gully	Linear, gently sloping sides to north, base concave	0.5	2.4	0.12	2.1	1.98	Early post-med	5bii	5
BVM12	491	A3	E39	491	7	Layer	Industrial Waste	Indurated, grey/orange brown, iron slag, frags tile/mortar/chalk	1.3	2.3	0.04	2.1	n/a	Early post-med	5bi	5
BVM12	492	A3	E39	492	7	Layer	Industrial Waste	Friable, dark reddish/blackish grey, clayey silt, freq charcoal, occ frags shell/mortar/pot/cbm	1.6	2.3	0.05	2.08	n/a	Early post-med	5bi	5
BVM12	493	A3	E39	493	7	Layer	Surface/Repair	Firm, mid brown sandy silt, freq cbm, occ bone/sub-rnd flint/oyster	0.76	1.32	0.04	2.03	n/a	Early post-med	5bi	5
BVM12	494	A3	E39	494	7	Layer	Surface	Firm, mid grey-brown, silty-sand and gravel, freq light yellowish white mortar/chalk/cbm/sub-rnd gravels, occ	1.9	2.32	0.03	2.02	1.99	Early post-med	5bi	5

								oyster/frags charcoal/chalk								
BVM12	495	A3	E39	n/a	7	Fill	Fill of Gully [496]	Firm, mid brown, sandy silt, mod flecks mortar/oyster, occ flecks charcoal/sub-rnd to sub-ang flints/cbm/pot/bone	0.36	2.3	0.2	2.02	n/a	Early post-med	5bii	5
BVM12	496	A3	E39	496	7	Cut	E-W Gully	Linear, sloping on north side, vertical on south, base flat	0.36	2.3	0.2	2.02	1.93	Early post-med	5bii	5
BVM12	497	A3	E39	n/a	n/a	Fill	Fill of posthole [498]	Loose, mid brown sandy silt, occ frags oyster/sub-ang flint/flecks charcoal / bone / pot, mod cbm	0.22	0.36	0.17	1.88	n/a	Early post-med	5bi	5
BVM12	498	A3	E39	498	n/a	Cut	Posthole	Semi circular vertical southern edge, base flat	0.22	0.36	0.17	1.88	1.71	Early post-med	5bi	5
BVM12	499	A3	E39	499	7	Layer	Occupation layer	Firm to friable, dark brown sandy silt, mod frags coal/charcoal/sub-rnd gravel	1.74	2.32	0.06	2.01	n/a	Early post-med	5bi	5
BVM12	500	A3	E39	500	7	Layer	Surface	Indurated, light yellowish brown sandy gravel, occ frags chalk/cbm/oyster/animal bone	1.54	2.32	0.06	1.98	n/a	Early post-med	5bi	5
BVM12	501	A3	E39	501	7	Layer	Dump layer	Firm mid grey-brown, clay-silt, occ flecks charcoal/frags oyster/sub-rnd flint/bone/cbm	0.46	2.32	0.05	2	1.93	Early post-med	5bi	5
BVM12	502	A3	E39	502	7	Timber	E-W Partition	Soft, dark brown, clayey silt/degraded wood	0.04	1.77	0.16	2.06	2.01	Early post-med	5bi	5
BVM12	503	A3	E39	503	7	Timber	E-W Partition	Soft, dark brown, clayey silt/degraded wood	0.04	2.5	0.2	2.08	1.99	Early post-med	5bi	5
BVM12	504	A3	E39	504	7	Layer	Makeup	Firm, light greyish brown, sandy silt, freq cbm/mortar/chalk/oyster/other shell occa greensand frags/charcoal/pot, mod sub-ang flint	1.34	2.32	0.07	1.92	1.87	Early post-med	5bi	5
BVM12	505	A3	E39	505	7; 8	Layer	Garden soil/Dump	Soft, dark brown, clayey silt, mod frags oyster, occ flecks charcoal/coal/chalk/sub-rnd to sub-ang stones/cbm/pot/bone/struck flint	0.9	2.32	0.09	2.13	2.05	Early post-med	5bi	5
BVM12	506	A3	E39	506	7; 8	Layer	Dump	Soft, dark grey silty clay, mod oyster / mortar / coal/charcoal/gravels, occ frags chalk/pot/bone/CBM	1.02	2.32	0.2	2.07	1.9	Early post-med	5bi	5
BVM12	507	A3	E39	n/a	n/a	Fill	Fill of Pit [508]	Loose, dark brown clayey silt, mod oyster, occ flecks charcoal / mortar / pot / cbm / bone / sub-ang to sub-rnd stones	0.76	0.66	0.32	1.99	n/a	Early post-med	5bi	5
BVM12	508	A3	E39	508	n/a	Cut	Rubbish Pit	Sub rectangular, steeply sloping on north and south sides, gentle slope on east, base concave	0.76	0.66	0.32	1.99	1.67	Early post-med	5bi	5
BVM12	509	A3	E39	n/a	7	Fill	Fill of Gully [510]	Mod compact, mid greyish brown, silty clay, mod frags cbm, freq flint/gravel, occ-mod oyster	0.26	2.3	0.12	1.88	n/a	Early post-med	5bi	5
BVM12	510	A3	E39	510	7	Cut	E-W Gully	Linear, sloping on north vertical on south side, base gently sloping to east	0.26	2.3	0.12	1.88	1.76	Early post-med	5bi	5
BVM12	519	A3	E39	n/a	n/a	Fill	Fill of Grave [520]	Soft, mid grey, silty clay, occ frags oyster/charcoal/mortar/wood/sub-ang to	0.54	0.96	0.07	1.72	1.7	Medieval	4c	4c

								sub-rnd flints/pot/CBM								
BVM12	520	A3	E39	521	n/a	Cut	Grave	Sub rectangular, gently sloping sides, base flat	0.54	0.96	0.07	1.72	1.63	Medieval	4c	4c
BVM12	521	A3	E39	521	n/a	Skeleton	Skeleton	Disarticulated remnants (skull) within grave cut [520], poss E-W aligned	n/a	n/a	n/a	1.73	1.68	Medieval	4c	4c
BVM12	524	A3	E39	524	n/a	Timber	Post	Upright sub-squared, flat based post, boxed heart	0.19	0.19	0.53	1.59	n/a	Early post-med	5bii	5
BVM12	533	A3	E39	533	7	Cut	E-W Partition	Linear, vertical sides, base flat	0.04	2.2	0.16	2.06	1.9	Early post-med	5bi	5
BVM12	534	A3	E39	534	7; 8	Layer	Dump	Mod compact, mid brownish grey, silty clay, mod oyster, frags and flecks charcoal, occ cbm animal bone, pot	3.7	2.4	0.12	1.62	1.52	Medieval	4c	4c
BVM12	539	A3	E39	n/a	n/a	Fill	Fill of pit [540]	Loose, mid grey clayey sand and gravel, mod oyster/other shell/lg frags burnt charcoal/coal/bone/cbm, occ frags mortar / pot/slag/nails	2.02	1.1	0.36	1.47	n/a	Medieval	4c	4c
BVM12	540	A3	E39	540	n/a	Cut	Rubbish Pit	Oval, sloping sides, steep sides on north, base gently sloping to north	2.02	1.1	0.36	1.47	1.11	Medieval	4c	4c
BVM12	546	A3	E39	546	7	Cut	E-W Partition	Linear, vertical sides, base flat	0.04	2.24	0.2	2.08	1.87	Early post-med	5bi	5
BVM12	549	A3	E39	n/a	7	Layer	Makeup for floor	Firm, white mortar and chalk, mod frags cbm, occ clay lenses	1.06	n/a	0.05	1.83	n/a	Early post-med	5bi	5
BVM12	550	A3	E39	n/a	7	Fill	Fill of gully [699]	Firm, mid grey, sandy silt, mod cbm / mortar, occ flecks chalk/frags oyster	0.44	n/a	0.11	2.14	n/a	Early post-med	5bii	5
BVM12	551	A3	E39	n/a	7	Layer	Surface/repair	Hard, white, chalk, mod frags cbm	0.6	n/a	0.03	1.98	n/a	Early post-med	5bi	5
BVM12	552	A3	E39	n/a	7	Layer	Dump layer	Firm, mid greyish brown, clayey silt, occ flecks charcoal/frags oyster/sub-rnd flints	0.66	n/a	0.06	1.97	n/a	Early post-med	5bi	5
BVM12	553	A3	E39	n/a	n/a	Fill	Fill of pit [554]	Loose, dark greyish brown, clayey sand, mod charcoal/sub-rnd gravel/mortar/oyster and other shells/cbm, occ frags chalk / pot / slag/nails/leather, freq bone	0.98	0.72	0.2	1.42	n/a	Medieval	4c	4c
BVM12	554	A3	E39	554	n/a	Cut	Rubbish Pit	Sub rectangular, sloping sides, base flat	0.98	0.72	0.2	1.42	1.22	Medieval	4c	4c
BVM12	557	A3	E39	557	7; 8	Layer	Dump layer	Soft, mid greyish brown silty clay, mod sub-rnd gravels/oyster and other shell/frags charcoal/chalk/mortar/cbm, occ bone/pot, very occ glass/slag	3.78	2.44	0.14	1.46	n/a	Medieval	4bii	4bi i
BVM12	566	A3	E39	566	7; 8	Layer	Dump	Soft, mid grey, sandy clay, freq oyster / bone, mod frags charcoal/sub-rnd stones / cbm / pot, occ frags chalk / mortar / glass / slag/lead/glazed cbm	3.8	2.48	0.2	1.3	n/a	Medieval	4bii	4bi i
BVM12	578	A3	E39	578	n/a	Skeleton	E-W skeleton	Supine, extended skeleton, good condition, not fully exposed	n/a	n/a	n	1.12	1.01	Medieval	4c	4c
BVM12	579	A3	E39	n/a	7	Fill	Fill of grave cut [580]	Loose, mid grey sandy silt, mod oyster/mussels and other shell/sub-ang and sub-rnd stones/fragments charcoal/bone, occ pot/slag/fe objects	0.48	0.9	0.5	1.45	1.07	Medieval	4c	4c

BVM12	580	A3	E39	578; 580	7	Cut	Grave	Sub rectangular, near vertical sides, base flat	0.48	0.9	0.5	1.48	0.98	Medieval	4c	4c
BVM12	582	A3	E39	n/a	7	Fill	Fill of grave cut [584]	Soft, mod compact, whitish grey sandy clay, freq scallop/mussel/oyster, mod cbm/animal bone/fe obj, occ pot	0.4	0.7	0.35	1.47	1.12	Medieval	4c	4c
BVM12	583	A3	E39	583	n/a	Skeleton	E-W skeleton	Supine, extended skeleton, mod condition, not fully exposed	n/a	n/a	n	1.29	1.18	Medieval	4c	4c
BVM12	584	A3	E39	584	7	Cut	Grave	E-W sub-rectangular cut, vertical sides, concave base	0.52	0.86	0.35	1.48	1.12	Medieval	4c	4c
BVM12	585	A3	E39	n/a	7; 8	Fill	Fill of channel [586]	Loose, mid greyish brown silty clay, mod oyster, occ frags charcoal / chalk / cbm / pot / bone	0.3	1.48	0.22	1.02	n/a	Medieval	4bii	4bi i
BVM12	586	A3	E39	586	7; 8	Cut	E-W channel	Linear, sloping sides, base not seen	0.3	1.48	0.22	1.02	0.86	Medieval	4bii	4bi i
BVM12	587	A3	E39	n/a	7	Fill	Fill of pit [588]	Loose, mid greyish brown clayey sand, freq oyster and other shells, mod charcoal/sub-rnd gravels/bone/cbm, occ frags chalk/mortar/pot/metal/leather/bones	1.5	1.28	0.38	1.09	n/a	Medieval	4bii	4bi i
BVM12	588	A3	E39	588	7	Cut	Pit	Circular, sloping sides, flat base	1.5	1.28	0.38	1.09	0.71	Medieval	4bii	4bi i
BVM12	589	A3	E39	n/a	n/a	Fill	Fill of grave cut [591]	Soft, dark grey silty clay, freq flint pebbles, occ bone/cbm	0.2	0.13	0.01	1.2	n/a	Medieval	4c	4c
BVM12	590	A3	E39	590	n/a	Skeleton	E-W skeleton	Truncated/partially exposed supine skeleton, good preservation	n/a	n/a	n/a	1.22	1.14	Medieval	4c	4c
BVM12	591	A3	E39	591	n/a	Cut	Grave	E-W, sub-rectangular cut, truncated sides, flat base	0.2	0.13	0.01	1.2	1.1	Medieval	4c	4c
BVM12	592	A3	E39	n/a	n/a	Fill	Fill of pit [593]	Loose, dark grey clayey sand, mod flecks charcoal/bone, occ oyster and mussel shells/sub-rnd stones/frags mortar/chalk/pot	0.92	0.9	0.21	1	n/a	Medieval	4bii	4bi i
BVM12	593	A3	E39	593	n/a	Cut	Pit	Sub-circular cut, steeply sloping southern sides, flat base	0.92	0.9	0.21	1	0.79	Medieval	4bii	4bi i
BVM12	594	A3	E39	594	7	Layer	Occupation layer	Loose, mid grey brown/yellow-brown, silty clay, freq shell/frags cbm/animal bone, occa glazed floor tile	1.5	2.3	0.25	1.13	n/a	Medieval	4bi	4bi
BVM12	595	A3	E39	n/a	n/a	Fill	Fill of pit [596]	Loose, mid greyish brown clayey sand, freq oyster and other shells/bone/pot, mod gravels/cbm, occ frags charcoal / wood / mortar/chalk/leather/iron objects	1.88	1.62	0.34	0.99	n/a	Medieval	4bii	4bi i
BVM12	596	A3	E39	596	n/a	Cut	Pit	Sub-circular pit, sloping sides, flat base	1.88	1.62	0.34	0.99	0.65	Medieval	4bii	4bi i
BVM12	597	A3	E39	n/a	n/a	Fill	Fill of pit [598]	Soft, mid brown sandy-clay, mod gravels / charcoal, occa chalk/mortar/pot/CBM	0.68	0.9	0.22	1.1	n/a	Medieval	4bii	4bi i
BVM12	598	A3	E39	598	n/a	Cut	Rubbish Pit	Sub-circular pit, steeply sloping sides, flat base	0.68	0.9	0.22	1.01	0.88	Medieval	4bii	4bi i

BVM12	599	A3	E39	n/a	n/a	Fill	Fill of pit [650]	Loose, mid-brown, silty sand, mod oyster / gravels/charcoal/pot/CBM, occa chalk / wood/metal/bone/leather	1.4	0.94	0.38	1.01	n/a	Medieval	4bii	4bi i
BVM12	621	A3	E39	621	7; 8	Cut	Tanning Pit?	Sub-squared cut feature with steep sides, not fully excavated	4.4	2.5	1.17	0.78	0.39	Medieval	4bi	4bi
BVM12	650	A3	E39	650	n/a	Cut	Rubbish Pit	Heavily truncated irregular pit, concave sides and base	1.5	0.96	0.38	1.01	0.62	Medieval	4bii	4bi i
BVM12	651	A3	E39	651	7	Fill	Fill of pit [621]	Loose, dark grey silty-clay, freq oyster / mussel / bone, mod CBM / mortar / leather, occa pot	2.32	2.5	0.32	0.94	n/a	Medieval	4bi	4bi
BVM12	666	A3	E39	666	7; 8	Layer	Alluvium	Firm, green-grey silty-clay, occa charcoal / sub-ang gravels/oyster/pot/metal/CBM	1.18	1.86	0.04	1.08	n/a	Medieval	4bi	4bi
BVM12	667	A3	E39	667			VOID	VOID								
BVM12	668	A3	E39	667			VOID	VOID								
BVM12	669	A3	E39	669	n/a	Timber	Stake	Vertical oak stake, semi-circular profile, decayed at top	0.09	0.04	0.15	1.12	n/a	Medieval	4bii	4bi i
BVM12	670	A3	E39	670	7; 8	Layer	Dump layer	Soft, grey-brown silty-clay, freq CBM/shell/bone, occa pot	0.83	2.5	0.08	1	0.77	Medieval	4bi	4bi
BVM12	671	A3	E39	671	7; 8	Layer	Dump layer	Soft yellow/grey-brown sandy-clay, freq shell, mod bone, occa CBM/pot	1.4	1.52	0.15	0.96	0.65	Medieval	4bi	4bi
BVM12	672	A3	E39	672	n/a	Layer	Dump layer	Loose, dark black-brown, coarse sandy-silt and clay, freq oyster/CBM/lg bone, occa/mod pot	1.1	0.58	0.15	0.92	n/a	Medieval	4bi	4bi
BVM12	673	A3	E39	673	7; 8	Layer	Dump layer	Loose, dark brown-grey coarse sandy-silt, freq CBM/bone, mod pot/leather	2.5	2.5	0.06	0.82	n/a	Medieval	4bi	4bi
BVM12	674	A3	E39	674	7; 8	Fill	Fill of pit [621]	Loose, dark grey-brown coarse sandy-silt and clay, freq med/lg leather/bone, mod pot	4.4	2.5	0.14	0.74	n/a	Medieval	4bi	4bi
BVM12	675	A3	E39	675	7	Fill	Fill of pit [621]	Soft, brown-grey silty-clay, occa/mod bone/pot/CBM	1	2.46	0.08	0.87	n/a	Medieval	4bi	4bi
BVM12	676	A3	E39	676	7; 8	Fill	Fill of pit [621]	Loose, mid grey-brown, silty-sand, mod oyster/gravels, occa chalk/charcoal/pot/CBM/bone/leather	4.1	2.5	0.11	0.65	n/a	Medieval	4bi	4bi
BVM12	677	A3	E39	677; post-ex	7; 8	Fill	Fill of pit [621]	Loose, mid-brown, clay-sand, mod gravels, occa oyster/shell/wood/pot/CBM/leather/bone	4.16	2.48	0.55	0.87	n/a	Medieval	4bi	4bi
BVM12	678	A3	E39	678	8	Fill	Fill of pit [621]	Dump of elder roundwood stakes	1.6	1.68	0.25	0.87	0.42	Medieval	4bi	4bi
BVM12	679	A3	E39	679; post-ex	7; 8	Layer	Alluvium	Firm, grey-brown clay, occa manganese flecks/roots	4.4	2.5	0.58	0.78	n/a	Medieval	4a	4a
BVM12	680	A3	E39	n/a	n/a	Layer	Alluvium	Firm, grey-brown clay, occa charcoal flecks	n/a	n/a	0.05	0.09	n/a	Natural/Prehistoric	1; 2	4a
BVM12	681	A3	E39	n/a	n/a	Layer	Alluvium	Soft, grey-brown sandy-clay, flecks wood/charcoal	n/a	n/a	0.1	0.04	0.06	Natural/Prehistoric	1; 2	4a
BVM12	682	A3	E39	n/a	n/a	Layer	Alluvium	Soft, grey-brown clay, occa charcoal flecks	n/a	n/a	0.03	0.06	n/a	Natural/Prehistoric	1; 2	4a

BVM12	683	A3	E39	n/a	n/a	Layer	Alluvium	Soft, grey-brown clay, occa charcoal flecks	n/a	n/a	0.11	-	0.09	n/a	Natural/Prehistoric	1; 2	4a
BVM12	684	A3	E39	n/a	n/a	Layer	Alluvium	Firm, grey-brown clay, occa charcoal flecks	n/a	n/a	0.12	-0.2	n/a	n/a	Natural/Prehistoric	1; 2	4a
BVM12	685	A3	E39	n/a	n/a	Layer	Alluvium	Soft, grey-brown clay, occa wood/charcoal/shell	n/a	n/a	0.13	-	0.32	n/a	Natural/Prehistoric	1; 2	4a
BVM12	686	A3	E39	n/a	n/a	Layer	Natural?	Loose, grey-brown sandy gravels, occa timber/chalk	n/a	n/a	0.12	-	0.47	n/a	Natural/Prehistoric	1; 2	4a
BVM12	687	A3	E39	n/a	n/a	Layer	Alluvium	Soft, light grey clay, occa gravel/chalk	n/a	n/a	0.25	-	0.86	n/a	Natural/Prehistoric	1; 2	4a
BVM12	688	A3	E39	n/a	n/a	Layer	Alluvium	Soft, light grey clay, occa shell/wood	n/a	n/a	0.17	-	0.99	n/a	Natural/Prehistoric	1; 2	4a
BVM12	689	A3	E39	n/a	n/a	Layer	Alluvium	Soft, light grey clay with sand laminations, occa chalk	n/a	n/a	0.14	-	1.09	n/a	Natural/Prehistoric	1; 2	4a
BVM12	690	A3	E39	n/a	n/a	Layer	Alluvium	Soft, mid grey clay-sand, v occa chalk	n/a	n/a	0.15	-	1.17	n/a	Natural/Prehistoric	1; 2	4a
BVM12	691	A3	E39	n/a	n/a	Layer	Alluvium	Soft, light grey sandy clay, occa shell	n/a	n/a	0.13	-	1.31	n/a	Natural/Prehistoric	1; 2	4a
BVM12	692	A3	E39	n/a	n/a	Layer	Alluvium	Loose, grey-brown sandy-clay, freq gravel	n/a	n/a	0.22	-	1.33	n/a	Natural/Prehistoric	1; 2	4a
BVM12	693	A3	E39	n/a	n/a	Layer	Natural	Loose, light brown sandy gravel	n/a	n/a	0.24	-	1.78	n/a	Natural	1	1
BVM12	694	A3	E39	n/a	n/a	Layer	Natural	Loose, mid grey-brown sandy-clay with gravel	n/a	n/a	0.12	-	2.02	n/a	Natural	1	1
BVM12	695	A3	E39	n/a	n/a	Layer	Alluvium	Soft, black silty clay, mod wood/oyster	n/a	n/a	0.00	-0.3	n/a	n/a	Medieval	4b	4a
BVM12	696	A3	E39	n/a	n/a	Layer	Alluvium	Firm, black clay, occa wood/chalk	n/a	n/a	0.05	-	0.34	n/a	Natural/Prehistoric	1; 2	4a
BVM12	697	A3	E39	697	7	Cut	E-W Gully	Linear cut, concave sides, flat base	0.42	2.42	0.09	2.19	2.07	n/a	Early post-med	5bii	5
BVM12	698	A3	E39	698	7	Cut	E-W Gully	Linear cut, concave sides, flat base	0.5	2.4	0.2	2.33	2.12	n/a	Early post-med	5biii	5
BVM12	699	A3	E39	699	7	Cut	NW-SE Gully	Linear cut, concave sides, flat base	0.4	2.28	0.1	2.12	2.01	n/a	Early post-med	5bii	5
BVM12	542	A4, ST2	E103	n/a	16	Layer	Made ground	Brown-grey mortar crush with silt lenses, occa CTP	2.1	1	0.85	2.82	n/a	n/a	Post-med	6a	6a
BVM12	543	A4, ST2	E103	n/a	16	Layer	Dump layer	Dark grey-brown clay-silt, no inc	2.1	1	0.2	1.97	n/a	n/a	Post-med	6a	6a
BVM12	544	A4, ST2	E103	ST2	16	Layer	Alluvium	Mid blue-grey clay	2.1	1	0.55	1.77	n/a	n/a	Medieval	4a	4a
BVM12	567	A4, ST3	E103	n/a	17	Layer	Demolition rubble	Loose, grey-white, crushed mortar, mod CBM/gravels	n/a	n/a	0.3	2.32	n/a	n/a	Modern	7	7
BVM12	568	A4, ST3	E103	n/a	17	Masonry	Brick floor	Red brick floor, white lime mortar	n/a	n/a	0.2	2.12	n/a	n/a	Post-med	6b	6b
BVM12	569	A4, ST3	E103	ST3	17	Layer	Alluvium	Soft, mid grey silty-clay	n/a	n/a	0.6	2.02	n/a	n/a	Undated	4a	4a
BVM12	570	A4, ST3	E103	ST3	17	Masonry	Culvert	E-W red brick culver, stretcher bond, cemented mortar	0.8	0.7	1.6	3.42	n/a	n/a	Post-med	6b	6b

BVM12	571	A4, ST4	E103	n/a	18	Layer	Made ground	Loose, grey-white sandy mortar, occa CBM	n/a	n/a	0.2	2.32	n/a	Modern	7	7
BVM12	572	A4, ST4	E103	n/a	18	Layer	Dump layer	Soft dark brown-black, humic sandy-silt, occa CBM/disartic. Human bone	n/a	n/a	0.3	2.12	n/a	Modern	7	7
BVM12	573	A4, ST4	E103	n/a	18	Fill	Fill of construction cut [574]	Soft, mid grey, clayey-silt, no inc	0.8	n/a	0.8	1.82	n/a	Post-med	6b	6b
BVM12	574	A4, ST4	E103	n/a	18	Cut	Construction cut for footing [575]	E-W linear cut, vertical sides, flat base	0.8	n/a	0.8	1.82	1.02	Post-med	6b	6b
BVM12	575	A4, ST4	E103	ST4	18	Masonry	Red brick and concrete footing	Possible footing, cemented brickwork	0.8	n/a	2.36	3.38	1.02	Post-med	6b	6b
BVM12	576	A4, ST4	E103	ST4	18	Layer	Alluvium	Soft, mid yellow-grey silty-clay	n/a	n/a	0.94	1.82	n/a	Undated	4a	4a
BVM12	900	A5	E98	900a; 900b	n/a	Layer	Redeposited Alluvium	Soft brown-grey mottled clay-silt, occa organics (twigs/roots)	2.3	1.25	0.16	- 0.22	n/a	Roman	3	3
BVM12	901	A5	E98	901	n/a	Layer	Natural timbers	Collection of natural roundwood, no evidence of human working	0.9	0.6	0.1	- 0.32	n/a	Roman	3	3
BVM12	902	A5	E98	902	37	Layer	Redeposited Alluvium	Soft brown-grey mottled clay-silt, occa organics (twigs/roots), occa chalk	2.5	1.3	0.4	-0.1	n/a	Roman	3	3
BVM12	903	A5	E98	903	n/a	Layer	Dump layer	Firm, brown-grey sandy-silty-clay, occa chalk/stone/sub-ang flints/shell	1.6	0.87	0.15	- 0.65	n/a	Roman	3	3
BVM12	904	A5	E98	904	37, 38	Layer	Dump layer	Compacted brown-grey silty-sandy-gravel, occa CBM/pot/stone/obj/rnd flints	2.5	1.2	0.2	- 0.74	n/a	Roman	3	3
BVM12	905	A5	E98	905	37	Layer	Redeposited Alluvium	Firm brown-grey silty-clay with organic lenses, occa CBM/pot/metal/oyster/ang gravels/bone	1.4	1.2	0.1	- 0.65	n/a	Roman	3	3
BVM12	906	A5	E98	906	37, 38	Layer	Dump layer	Loose brown-grey sandy gravel, freq rnd stones, occa sub-ang gravels/pot/CBM/worked stone	2.3	1.3	0.25	- 0.59	n/a	Roman	3	3
BVM12	907	A5	E98	907	37	Timber	Beam	Horizontal beam, lap joint on underside with iron nails, poss displaced revetment timber, boxed heart, oak	0.2	0.82	0.14	- 0.66	- 0.79	Roman	3	3
BVM12	908	A5	E98	908; post-ex	n/a	Layer	Alluvium	Soft blue-grey clay, mod sub-rnd pebbles/sub-ang flints	2.5	1.3	n/a	- 0.89	n/a	Roman	3	3
BVM12	909	A5	E98	909	38	Timber	Collapsed tree	Remnants of collapsed tree trunk	0.32	0.52		- 0.55	n/a	Roman	3	3
BVM12	1800	AT1	n/a	TST	n/a	Masonry	Wall foundation	E-W aligned brick foundation, coursing unclear	1.08	7	0.5	2.08	n/a	Post-med	6b	6
BVM12	1801	AT1	n/a	TST	n/a	Masonry	Chalk wall foundation	E-W with N-S returns at either end, Chalk, random coursing, fairly loose off-white/yellowish mortar with moderate-frequent chalk flecks	3.18	2.4	0.5	2	n/a	Medieval	4b	5
BVM12	1802	AT1	n/a	TST	n/a	Masonry	Wall footing	N-S Chalk and flint with occasional green sand stone, light yellowish mortar with	2.07	0.45	0.05	1.9	n/a	Medieval	4b	5

							chalk flecks									
BVM12	1803	AT1	n/a	TST	n/a	Layer	Crushed chalk surface	Moderate off-white crushed chalk	1.1	2.1	0.1	1.98	n/a	Medieval	4b	5
BVM12	1804	AT1	n/a	TST	n/a	Masonry	Chalk footings	N-S Chalk squared blocks, yellowish mortar	4.15	0.36	0.22	1.75	n/a	Medieval	4b	5
BVM12	1805	AT1	n/a	TST	n/a	Masonry	Wall footing	E-W Chalk roughly cut, off-white yellowish mortar with chalk flecks	0.27	1.02	0.18	1.92	n/a	Medieval	4b	5
BVM12	1806	AT1	n/a	TST	n/a	Masonry	Wall	N-S Green sandstone, ragstone and flint core on west face, squared green sandstone and roughly hewn ragstone, orangey clay bonding material	1.05	0.46	0.2	1.66	n/a	Medieval	4b	5
BVM12	1807	AT1	n/a	TST	n/a	Layer	Silty clay deposit	Firm greenish brown silty clay, freq charcoal	n/a	n/a	n/a	1.66	n/a	Medieval	4b	5
BVM12	1808	AT1	n/a	TST	n/a	Layer	Clay deposit	Plastic light to mid yellowish brown slightly silty clay, occ charcoal flecks	n/a	n/a	n/a	1.66	n/a	Medieval	4b	5
BVM12	1809	AT1					VOID	VOID								
BVM12	1810	AT1	n/a	TST	n/a	Timber	Timber stake - group of three	Timber stake, diagonal incline north-south, north-south orientation, quarter/eighth cleft (?) cross-section, poor condition	0.05	0.02	0.2	0.17	n/a	Medieval	4b	4b
BVM12	1811	AT1	n/a	TST	n/a	Timber	Timber stake - group of three	Timber stake, diagonal incline north-south, north-south orientation, rectangle cross-section, poor condition	0.05	0.02	0.19	0.18	n/a	Medieval	4b	4b
BVM12	1812	AT1	n/a	TST	n/a	Timber	Timber stake - group of three	Timber stake, diagonal incline north-south, north-south orientation, rectangle cross-section, poor condition	0.07	0.03	0.12	0.17	n/a	Medieval	4b	4b
BVM12	1813	AT1	n/a	TST	n/a	Timber	Timber stake	Timber stake, diagonal incline north-south, north-south orientation, rectangle cross-section, poor condition	0.08	0.02	0.17	0.17	n/a	Medieval	4b	4b
BVM12	1814	AT1	n/a	TST	n/a	Timber	Timber stake	Timber stake, diagonal incline north-south, north-south orientation, rectangle cross-section, poor condition	0.04	0.02	0.11	0.17	n/a	Medieval	4b	4b
BVM12	1815	AT1	n/a	TST	n/a	Timber	Timber post - for timber structure/revetment	Vertical setting, boxed heart, good condition	0.12	0.17	0.45	0.08	n/a	Medieval	4b	4b
BVM12	1816	AT1	n/a	TST	n/a	Timber	Cross beam - part of timber structure/revetment	Horizontal setting, east-west orientation, good condition, conversion unknown	0.11	0.32	n/a	0.06	n/a	Medieval	4b	4b
BVM12	1817	AT1	n/a	TST	n/a	Timber	Timber post - part of timber	Vertical setting with slight incline north-south, irregular cross-section, damaged/poor condition, attached to	0.13	0.1	0.42	0.03	n/a	Medieval	4b	4b



							structure/rev etment	[1818] but no fittings seen								
BVM12	1818	AT1	n/a	TST	n/a	Timber	Timber plank - part of revetment/st ructure	Horizontal setting, east-west orientation, good condition, conversion unknown, attached to [1817] but no fittings seen	0.02	0.18	n/a	0.03	n/a	Medieval	4b	4b
BVM12	1819	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition, unknown conversion	0.14	0.4	n/a	-0.3	n/a	Medieval	4b	4b
BVM12	1820	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition,	0.26	1.38	n/a	- 0.37	n/a	Medieval	4b	4b
BVM12	1821	AT1	n/a	TST	n/a	Timber	Timber post - tie-back for timber structure/rev etment	Vertical setting, north-south orientation, good condition, squared conversion	0.62	0.12	n/a	- 0.32	n/a	Medieval	4b	4b
BVM12	1822	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition,	0.25	0.52	n/a	- 0.34	n/a	Medieval	4b	4b
BVM12	1823	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, good condition, squared conversion	0.27	0.14	n/a	- 0.33	n/a	Medieval	4b	4b
BVM12	1824	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition	0.15	0.53	n/a	- 0.35	n/a	Medieval	4b	4b
BVM12	1825	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, good condition, squared conversion	0.12	0.12	n/a	- 0.28	n/a	Medieval	4b	4b
BVM12	1826	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/rev etment	Horizontal setting, north-south orientation, good condition	0.63	0.14	n/a	-0.2	n/a	Medieval	4b	4b
BVM12	1827	AT1	n/a	TST	n/a	Timber	Timber post	Vertical setting, east-west orientation,	0.74	0.15	n/a	-	n/a	Medieval	4b	4b

							- tie-back for timber structure/revetment	good condition, squared conversion				0.21				
BVM12	1828	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/revetment	Horizontal setting, east-west orientation, good condition	0.2	1.38	n/a	- 0.21	n/a	Medieval	4b	4b
BVM12	1829	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/revetment	Vertical setting, good condition, squared conversion	0.12	0.16	n/a	-0.2	n/a	Medieval	4b	4b
BVM12	1830	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/revetment	Vertical setting, good condition, squared conversion	0.1	0.1	n/a	- 0.18	n/a	Medieval	4b	4b
BVM12	1831	AT1	n/a	TST	n/a	Timber	Timber beam - part of timber structure/revetment	Horizontal setting, east-west orientation, good condition	0.14	0.57	n/a	- 0.24	n/a	Medieval	4b	4b
BVM12	1832	AT1	n/a	TST	n/a	Layer	Peat layer	Peat - truncated by timber revetment [1819] to [1831]	n/a	n/a	n/a	- 0.22	n/a	Medieval	4a	4a
BVM12	1833	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.15	0.14	n/a	- 0.25	n/a	Medieval	4b	4b
BVM12	1834	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.11	0.12	n/a	-0.2	n/a	Medieval	4b	4b
BVM12	1835	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.15	0.12	n/a	- 0.18	n/a	Medieval	4b	4b
BVM12	1836	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.12	0.16	n/a	- 0.13	n/a	Medieval	4b	4b
BVM12	1837	AT1	n/a	TST	n/a	Timber	Timber post - possibly	Vertical setting, good condition, squared conversion	0.11	0.12	n/a	- 0.14	n/a	Medieval	4b	4b

							part of timber structure										
BVM12	1838	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.13	0.14	n/a	- 0.12	n/a	Medieval	4b	4b	
BVM12	1839	AT1	n/a	n/a	74	Layer	Alluvium	Compact mid bluish grey clay, occ wood inclusions	1.95	n/a	0.79	0.42	n/a	Medieval	4a	4a	
BVM12	1840	AT1	n/a	n/a	74	Layer	Organic Alluvium / Peat	Moderate mid greyish brown silty clay, occ-mod wood inclusions	n/a	2	0.15	0.26	n/a	Medieval	4a	4a	
BVM12	1841	AT1	n/a	n/a	74	Layer	Coarse Sand	Spongy grey coarse sand with patches of silty/clay alluvium	n/a	2	0.15	0.21	n/a	Medieval	4a	4a	
BVM12	1842	AT1	n/a	n/a	74	Layer	Organic Alluvium / Peat	Very compact mid greyish brown silty clay	n/a	2	0.3	0.11	n/a	Medieval	4a	4a	
BVM12	1843	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.18	0.18	n/a	-0.2	n/a	Medieval	4a	4a	
BVM12	1844	AT1	n/a	TST	n/a	Timber	Timber post - possibly part of timber structure	Vertical setting, good condition, squared conversion	0.18	0.18	n/a	0.06	n/a	Medieval	4b	4b	
BVM12	1845	AT1	n/a	TST	n/a	Timber	Timber post	Vertical setting, good condition, squared conversion	0.18	0.18	n/a	-0.3	n/a	Medieval	4b	4b	
BVM12	1846	AT1	n/a	TST	n/a	Timber	Timber plank/beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition	0.03	1.7	n/a	- 0.32	n/a	Medieval	4b	4b	
BVM12	1847	AT1	n/a	TST	n/a	Timber	Timber plank/beam - part of timber structure/rev etment	Horizontal setting, northeast-southwest orientation, good condition	0.02	0.28	n/a	- 0.25	n/a	Medieval	4b	4b	
BVM12	1848	AT1	n/a	TST	n/a	Timber	Plank/beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition	0.04	1.11	n/a	- 0.23	n/a	Medieval	4b	4b	

BVM12	1849	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, good condition, squared conversion	0.16	0.15	n/a	- 0.26	n/a	Medieval	4b	4b
BVM12	1850	AT1	n/a	TST	n/a	Timber	Plank/beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition	0.02	1.32	n/a	- 0.26	n/a	Medieval	4b	4b
BVM12	1851	AT1	n/a	TST	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, good condition, squared conversion	0.19	0.18	n/a	- 0.24	n/a	Medieval	4b	4b
BVM12	1852	AT1	n/a	TST	n/a	Timber	Timber plank/beam - part of timber structure/rev etment	Horizontal setting, east-west orientation, good condition	0.02	1.22	n/a	- 0.25	n/a	Medieval	4b	4b
BVM12	1853	AT1	n/a	n/a	n/a	Layer	Made Ground	Loose, mottled mid dark reddish grey brown clay/silty sand, freq rubble/concrete, occ plastic frags, mod small pebbles	25	7	3	3.41	n/a	Modern	7	6
BVM12	1854	AT1	n/a	1854	n/a	Masonry	Chalk wall footings	Chalk nodules roughly finished no tooling marks, mid yellow/grey lime mortar with chalk inclusions, east-west orientation	0.55	3.74	0.4	1.5	n/a	Medieval	4b	4b
BVM12	1855	AT1	n/a	1854	n/a	Layer	Dump layer	Friable mid grey brown silty clay, occ oyster shell, v occa cbm/pot/bone, occ med sub-ang - sub-rnd flint nodules/chalk/chalk flecks/gravel	n/a	n/a	0.8	1.1	n/a	Medieval	4b	4b
BVM12	1856	AT1	n/a	n/a	n/a	Layer	Alluvium	Firm mid grey clay, rare oyster shell, rare flint nodules (small to medium sub- angular/sub-rounded)	n/a	n/a	n/a	0.3	n/a	Medieval	4b	4b
BVM12	1857	AT1	n/a	1857	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, square cross-section, good condition, box squared conversion	0.26	0.24	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1858	AT1	n/a	1857	n/a	Timber	Timber post - part of timber structure/rev etment	Vertical setting, square cross-section, good condition, box squared conversion	0.2	0.2	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1859	AT1	n/a	1857	n/a	Timber	Timber post - part of timber structure/rev	Vertical setting, square cross-section, good condition, box squared conversion	0.16	0.17	n/a	0.05	n/a	Medieval	4b	4b

							ement									
BVM12	1860	AT1	n/a	1857	n/a	Timber	Timber post - part of timber structure/revetment	Vertical setting, square cross-section, good condition, box squared conversion	0.19	0.17	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1861	AT1	n/a	1857	n/a	Timber	Timber post - part of timber structure/revetment	Vertical setting, square cross-section, good condition, box squared conversion	0.17	0.17	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1862	AT1	n/a	1857	n/a	Timber	Timber plank - part of revetment/structure	Horizontal setting, east-west orientation, good condition	0.04	0.7	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1863	AT1	n/a	1857	n/a	Timber	Timber plank - part of revetment/structure	Horizontal setting, east-west orientation, good condition	0.04	1.25	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1864	AT1	n/a	1857	n/a	Timber	Timber plank - part of revetment/structure	Horizontal setting, east-west orientation, good condition	0.07	0.31	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1865	AT1	n/a	1857	n/a	Timber	Timber plank - part of revetment/structure	Horizontal setting, east-west orientation, good condition	0.07	0.29	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1866	AT1	n/a	1857	n/a	Timber	Timber plank - part of revetment/structure	Horizontal setting, east-west orientation, good condition	0.08	0.32	n/a	0.05	n/a	Medieval	4b	4b
BVM12	1867	AT1	n/a	1857	n/a	Layer	Alluvium	Firm - hard light grey/blue clay, v. rare amounts of oyster shell, small stones	10.8	3.85	n/a	-0.2	n/a	Undated	4a	4a
BVM12	1868	AT1	n/a				VOID	VOID								
BVM12	1869	AT1	n/a	n/a	n/a	Masonry	N-S wall	Chalk and 'Tudor' brick wall foundations	n/a	n/a	n/a	0.2	n/a	Medieval	4b	4b
BVM12	1870	AT1	n/a	n/a	n/a	Masonry	Wall	Post-med masonry	n/a	n/a	n/a	0.2	n/a	Post-med	6b	6
BVM12	1871	AT1	n/a	n/a	n/a	Masonry	Wall foundation	Post-med brick wall foundation	n/a	n/a	n/a	0.2	n/a	Post-med	6b	6
BVM12	1872	AT1	n/a	n/a	n/a	Masonry	Wall?	Post-med masonry	n/a	n/a	n/a	0.2	n/a	Post-med	6b	6
BVM12	1891	AT1	n/a				Unused	Unused								

BVM12	1892	AT1	n/a				Unused	Unused								
BVM12	1893	AT1	n/a				Unused	Unused								
BVM12	1894	AT1	n/a				Unused	Unused								
BVM12	1895	AT1	n/a				Unused	Unused								
BVM12	1896	AT1	n/a				Unused	Unused								
BVM12	1897	AT1	n/a				Unused	Unused								
BVM12	1898	AT1	n/a				Unused	Unused								
BVM12	1899	AT1	n/a				Unused	Unused								
BVM12	1	B1	E123	n/a	1, 2	Layer	Made Ground	Brown-grey clayey silt with CBM, charcoal, oyster shell	5	3	0.33	4.21	n/a	Post-med	6b	6b
BVM12	2	B1	E123	Pre-ex, 2	n/a	Masonry	E-W brick wall	C18th/C19th red brick wall	0.6	1.12	0.3	3.63	n/a	Post-med	6b	6a
BVM12	3	B1	E123	Pre-ex; 3	1, 2	Layer	Demolition layer	Brick rubble and lime mortar	3.3	3	0.3	3.78	n/a	Post-med	6b	6b
BVM12	4	B1	E123	Pre-ex, 4	1, 2	Cut	Linear Cut	Shallow cut filled by [5]	2.4	3	0.25	3.78	3.49	Post-med	6b	6b
BVM12	5	B1	E123	Pre-ex	1, 2	Fill	Fill of [4]	Yellowish-brown sandy silt with mortar	2.4	3	0.25	3.78	n/a	Post-med	6b	6b
BVM12	6	B1	E123	n/a	1, 2	Fill	Fill of [11]	Brown-grey silty clay with CBM and oyster shell	2.5	2.1	1.28	3.48	n/a	Post-med	6b	6a
BVM12	7	B1	E123	n/a	1	Fill	Fill of [8]	Grey/yellow-brown crushed mortar and clay	1.46	2.5	0.94	3.38	n/a	Post-med	6a	6a
BVM12	8	B1	E123	8; post-ex	1	Cut	Construction cut for [10]	Cut for post-med sewer, vertical sides, base unseen	1.46	2.5	1.93	3.38	1.45	Post-med	6a	6a
BVM12	9	B1	E123	n/a	1, 2	Fill	Fill of [11]	Grey-brown silty sand with mortar, CBM	2.5	2.1	0.18	3.58	n/a	Post-med	6b	6a
BVM12	10	B1	E123	10; post-ex	1	Masonry	Sewer within cut [8]	Red brick arched sewer runnig NE-SW	2.34	2.6	1.24	2.67	1.43	Post-med	6a	6a
BVM12	11	B1	E123	11; post-ex	1	Cut	Robber cut	Linear cut with vertical sides	2.5	2.1	1.93	3.58	1.43	Post-med	6b	6a
BVM12	12	B1	E123	n/a	1	Layer	Dump layer	Grey-brown silty sand and mortar	0.9	n/a	0.18	3.37	n/a	Post-med	6a	6a
BVM12	13	B1	E123	n/a	1	Layer	Dump layer	Dark grey-brown, clayey-sandy-silt with CBM	0.9	n/a	0.7	3.18	n/a	Post-med	6a	4a
BVM12	14	B1	E123	post-ex	1	Fill	Fill of [8]	Mid-grey silty clay with charcoal/CBM	1	2.5	1	2.48	n/a	Post-med	6a	6a
BVM12	15	B1	E123	post-ex	1, 2	Fill	Fill of [11]	Grey silty clay with mortar and timber	1.4	1.68	0.5	1.96	n/a	Post-med	6b	6a
BVM12	16	B1	E123	post-ex	1, 2	Fill	Fill of [11]	Yellow and blackish-brown silty sand with mortar	2.1	0.86	0.34	1.92	n/a	Post-med	6b	6a
BVM12	17	B1	E123	post-ex	1	Layer	Alluvium	Mid grey silty clay with occa timber frags	0.94	2.5	1.05	2.48	n/a	Post-med	6a	4a
BVM12	18	B2	E123	pre-ex	5	Layer	Made	Grey-brown, clayey-sandy-silt with CBM,	2.6	2.85	1.1	3.68	n/a	Post-med	6biii	6a

				(a)			Ground	charcoal and mortar								
BVM12	19	B2	E123	pre-ex (a)	5, 6	Fill	Fill of [20]	Dark brown silty sand and rubble	2.8	1.38	1.04	3.93	n/a	Modern	7	7
BVM12	20	B2	E123	pre-ex (a); 20	5, 6	Cut	Robber cut	Linear N-S aligned cut with flat base and sloping sides	2.8	1.38	1.04	3.93	2.84	Modern	7	7
BVM12	21	B2	E123	pre-ex (a); pre-ex (b); 21	n/a	Masonry	E-W brick wall	Exterior red brick wall, part of structure [68]	0.54	4.21	0.7	3.39	3.19	Post-med	6biii	6
BVM12	22	B2	E123	pre-ex (a)	n/a	Fill	Backfill of construction cut [22]	Dark brown silty sand with oyster shell	0.24	2.84	0.7	3.39	n/a	Post-med	6biii	6
BVM12	23	B2	E123	pre-ex (a); 23	n/a	Cut	Construction cut for [21]	Linear E-W cut with vertical sides and flat base	0.8	4.21	0.7	3.39	2.69	Post-med	6biii	6
BVM12	24	B2	E123	pre-ex (a)	n/a	Layer	Dump layer	Grey-brown silty sand and sandy clay with occa pot	3.64	1.36	0.41	3.44	n/a	Post-med	6biv	6
BVM12	25	B2	E123	n/a	5	Fill	Fill of robber cut [26]	Brown silty sand/clinker with charcoal	3.56	0.8	0.34	3.57	n/a	Post-med	6biv	6
BVM12	26	B2	E123	n/a	5	Cut	Robber cut	Near vertical sides, flat base, seen in section only	n/a	0.8	0.35	3.57	3.27	Post-med	6biv	6
BVM12	27	B2	E123	n/a	5	Masonry	E-W brick wall	Unfrogged red brick wall seen in section	n/a	0.75	0.46	3.27	2.83	Post-med	6bii	6
BVM12	28	B2	E123	pre-ex (b)	5	Fill	Fill of culvert [37]	Dark grey silty-clay with CBM and chalk frags	0.42	0.53	0.2	2.83	n/a	Post-med	6bii	6
BVM12	29	B2	E123	n/a	5	Layer	Dump layer	Grey-brown silty clay with CBM and charcoal	n/a	1.36	0.15	2.73	n/a	Post-med	6bii	6
BVM12	30	B2	E123	pre-ex (b)	5	Layer	Dump layer	Grey silty clay with CBM, backfill into [37]	1.1	2.88	0.27	2.65	n/a	Post-med	6bii	6
BVM12	31	B2	E123	pre-ex (b)	n/a	Fill	Fill of pit [61]	Black silty-sand with mortar and clinker	0.36	2.5	0.36	0.33	n/a	Post-med	6biv	6
BVM12	32	B2	E123	pre-ex (b); 32	n/a	Layer	Dump layer	Grey-brown clayey-sandy-silt with clay lenses, CBM and oyster shell	0.64	2.1	0.16	2.94	n/a	Post-med	6biv	6
BVM12	33	B2	E123	33	n/a	Layer	Dump layer	Grey-brown/black silty sand with chalk, mortar, charcoal and iron rusting	0.8	3.6	0.33	2.88	2.71	Early post-med	5a	5
BVM12	34	B2	E123	pre-ex (b); 34	6	Layer	Clay dump layer	Yellow-brown clay with mortar flecks	1.24	3.9	0.17	3.03	n/a	Post-med	6biv	6
BVM12	35	B2	E123	pre-ex (b); 35	n/a	Layer	NW-SE Mortar and tile capping	Grey-white mortar with chalk and tile frags	4.24	1.45	0.8	2.89	2.49	Post-med	6bii	6
BVM12	36	B2	E123	36	n/a	Masonry	Brick floor	Orange-red unfrogged brick floor with yellow-brown mortar	0.72	4.12	0.1	2.7	2.45	Post-med	6bii	6
BVM12	37	B2	E123	pre-ex (b); 37	5	Masonry	E-W Brick vault (culvert?)	Orange-red unfrogged brick arch/vault with yellow-brown mortar	0.6	4.42	0.23	2.81	2.44	Post-med	6bi	6

BVM12	38	B2	E123	38	n/a	Masonry	NE-SW Brick culvert	Red brick wall/culvert laid in English bond with grey clayey mortar	0.56	4.52	0.3	2.81	n/a	Post-med	6bii	6
BVM12	39	B2	E123	Pre-ex (b); 39	n/a	Masonry	NE-SW Support/buttress for wall [21]	Red/purple brick laid in stretcher bond, soft clay/chalk mortar	3.66	0.36	0.2	3.05	2.85	Post-med	6biii	6
BVM12	40	B2	E123	pre-ex (b); 40	6	Masonry	NE-SW rebuild of wall [39]	Truncated brick wall bonded with cemented yellow mortar	0.35	0.4	0.08	3.04	n/a	Post-med	6biii	6
BVM12	41	B2	E123	pre-ex (b); 41; post-ex	5, 6	Masonry	NW-SE wall, part of structure [68]	Orange unfrogged brick wall of culvert, laid in English cross, yellow-brown sandy mortar	3.1	0.48	1.34	2.98	2.26	Post-med	6bi	6
BVM12	42	B2	E123	pre-ex (b); 42; post-ex	5, 6	Masonry	NW-SE wall, repair of wall [41]	Orange/yellow shallow frogged wall, soft grey mortar	2.46	0.42	1.19	2.94	1.75	Post-med	6bii	6
BVM12	43	B2	E123	43	n/a	Cut	Construction cut for wall [39]	NW-SE aligned linear, vertical sides, flat base	0.36	3.66	0.1	2.88	2.69	Post-med	6biii	6
BVM12	44	B2	E123	pre-ex (b)	5, 6	Fill	Fill of pit [63]	Soft grey-black silt with flint, CBM and pot	2.4	0.6	0.4	3.1	n/a	Post-med	6biv	6
BVM12	45	B2	E123	45	n/a	Masonry	NW-SE Rebuild of buttress [47], structure [68]	Orange-red unfrogged brick, grey chalky mortar, regular courses	0.84	0.44	0.31	3.05	n/a	Post-med	6bii	6
BVM12	46	B2	E123				VOID	VOID								
BVM12	47	B2	E123	41; post-ex	n/a	Masonry	Buttress of culvert, part of structure [68]	Orange unfrogged brick buttress to walls [41]/[49]	0.9	0.64	0.99	2.74	n/a	Post-med	6bi	6
BVM12	48	B2	E123	48; post-ex	n/a	Cut	Construction cut for vault [41]/[47]/[49]	Cut associated with structure [68], irregular with vertical sides, base unseen, roughly aligned NE-SW	3.9	2.64	1.14	2.8	unseen	Post-med	6bi	6
BVM12	49	B2	E123	41; post-ex	n/a	Masonry	Wall of culvert [68]	Orange unfrogged brick wall, yellow-brown sandy mortar, keyed into [47]/[41]	0.52	4.26	0.93	2.53	n/a	Post-med	6bi	6
BVM12	50	B2	E123	n/a	6	Fill	Fill of pit [51]	Soft mid grey clayey silt with oyster shell, chalk, CBM	0.85	0.3	0.28	2.57	n/a	Post-med	6bi	6
BVM12	51	B2	E123	51	6	Cut	Rubbish pit	Irregular, truncated circular (?), steeply sloping sides, base unseen	0.85	0.3	0.28	2.55	2.35	Post-med	6bi	6



BVM12	52	B2	E123	n/a	n/a	Fill	Fill of pit [53]	Soft yellow-brown clay with silt lenses	0.26	0.2	0.1	2.8	n/a	Post-med	6bi	6
BVM12	53	B2	E123	53	n/a	Cut	Truncated pit, uncertain function	Sub-rectangular, near vertical sides, possible posthole	0.26	0.2	0.1	2.8	2.7	Post-med	6bi	6
BVM12	54	B2	E123	n/a	n/a	Fill	Fill of posthole [53]	Soft yellow-brown clay with silt lenses	0.18	0.18	0.05	2.8	n/a	Post-med	6bi	6
BVM12	55	B2	E123	53	n/a	Cut	Posthole	Circular posthole with vertical sides and flat base	0.18	0.18	0.05	2.8	2.75	Post-med	6bi	6
BVM12	56	B2	E123	56	5, 6	Layer	Cessy dump layer	Grey-green sandy silt with gravels, CBM, bone, pot and CTP	1.1	0.45	0.8	2.7	n/a	Post-med	6bi	6
BVM12	57	B2	E123	57	n/a	Layer	Dump layer	Dark green-grey-brown sandy clay with mortar, charcoal, flint and oyster shell	1	3.6	0.45	2.69	n/a	Early post-med	5a	5
BVM12	58	B2	E123	post-ex	5	Layer	Backfill of structure [68] following abandonment	Soft, dark grey silty clay with CBM, masonry frags and wood	2.86	4.3	1.42	2.47	n/a	Post-med	6bii	6
BVM12	59	B2	E123	59	n/a	Layer	Dump layer	Soft, dark grey silty clay with shell and gravels	0.95	3.6	0.41	2.25	n/a	Early post-med	5a	5
BVM12	60	B2	E123	60	n/a	Timber	Upright post	Assoc with arch [37]?, squared/box quartered	0.13	0.14	1.45	2.32	n/a	Post-med	6bi	6
BVM12	61	B2	E123	61	n/a	Cut	Pit	Semi-circular cut with sloping sides, base unseen	0.36	2.5	0.33	2.96	2.63	Post-med	6biv	6
BVM12	62	B2	E123	62	5, 6	Cut	NW-SE construction cut for wall [42]	Linear cut with vertical sides and flat base	2.46	0.5	1.19	2.94	1.75	Post-med	6bii	6
BVM12	63	B2	E123	pre-ex (b); 63	5, 6	Cut	Rubbish / demolition pit	Irregularly shaped pit for robbing refuse, steeply sloping sides, rounded base	2.5	0.6	0.4	2.99	2.55	Post-med	6biv	6
BVM12	64	B2	E123	n/a	5, 6	Fill	Backfill of construction cut [42]	Loose, grey-brown silty sand with CBM, mortar, charcoal and oyster	2.2	0.5	0.96	2.71	n/a	Post-med	6bii	6
BVM12	65	B2	E123	post-ex	n/a	Fill	Backfill of construction cut [48]	Grey-brown silty sand with clay lenses, CBM and mortar	0.1	3.8	1.14	2.8	n/a	Post-med	6bi	6
BVM12	66	B2	E123	60	n/a	Timber	Upright post	Box quartered post, assoc with [67]/[60]	0.12	0.12	1.12	2.01	n/a	Post-med	6bi	6
BVM12	67	B2	E123	60	5	Timber	Upright post	Box quartered post, assoc with [66]/[60]	0.14	0.13	1.41	2.18	n/a	Post-med	6bi	6
BVM12	68	B2	E123	n/a	n/a	Structure	Vaulted structure	Comprises [21]/[40]/[39]/[45]/[38]/[41]/[47]/[49]/[37]/[36]/[60]/[66]/[67]						Post-med	6b	6
BVM12	69	B2	E123	70	n/a	Timber	Upright post	Box quartered post, assoc with beam [70]	0.14	0.16	0.43	2.11	n/a	Medieval	4b	4b

BVM12	70	B2	E123	70; post- ex	n/a	Timber	Horizontal beam, NE- SW	Beam assoc with post [69], unknown function	0.21	1.1	unse en	1.97	n/a	Medieval	4b	4b
BVM12	71	B2	E123	71; post- ex	n/a	Layer	Dump layer - redeposited alluvium	Dark grey silty clay, mod oyster shell, occa charcoal	0.96	3.58	0.4	1.91	n/a	Early post- med	5a	5
BVM12	72	B2	E123	72; post- ex	5, 6	Layer	Organic dump layer	Grey-black sandy silt, occa pot, pebbles, CTP, slate	2.2	0.8	0.15	1.9	n/a	Post-med	6bi	6
BVM12	73	B2	E123	n/a	n/a	Layer	Dump layer	Mid grey silty clay with CBM, wood, chalk, shell	n/a	n/a	0.38	1.6	n/a	Medieval	4b	4b
BVM12	74	B2	E123	n/a	n/a	Layer	Dump layer	Dark grey sandy clay with chalk, shell, wood, CBM	n/a	n/a	0.14	1.22	n/a	Medieval	4b	4b
BVM12	75	B2	E123	n/a	n/a	Layer	Alluvium	Grey silty clay with sub-rnd gravels, wood, shell	n/a	n/a	0.3	1.08	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	76	B2	E123	n/a	n/a	Layer	Alluvium	Grey-brown silty clay with shell, chalk, wood	n/a	n/a	0.19	0.78	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	77	B2	E123	n/a	n/a	Layer	Alluvium	Light grey clay with v. occa shell and wood	n/a	n/a	0.52	0.59	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	78	B2	E123	n/a	n/a	Layer	Alluvium	Light grey silty clay, mod shell	n/a	n/a	0.11	0.07	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	79	B2	E123	n/a	n/a	Layer	Alluvium	Light grey silty clay, mod shell, wood	n/a	n/a	0.39	- 0.04	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	80	B2	E123	n/a	n/a	Layer	Alluvium	Mid brown-grey silty clay with occa timber, shell	n/a	n/a	0.15	- 0.43	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	81	B2	E123	n/a	n/a	Layer	Alluvium	Soft blue-grey clay, occa sand lenses	n/a	n/a	0.7	- 0.58	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	82	B2	E123	n/a	n/a	Layer	Alluvium	Light grey sandy clay, occa timber, sub- ang gravels	n/a	n/a	0.58	- 1.28	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	83	B2	E123	n/a	n/a	Layer	Alluvium	Light grey sandy clay, occa shell	n/a	n/a	0.22	- 1.86	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	84	B2	E123	n/a	n/a	Layer	Natural Sand	Light grey clayey-sand, laminated	n/a	n/a	0.12	- 2.08	n/a	Natural	1	1
BVM12	85	B2	E123	n/a	n/a	Layer	Natural Sand	Mid grey fine sand with clay laminations	n/a	n/a	0.17	-2.2	n/a	Natural	1	1
BVM12	86	B3	E45	n/a	13	Fill	Fill of culvert run [87]	Dark brown-grey sandy silt with clay, river cobbles, CBM, flint, oyster	1.8	2.2	0.4	2.81	n/a	Post-med	6b	6
BVM12	87	B3	E45	87	13	Cut	L-shaped cut, prob culvert run	L-shaped feature with near vertical sides, base unseen	1.8	2.2	0.4	2.81	2.34	Post-med	6b	6
BVM12	88	B3	E45	n/a	13	Fill	Fill of pit [89]	Dark brown-grey sandy-silty-clay with CBM, CTP, oyster	1.9	2	0.45	2.71	n/a	Post-med	6b	6
BVM12	89	B3	E45	89	13	Cut	Rubbish pit	Sub-square, vertical sides and flat base	1.9	2	0.45	2.71	2.36	Post-med	6b	6
BVM12	90	B3	E45	n/a	n/a	Fill	Fill of pit [91]	Brown-grey sandy-silty-clay with sub-rnd flints, occa oyster	0.84	0.3	0.15	2.63	n/a	Post-med	6b	6

BVM12	91	B3	E45	91	13	Cut	Pit	Sub-circular pit, concave sides and base	0.84	0.3	0.15	2.63	2.58	Post-med	6b	6
BVM12	92	B3	E45	92	11, 13	Layer	Dump layer	Grey-brown silty clay, occa oyster, mod CBM and mortar	4.1	2.26	0.1	2.81	n/a	Early post-med	5a	5
BVM12	93	B3	E45	93	11, 13	Layer	Redeposited alluvium	Blue-grey silty clay with CBM, chalk, mortar and charcoal flecks	4.1	2.26	0.1	2.69	n/a	Medieval	4b	4b
BVM12	94	B3	E45	n/a	11	Fill	Fill of cess pit [95]	Green-brown sandy-silty-clay with charcoal, mortar, occa chalk, mod oyster	0.34	0.84	0.25	2.76	n/a	Early post-med	5a	5
BVM12	95	B3	E45	95	11	Cut	Cess pit	Sub-circular, near vertical sides and flat base	0.34	0.84	0.25	2.76	2.43	Early post-med	5a	5
BVM12	96	B3	E45	n/a	n/a	Fill	Fill of pit [98]	Mid blue-grey silty clay with oyster, oca CBM, chalk	0.7	1	0.3	2.54	n/a	Early post-med	5a	5
BVM12	97	B3	E45	n/a	n/a	Fill	Fill of pit [98] - basal	Dark brown-grey, green lenses, sandy-clayey-silt with sub-rnd flints	0.7	1	0.1	2.24	n/a	Early post-med	5a	5
BVM12	98	B3	E45	98	n/a	Cut	Rubbish pit	Heavily truncated, irregular shape, concave sides, sloping base	0.7	1	0.3	2.54	2.33	Early post-med	5a	5
BVM12	99	B3	E45	99	11, 12, 14, 15	Layer	Alluvium	Stiff, grey-brown silty clay, occa CBM/organic flecks	2.5	4.7	0.4	2.5	1.81	Medieval	4b	4b
BVM12	600	B3	E45	n/a	n/a	Fill	Fill of pit [601]	Firm yellow-brown silty-clay, sandy-clay lenses, occa oyster, v occa CBM/pot/mortar/charcoal	2.1	0.9	0.5	2.35	n/a	Post-med	6b	6
BVM12	601	B3	E45	601	n/a	Cut	Rubbish pit	Kidney shaped, vertical sides, flat base	2.1	0.9	0.5	2.35	1.8	Post-med	6b	6
BVM12	602	B3	E45	n/a	n/a	Fill	Fill of pit [603]	Soft, brown-grey humic clay-silt, occa oyster/CBM/pot/bone	1	1.5	0.5	2.41	n/a	Post-med	6b	6
BVM12	603	B3	E45	603	n/a	Cut	Rubbish pit	Sub-rectangular cut, nr vertical sides, concave base	1	1.5	0.5	2.41	2	Post-med	6b	6
BVM12	604	B3	E45	n/a	n/a	Fill	Fill of pit [605]	Firm brown-grey silty-clay, occa oyster/cockle/charcoal/CBM	1	1.3	0.4	2.35	n/a	Medieval	4b	4b
BVM12	605	B3	E45	605	n/a	Cut	Rubbish pit	Sub-circular cut, concave sides and base	1	1.3	0.4	2.35	1.92	Medieval	4b	4b
BVM12	606	B3	E45	n/a	14	Fill	Fill of pit [607]	Firm dark blue-grey silty-clay, occa stone/sub-rnd flints/oyster/mortar/pot/CBM/bone	1.7	0.4	0.45	2.41	n/a	Medieval	4b	4b
BVM12	607	B3	E45	607	14	Cut	Rubbish pit	Sub-circular cut, concave sides and base	1.7	0.4	0.45	2.41	1.87	Medieval	4b	4b
BVM12	608	B3	E45	n/a	14, 15	Fill	Fill of pit [609]	Stiff brown-grey silty clay, freq oyster, occa CBM/mortar/slag	0.5	0.45	0.2	2.35	n/a	Medieval	4b	4b
BVM12	609	B3	E45	609	14, 15	Cut	Rubbish pit	Squared cut, vertical sides, flat base	0.5	0.45	0.2	2.35	2.17	Medieval	4b	4b
BVM12	610	B3	E45	n/a	15	Fill	Fill of posthole [611]	Dark grey-brown silty-clay, freq charcoal/CBM/oyster	0.25	0.22	0.13	2.29	n/a	Medieval	4b	4b
BVM12	611	B3	E45	611	15	Cut	Posthole	Squared cut, vertical sides, flat base	0.25	0.22	0.13	2.29	2.19	Medieval	4b	4b
BVM12	612	B3	E45	n/a	n/a	Fill	Fill of pit [613]	Firm blue-brown-grey, silty-clay, occa shel/oyster/mortar/CBM	1	0.45	0.25	2.38	n/a	Medieval	4b	4b

BVM12	613	B3	E45	613	n/a	Cut	Rubbish pit	Semi-circular, concave sides and base	1	0.45	0.25	2.38	2.15	Medieval	4b	4b
BVM12	614	B3	E45	n/a	n/a	Fill	Fill of pit [615]	Stiff brown-grey silty clay, freq oyster, occa CBM/charcoal	1.2	0.35	0.35	2.46	n/a	Medieval	4b	4b
BVM12	615	B3	E45	615	n/a	Cut	Pit (truncated)	Semi-circular, concave sides and base	1.2	0.35	0.35	2.46	2.1	Medieval	4b	4b
BVM12	616	B3	E45	n/a	n/a	Fill	Fill of pit [617]	Stiff brown-grey silty clay, occa oyster/mortar/pot/CBM/charcoal	1.45	1	0.25	2.53	n/a	Medieval	4b	4b
BVM12	617	B3	E45	617	n/a	Cut	Rubbish pit	Ovoid cut, concave sides and base	1.45	1	0.25	2.53	2.25	Medieval	4b	4b
BVM12	618	B3	E45	619	15	Fill	Fill of pit [620]	Soft, blue-grey clay-silt, occa organic flecks	0.8	0.96	0.4	2.16	n/a	Medieval	4b	4b
BVM12	619	B3	E45	619	15	Timber	Driven stake	Roundwood, chop marks towards tapered base	0.08	0.08	0.31	2.16	n/a	Medieval	4b	4b
BVM12	620	B3	E45	619	15	Cut	Pit/channel?	Irregular shape, near vertical sides, not fully bottomed	0.8	0.96	0.4	2.16	1.79	Medieval	4b	4b
BVM12	649	B3	E45													
BVM12	200	C		pre-ex			VOID	VOID								
BVM12	202	C	E94	pre-ex	n/a	Masonry	Brick floor	Unfrogged orange brick floor associated with [203]/[204]	0.52	0.82	0.18	2.39	2.29	Post-med	6a	6
BVM12	203	C	E94	pre-ex	n/a	Masonry	N-S brick wall	Unfrogged red brick with lime mortar	1.38	0.38	0.2	2.23	2.03	Post-med	6a	6
BVM12	204	C	E94	pre-ex	n/a	Masonry	N-S? brick wall	Unfrogged red brick with sandy lime mortar	0.73	0.76	0.26	2.43	n/a	Post-med	6a	6
BVM12	205	C	E94	n/a	n/a	Fill	Fill of construction cut [206]	Light grey lime mortar with manganese staining	0.82	0.6	0.22	2.25	n/a	Post-med	6a	6
BVM12	206	C	E94	pre-ex	n/a	Cut	Construction cut for wall [203]	Irregular shape with near vertical sides, concave base	0.82	0.6	0.22	2.25	2.15	Post-med	6a	6
BVM12	207	C	E94	pre-ex	n/a	Cut	Posthole	Squared cut with vertical sides and sloped base to north	0.56	0.5	0.33	2.27	1.94	Early post-med	5b	5
BVM12	208	C	E94	pre-ex	n/a	Layer	Dump layer	Stiff, grey-brown sandy clay, mod shell	4.9	2.78	0.45	1.95	n/a	Early post-med	5b	5
BVM12	209	C	E94	n/a	n/a	Fill	Fill of posthole [207]	Dark brown silty-clay with coal	0.56	0.5	0.33	2.27	n/a	Early post-med	5b	5
BVM12	210	C	E94	n/a	n/a	Fill	Fill of pit [213]	Brown-black silty-clay, organic-rich, freq shell/gravel	2.5	1.64	0.33	1.44	n/a	Early post-med	5b	5
BVM12	211	C	E94	n/a	n/a	Fill	Fill of linear cut [212]	Grey-brown sandy silt, freq sub-ang pebbles, natural accumulation	2.52	0.6	0.25	1.48	n/a	Early post-med	5b	5
BVM12	212	C	E94	212	n/a	Cut	Linear N-S drainage (?) channel	Linear cut, vertical sides concave base, unknown function	2.52	0.6	0.25	1.48	1.23	Early post-med	5b	5
BVM12	213	C	E94	213	n/a	Cut	Shallow pit	Sub-circular pit, gentle slope sides, concave base	2.5	1.64	0.33	1.44	1.11	Early post-med	5b	5

BVM12	214	C	E94	n/a	n/a	Fill	Fill of pit [215]	Soft, grey-brown silty-clay, occa CBM/chalk, mod oyster	1.2	1.4	0.17	1.42	n/a	Early post-med	5b	5
BVM12	215	C	E94	215	n/a	Cut	Pit	Sub-circular pit, gentle slope sides, concave base	1.2	1.4	0.17	1.42	1.25	Early post-med	5b	5
BVM12	216	C	E94	216	21, 22	Layer	Levelling	Brown-yellow silty-clay, occa pebbles/CBM/oyster/mussel/charcoal	4.6	2.06	0.18	1.54	1.11	Medieval	4b	4b
BVM12	217	C	E94	216	n/a	Layer	Levelling - same as [216]	Brown-yellow silty-clay, occa pebbles/CBM/oyster/mussel/charcoal	2.32	0.25	0.15	1.47	n/a	Medieval	4b	4b
BVM12	218	C	E94	n/a	n/a	Fill	Fill of pit/gully [219]	Firm grey-brown silty-clay, freq sm fish bones	0.98	0.16	0.15	1.23	n/a	Medieval	4a	4b
BVM12	219	C	E94	219	n/a	Cut	NE-SW pit/gully	Rectangular, steep sides to east, gradual to west, imperceptible break to flat base	0.98	0.16	0.15	1.23	1.08	Medieval	4a	4b
BVM12	220	C	E94	n/a	n/a	Fill	Fill of depression/pit [221]	Grey-brown silty-clay, freq sm fish bones, natural accumulation	1.08	0.41	0.1	1.23	n/a	Medieval	4a	4b
BVM12	221	C	E94	221	n/a	Cut	NW-SE oval pit/depression	Oval depression, gently sloping sides, flat base	1.08	0.41	0.1	1.23	1.13	Medieval	4a	4b
BVM12	222	C	E94	n/a	n/a	Fill	Fill of posthole [223]	Soft, reddish-brown degraded timber and clay	0.12	0.12	0.17	1.26	n/a	Medieval	4a	4b
BVM12	223	C	E94	225	n/a	Posthole	Circular posthole	Circular cut, vertical sides, tapered base	0.12	0.12	0.17	1.26	1.09	Medieval	4a	4b
BVM12	224	C	E94	n/a	n/a	Fill	Fill of posthole [225]	Soft, reddish-brown degraded timber and clay	0.1	0.1	0.1	1.23	n/a	Medieval	4a	4b
BVM12	225	C	E94	225	n/a	Cut	Circular posthole	Circular cut, vertical sides, tapered base	0.1	0.1	0.1	1.23	1.13	Medieval	4a	4b
BVM12	226	C	E94	n/a	n/a	Fill	Fill of pit [227]	Firm, grey-brown clayey-silt, occa pot	0.67	0.31	0.1	1.27	n/a	Medieval	4a	4b
BVM12	227	C	E94	227	n/a	Cut	Pit	Circular pit, concave sides, flat base	0.67	0.31	0.1	1.27	1.17	Medieval	4a	4b
BVM12	228	C	E94	n/a	n/a	Fill	Fill of pit [229]	Firm, grey-blue, clayey-silt, occa pot/CBM	0.51	0.8	0.06	1.25	n/a	Medieval	4a	4b
BVM12	229	C	E94	229	n/a	Cut	Pit	Circular pit, steep sides, flat base	0.51	0.8	0.06	1.25	1.19	Medieval	4a	4b
BVM12	230	C	E94	n/a	n/a	Fill	Fill of posthole [231]	Soft, reddish-brown degraded timber and clay	0.09	0.09	0.15	1.27	n/a	Medieval	4a	4b
BVM12	231	C	E94	225	n/a	Cut	Posthole	Circular cut, vertical sides, tapered base	0.09	0.09	0.15	1.27	1.12	Medieval	4a	4b
BVM12	232	C	E94	n/a	n/a	Fill	Fill of posthole [232]	Soft, reddish-brown degraded timber and clay	0.04	0.04	0.04	1.21	n/a	Medieval	4a	4b
BVM12	233	C	E94	233	n/a	Cut	Posthole	Circular cut, steep sides, tapered base	0.04	0.04	0.04	1.21	1.17	Medieval	4a	4b

BVM12	234	C	E94	234	n/a	Timber	Post within [236]	Degraded timber post at base of cut	0.1	0.08	0.04	1.25	n/a	Medieval	4a	4b
BVM12	235	C	E94	n/a	n/a	Fill	Fill of posthole [236]	Soft, reddish-brown degraded timber and clay	0.18	0.21	0.2	1.23	n/a	Medieval	4a	4b
BVM12	236	C	E94	233	n/a	Cut	Posthole	Circular cut, vertical sides, tapered base	0.18	0.21	0.2	1.23	1.05	Medieval	4a	4b
BVM12	237	C	E94	n/a	n/a	Fill	Fill of pit [238]	Firm, dark blue-brown clayey-silt, occa pot/CBM	0.48	0.5	0.15	1.22	n/a	Medieval	4a	4b
BVM12	238	C	E94	238	n/a	Cut	Pit	Sub-rectangular cut, concave sides, flat base, uncertain function	0.48	0.5	0.15	1.22	1.07	Medieval	4a	4b
BVM12	239	C	E94	n/a	n/a	Fill	Fill of pit [240]	Firm, dark blue-brown clayey-silt, occa pot/CBM/Fe	0.61	0.62	0.13	1.19	n/a	Medieval	4a	4b
BVM12	240	C	E94	240	n/a	Cut	Pit	Squared cut, concave sides, flat base, uncertain function	0.61	0.62	0.13	1.19	1.06	Medieval	4a	4b
BVM12	241	C	E94	n/a	n/a	Fill	Fill of beamslot [242]	Firm, mid brown-grey, silty clay, occa CBM/Pb/animal bone	0.38	3.04	0.33	1.29	n/a	Medieval	4a	4b
BVM12	242	C	E94	242	n/a	Cut	NE-SW Beamslot?	Linear cut, steep sides, flat base	0.38	3.04	0.33	1.29	0.96	Medieval	4a	4b
BVM12	243	C	E94	243	22	Layer	Alluvium	Firm light blue-grey silty (alluvial) clay, no inc	4.29	2.34	0.16	1.18	n/a	Medieval	4a	4b
BVM12	244	C	E94	244	22	Masonry	Tile surface	Red tile surface	4.24	0.24	0.07	1.14	1.08	Medieval	4a	4b
BVM12	245	C	E94	245	22	Cut	Construction cut for surface [244]	Linear N-S aligned cut, steep sides, flat base, lenses out to south	4.24	0.24	0.07	1.14	0.91	Medieval	4a	4b
BVM12	246	C	E94	post-ex	22	Layer	Alluvium	Firm, light blue-grey silty-clay, occa pot/CBM/animal bone	4.38	2.33	0.49	1.06	0.55	Medieval	4a	4a
BVM12	377	D1	E925	377	41	Masonry	Granite setts	Mixture of yellow frogged brick and granite setts	3.6	1.64	0.15	4.05	3.96	Post-med	6bii	6b
BVM12	378	D1	E925	n/a	41	Layer	Made Ground	Loose mid greyish brown coarse silty sand	3.6	1.65	0.14	3.85	n/a	Post-med	6bii	6b
BVM12	379	D1	E925	379	41	Layer	Cement surface	Compact mid greyish yellow coarse sandy cement	4	1.06	0.06	3.81	n/a	Post-med	6bii	6b
BVM12	380	D1	E925	n/a	41	Layer	Made Ground	Loose mid greyish brown coarse sandy silt	4	1.06	0.2	3.65	n/a	Post-med	6bii	6b
BVM12	381	D1	E925	n/a	41	Layer	Made Ground	Loose dark blackish brown coarse silty sand	4.8	-	0.3	3.45	n/a	Post-med	6bii	6b
BVM12	382	D1	E925	n/a	42; 43; 52	Fill	Backfill in [384]	Loose mid greyish brown silty clay	4.2	2.35	1.8	3.36	3.23	Post-med	6bi	6b
BVM12	383	D1	E925	383	42; 43	Masonry	Brick Culvert	Large 19th century brick culvert	4.4	1.46	2	3.36	2.64	Post-med	6bi	6b
BVM12	384	D1	E925	384	42;	Cut	Construction	Construction cut for culvert	4.3	2.26	2.26	3.28	1.02	Post-med	6bi	6b

					43; 52; 63		cut									
BVM12	385	D1	E925	n/a	42; 43	Layer	Dumped deposit	Firm dark greyish brown silty clay	0.19	0.12	0.21	3.28	3.15	Post-med	6a	6a
BVM12	386	D1	E925	n/a	42; 43	Layer	Dumped deposit	Firm light greyish yellow clay	0.22	0.15	0.19	3.08	3	Post-med	6a	6a
BVM12	387	D1	E925	n/a	42; 43	Layer	Dumped deposit	Firm dark greyish brown silty clay	0.7	0.27	0.33	3.01	2.87	Post-med	6a	6a
BVM12	388	D1	E925	n/a	52	Fill	Backfill in culvert [383]	Soft dark grey sandy silt	4.2	1.16	0.42	1.92	n/a	Post-med	6bi	6b
BVM12	389	D1					VOID	VOID								
BVM12	390	D1	E925	390	n/a	Structure	Timber revetment	Timber revetment	4	0.8	1.2	2.07	0.95	Post-med	6a	6a
BVM12	391	D1	E925	390	n/a	Timber	Plank	Part of revetment [390]	1.46	0.26	0.06 5	2.07	1.82	Post-med	6a	6a
BVM12	392	D1	E925	390	n/a	Timber	Plank	Part of revetment [390]	1.46	0.19	0.06	1.82	1.72	Post-med	6a	6a
BVM12	393	D1	E925	390	n/a	Timber	Beam	Part of revetment [390]	1.45	0.18	0.17	1.72	1.42	Post-med	6a	6a
BVM12	394	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.78	0.13	0.11	2.01	n/a	Post-med	6a	6a
BVM12	395	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	1.3	0.13	0.05	1.68	n/a	Post-med	6a	6a
BVM12	396	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.45	0.08	0.07	1.65	n/a	Post-med	6a	6a
BVM12	397	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.56	0.1	0.08	1.78	n/a	Post-med	6a	6a
BVM12	398	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.02	0.04	n/a	1.71	n/a	Post-med	6a	6a
BVM12	399	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.02	0.02	n/a	1.68	n/a	Post-med	6a	6a
BVM12	1300	D1	E925	390	n/a	Timber	Post	Part of revetment [390]	0.16	0.04	n/a	1.6	n/a	Post-med	6a	6a
BVM12	1301	D1	E925	390	n/a	Timber	Plank	Part of revetment [390]	3.36	0.2	0.04	1.72	1.42	Post-med	6b	6a
BVM12	1302	D1	E925	1302	63	Layer	Dumped deposit	Firm-friable dark brown coarse sandy clay silt	0.9	0.7	0.4	2.1	n/a	Post-med	6a	6a
BVM12	1303	D1	E925	1325	63	Layer	Dumped deposit	Fairly compact dark greyish brown clay silt	3.6	0.4	0.91	2.07	1.16	Post-med	6a	6a
BVM12	1304	D1	E925	n/a	42	Timber	Post	Possible part of timber revetment	0.19	-	0.16	2.1	1.9	Post-med	6a	6a
BVM12	1305	D1	E925	n/a	42	Timber	Post	Possible part of timber revetment	0.13	0.05	0.6	2.12	1.88	Post-med	6a	6a
BVM12	1306	D1	E925	n/a	42	Fill	Fill of [1308]	Soft, light yellowish brown silty clay	1.96	-	0.28	2.27	2.01	Post-med	6a	6a
BVM12	1307	D1	E925	n/a	42; 62	Fill	Fill of [1308]	Soft-firm light greyish brown	1.12	2.2	1.2	2.01	0.85	Post-med	6a	6a
BVM12	1308	D1	E925	1340; Post- Ex	42; 62	Cut	Cut for [1310] & [1340]	Construction cut for timber pipes	1.12	2.2	1.2	2.17	0.85	Post-med	6a	6a
BVM12	1309	D1	E925	n/a	42	Layer	Dumped deposit	Firm mid-dark greyish brown/black organic clay with frequent pebbles	0.92	n/a	0.26	1.97	1.67	Post-med	6a	6a
BVM12	1310	D1	E925	1310	42;	Timber	Pipe	E-W aligned timber pipe	0.37	0.34	0.4	1.62	n/a	Post-med	6a	6a

					62											
BVM12	1311	D1	E925	1311	n/a	Timber	Pile	Part of revetment [390]	1.04	0.08	0.14	1.98	n/a	Post-med	6a	6a
BVM12	1312	D1	E925	1311	n/a	Timber	Post	Part of revetment [390]	0.06	0.04	-	1.68	n/a	Post-med	6a	6a
BVM12	1313	D1	E925	1311	n/a	Timber	Post	Part of revetment [390]	0.58	0.19	0.16	1.75	n/a	Post-med	6a	6a
BVM12	1314	D1	E925	1311	n/a	Timber	Post	Part of revetment [390]	0.4	1.1	0.08	1.98	n/a	Post-med	6a	6a
BVM12	1315	D1	E925	1316	42	Timber	Post	Part of tieback	0.35	0.16	0.15	1.84	1.68	Early post-med	5b	5b
BVM12	1316	D1	E925	1316	42	Timber	Post	Part of tieback	0.46	0.2	0.2	2.02	n/a	Early post-med	5b	5b
BVM12	1317	D1	E925	1316	42	Timber	Post	Part of tieback	0.76	0.1	0.1	2.09	n/a	Early post-med	5b	5b
BVM12	1318	D1	E925	1318	n/a	Timber	Pile	Part of revetment [390]	1.06	0.12	0.13	1.43	n/a	Post-med	6a	6a
BVM12	1319	D1	E925	n/a	42; 52	Layer	Made ground	Fairly compact greyish brown clay silt	2.38	n/a	0.65	2.4	1.86	Early post-med	5b	5b
BVM12	1320	D1	E925	n/a	42; 52	Layer	Dumped deposit	Fairly compact dark greyish brown clay silt	1.19	n/a	0.19	1.86	1.66	Early post-med	5b	5b
BVM12	1321	D1	E925	n/a	42; 52	Layer	Dumped deposit	Compact greyish brown clay silt	1.19	n/a	0.18	1.67	-	Medieval	4b	4b
BVM12	1322	D1	E925	n/a	52; 63	Layer	Organic lens	Soft mid dark brown organic clay silt	n/a	1	0.1	1.67	1.57	Medieval	4b	4b
BVM12	1323	D1	E925	n/a	42	Layer	Dumped deposit	Moderately compact greyish brown clay silt	0.92	n/a	0.38	2.24	2.17	Post-med	6a	6a
BVM12	1324	D1	E925	n/a	42	Timber	Post	Part of timber drain/revetment pile	1.12	0.1	0.08 5	2.03	n/a	Post-med	6a	6a
BVM12	1325	D1	E925	1325	n/a	Timber	Beam	Part of revetment [390]	3.5	0.25	0.1	1.25	1.22	Post-med	6a	6a
BVM12	1326	D1	E925	1325	n/a	Timber	Plank	Part of revetment [390]	0.22	0.85	0.02 5	1.37	n/a	Post-med	6a	6a
BVM12	1327	D1	E925	1325	n/a	Timber	Plank	Part of revetment [390]	0.9	0.2	0.03 5	1.36	n/a	Post-med	6a	6a
BVM12	1328	D1	E925	1328	n/a	Timber	Plank	Part of revetment [390]	0.42	0.07	0.08 2	1.11	n/a	Post-med	6a	6a
BVM12	1329	D1	E925	390; 1328	n/a	Timber	Plank	Part of revetment [390]	0.25	0.89	0.04	1.09	1.06	Post-med	6a	6a
BVM12	1330	D1	E925	1328	n/a	Timber	Beam	Part of revetment [390]	1.64	0.16	0.08	1.11	1.1	Post-med	6a	6a
BVM12	1331	D1	E925				VOID	VOID								
BVM12	1332	D1	E925	1328	n/a	Timber	Beam	Part of revetment [390]	0.45	0.1	0.07	1.11	n/a	Post-med	6a	6a
BVM12	1333	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.14	0.14	n/a	1.21	n/a	Post-med	6a	6a
BVM12	1334	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.09	0.11	0.64	1.61	n/a	Post-med	6a	6a
BVM12	1335	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.13	0.13	1.33	1.32	n/a	Post-med	6a	6a
BVM12	1336	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.12	0.08	0.58	1.56	n/a	Post-med	6a	6a
BVM12	1337	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.12	0.09	0.9	1.41	n/a	Post-med	6a	6a



BVM12	1338	D1	E925	1328	n/a	Timber	Pile	Part of revetment [390]	0.17	0.17	1.4	1.26	n/a	Post-med	6a	6a
BVM12	1339	D1	E925	1339	n/a	Timber	Plank	Associated with timber pipe [1340]	0.64	0.03	0.2	1.09	n/a	Post-med	6a	6a
BVM12	1340	D1	E925	1340; Post Ex	62	Timber	Pipe	E-W aligned timber pipe	0.2	2.2	0.2	0.98	0.95	Post-med	6a	6a
BVM12	1341	D1	E925	n/a	n/a	Fill	Fill of [1342]	Moderately loose dark greyish brown silty clay	1.5	1.12	0.3	1.09	n/a	Medieval	4b	4b
BVM12	1342	D1	E925	1342	n/a	Cut	Pit	Square shaped pit	1.56	1.12	0.3	1.09	0.75	Medieval	4b	4b
BVM12	1343	D1	E925	Post- ex	n/a	Layer	Alluvium	Firm mid grey brown silty clay	3.8	0.44	n/a	1.06	1.02	Undated	4a	4a
BVM12	1344	D1	E925				VOID	VOID								
BVM12	1345	D1	E925	Post- ex	62; 63	Layer	Alluvium	Compact mid grey silty clay	4.5	2.5	n/a	1.02	0.85	Medieval	4b	4b
BVM12	1346	D1	E925				VOID	VOID								
BVM12	1347	D1	E925				VOID	VOID								
BVM12	1348	D1	E925	1348	63	Layer	Alluvium	Slightly friable mid grey greenish brown slightly sandy silty clay	1.6	0.9	0.61	1.4	0.8	Medieval	4b	4b
BVM12	1349	D1	E925	1349; Post Ex	63	Structure	Wattle revetment	N-S aligned wattle revetment	1.6	0.04	0.45	1.54	1.04	Medieval	4b	4b
BVM12	1350	D1	E925	1349	n/a	Timber	Post/Root	Part of wattle revetment [1349]	0.1	0.1	0.25	1.54	n/a	Medieval	4b	4b
BVM12	1351	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.04	0.04	0.3	1.47	n/a	Medieval	4b	4b
BVM12	1352	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.05	0.05	0.42	1.47	n/a	Medieval	4b	4b
BVM12	1353	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.04	0.04	0.61	1.47	n/a	Medieval	4b	4b
BVM12	1354	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.06	0.06	0.3	1.42	n/a	Medieval	4b	4b
BVM12	1355	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.04	0.04	3.4	1.47	n/a	Medieval	4b	4b
BVM12	1356	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.06	0.06	0.18	1.38	n/a	Medieval	4b	4b
BVM12	1357	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.05	0.05	0.36	1.48	n/a	Medieval	4b	4b
BVM12	1358	D1	E925	1349	n/a	Timber	Stake	Part of wattle revetment [1349]	0.04	0.04	0.39	1.27	n/a	Medieval	4b	4b
BVM12	1359	D1	E925	1349	n/a	Timber	Plank	Part of wattle revetment [1349]	0.08	0.8	0.30 4	1.47	n/a	Medieval	4b	4b
BVM12	1360	D1	E925	1360; Post Ex	62; 63	Layer	Alluvium?	Firm mid greyish brown silty clay	1.5	0.4	0.6	1.47	1.27	Medieval	4b	4b
BVM12	1361	D1	E925	1361	n/a	Timber	Block	Part of revetment [390]	0.42	0.17	0.08 5	1.05	n/a	Post-med	6a	6a
BVM12	1362	D1	E925	1361	n/a	Timber	Block	Part of revetment [390]	0.31	0.21	0.05 2	1.02	n/a	Post-med	6a	6a
BVM12	1363	D1	E925	1363	n/a	Timber	Plank	Part of earlier revetment [1370]	1.04	0.2	0.02 8	1.16	1.11	Post-med	6a	6a
BVM12	1364	D1	E925	1363	n/a	Timber	Plank	Part of earlier revetment [1370]	0.62	0.03	0.03	1.16	n/a	Post-med	6a	6a

BVM12	1365	D1	E925	1328; 1365; 1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.15	0.16	0.36	1.2	n/a	Post-med	6a	6a
BVM12	1366	D1	E925	1328; 1361	n/a	Timber	Post	Part of revetment [390]	0.13	0.09	0.39	1.2	n/a	Post-med	6a	6a
BVM12	1367	D1	E925	1328	n/a	Timber	Stake	Part of revetment [390]	1.22	0.15	0.1	1.24	n/a	Post-med	6a	6a
BVM12	1368	D1	E925	1328	n/a	Timber	Post	Part of revetment [390]	0.16	0.08	0.3	1.24	n/a	Post-med	6a	6a
BVM12	1369	D1	E925				VOID	VOID								
BVM12	1370	D1	E925	1328; 1365; 1370	n/a	Structure	Revetment	Revetment pre-dating [390]	3.2	0.4	0.7	1.22	0.65	Post-med	6a	6a
BVM12	1371	D1	E925	1365; 1370	n/a	Timber	Plank	Part of earlier revetment [1370]	1.71	0.11	0.02	1.02	1.01	Post-med	6a	6a
BVM12	1372	D1	E925	1370	n/a	Timber	Plank	Part of earlier revetment [1370]	0.69	0.2	0.02 5	1.02	0.77	Post-med	6a	6a
BVM12	1373	D1	E925	1365; 1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.08	0.04	n/a	1.01	n/a	Post-med	6a	6a
BVM12	1374	D1	E925	1365; 1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.28	0.07	0.08	1.02	n/a	Post-med	6a	6a
BVM12	1375	D1	E925	1370; 1363	n/a	Timber	Stake	Part of earlier revetment [1370]	0.11	0.11	0.22	1.02	n/a	Post-med	6a	6a
BVM12	1376	D1	E925	1365; 1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.11	0.11	0.23	0.8	n/a	Post-med	6a	6a
BVM12	1377	D1	E925	1365; 1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.11	0.11	0.35	0.75	n/a	Post-med	6a	6a
BVM12	1378	D1	E925	1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.3	0.3	0.09	1.03	n/a	Post-med	6a	6a
BVM12	1379	D1	E925	1370	n/a	Timber	Plank	Part of earlier revetment [1370]	1.22	0.4	0.06 8	1.03	0.65	Post-med	6a	6a
BVM12	1380	D1	E925	1370	n/a	Timber	Plank	Part of earlier revetment [1370]	0.48	0.15	0.02	0.8	0.65	Post-med	6a	6a
BVM12	1381	D1	E925	1370	n/a	Timber	Post	Part of earlier revetment [1370]	0.2	0.2	0.06	1.06	n/a	Post-med	6a	6a
BVM12	1382	D1	E925	n/a	63	Layer	Alluvium	Soft mid yellowish brown sandy silt	n/a	0.2	0.2	0.9	n/a	Early post-med	5b	5b
BVM12	1383	D1	E925	1365	n/a	Timber	Post	Part of earlier revetment [1370]	0.1	0.1	0.3	0.75	n/a	Post-med	6a	6a
BVM12	1384	D1	E925	1365	n/a	Timber	Plank	Part of earlier revetment [1370]	0.96	0.04	n/a	0.75	n/a	Post-med	6a	6a
BVM12	1385	D1	E925				VOID	VOID								
BVM12	1386	D1	E925				VOID	VOID								
BVM12	1387	D1	E925				VOID	VOID								
BVM12	1388	D1	E925				VOID	VOID								
BVM12	1389	D1	E925	1365	n/a	Timber	Plank	Part of earlier revetment [1370]	0.56	0.18	0.02 5	0.87	n/a	Post-med	6a	6a
BVM12	1390	D1	E925	1365	63	Timber	Post	Part of earlier revetment [1370]	0.88	0.88	0.4	1.22	n/a	Post-med	6a	6a
BVM12	1391	D1	E925	1365	n/a	Timber	Plank	Part of earlier revetment [1370]	0.22	0.14	0.02	0.87	n/a	Post-med	6a	6a

BVM12	1392	D1	E925				VOID	VOID								
BVM12	1393	D1	E925	1363	n/a	Timber	Post	Part of earlier revetment [1370]	0.11	0.11	0.25	0.84	n/a	Post-med	6a	6a
BVM12	1394	D1	E925	1394	n/a	Layer	Mortar dump	Loose yellowish white lime mortar	0.75	0.64	0.04	1.06	n/a	Medieval	4b	4b
BVM12	1395	D1	E925	n/a	62	Layer	Dumped deposit	Firm, brown clay silt	2.18	n/a	0.2	1.3	n/a	Post-med	6a	6a
BVM12	1396	D1	E925	n/a	62	Layer	Alluvium	Fairly firm light brown silty clay	2.11	n/a	0.12	1.11	n/a	Medieval	4b	4b
BVM12	1397	D1	E925	1397	63	Cut	Channel	N-S aligned channel	4.5	2.4	0.3	1.09	0.82	Undated	4a	4a
BVM12	1398	D1	E925	n/a	63	Timber	Stake	Possibly part of wattle revetment [1349]	0.06	0.06	0.26	1.27	n/a	Medieval	4b	4b
BVM12	1399	D1	E925	Post-ex	n/a	Layer	Alluvium	Fairly firm dark grey brown silty clay	1.54	0.5	n/a	0.81	n/a	Post-med	6a	6a
BVM12	300	D2	E122	pre-ex; 300	27	Layer	Demolition	Soft, yellow grey silty sand, freq CBM/pebbles/gravel	1.56	2.16	0.03	2.97	n/a	Modern	7	7
BVM12	301	D2	E122	pre-ex; 301	n/a	Structure	Small building/drainage	Drainage complex - walls [307]/[305] const cut [302], bf [308]	2	2.4	0.2	2.96	2.71	Post-med	6b	6b
BVM12	302	D2	E122	pre-ex; 302	27	Cut	Construction cut for structure [301]	Irregular cut, gently sloping sides, flattish base, filled by [305]/[306]/[307] and bf [308]	2	2.4	0.22	2.91	2.69	Post-med	6b	6b
BVM12	303	D2	E122	pre-ex; 303	27	Layer	Dump layer	Soft, dark grey silty-clay, occa CBM/mortar/charcoal	1.9	3.28	0.3	2.84	n/a	Early post-med	5bi	5b
BVM12	304	D2	E122	pre-ex			VOID	VOID								
BVM12	305	D2	E122	pre-ex; 305	n/a	Masonry	Drain relating to structure [301], NW-SE	Unfrosted red brick, machine made, light grey mortar	1.32	0.45	0.05	2.78	n/a	Post-med	6b	6b
BVM12	306	D2	E122	pre-ex; 306	27	Masonry	Cobbled surface	Roughly hewn ragstone sm/med blocks	0.98	0.62	0.15	2.77	n/a	Post-med	6b	6b
BVM12	307	D2	E122	307	n/a	Masonry	Brick floor, NW-SE	Unfrosted red brick surface	0.56	1.2	0.05	2.76	n/a	Post-med	6b	6b
BVM12	308	D2	E122	pre-ex	n/a	Fill	Fill of construction cut [302]	Loose, yellow-grey silty sand, freq CBM/gravel	2	2.4	0.2	2.91	n/a	Post-med	6b	6b
BVM12	309	D2	E122	pre-ex; 309	27	Layer	Dump layer	Dark grey-brown/black sandy silt, freq coal/clinker/gravel, mod CBM, occa glass	1.94	3.18	0.3	2.91	n/a	Early post-med	5bii	5b
BVM12	310	D2	E122	n/a	n/a	Fill	Fill of posthole [311]	Loose dark brown/black sandy silt, mod CBM	0.3	0.2	0.09	2.68	n/a	Early post-med	5bi	5b
BVM12	311	D2	E122	311	n/a	Cut	Posthole	Sub-squared cut, steep sides, concave	0.3	0.2	0.09	2.68	2.57	Early post-	5bi	5b

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BVM12	312	D2	E122	312	27	Layer	Ashy dump layer	Loose, dark brown/black, sandy-ash	1.34	0.3	0.1	2.53	n/a	Early post-med	5bii	5b
BVM12	313	D2	E122	n/a	27	Fill	Fill of linear cut [314]	White/grey sandy-silt and mortar, with CBM	2.04	1.24	0.2	2.66	n/a	Early post-med	5bii	5b
BVM12	314	D2	E122	314	27	Cut	Linear N-S cut, unknown function	Linear, steep sides, flattish base	2.04	1.24	0.2	2.66	2.46	Early post-med	5bii	5b
BVM12	315	D2	E122	315	n/a	Layer	Make-up layer	Light grey silty-clay, freq mortar/charcoal, occa oyster	0.3	0.96	0.1	2.52	n/a	Early post-med	5bi	5b
BVM12	316	D2	E122	316	n/a	Masonry	E-W? Foundation	Dark red unfrogged brick, white/grey mortar with charcoal flecks, 1 course only	0.3	0.34	0.08	2.65	2.58	Early post-med	5bi	5b
BVM12	317	D2	E122	317	n/a	Masonry	E-W brick floor	Dark red unfrogged brick, white mortar with charcoal, stretcher bond, 1 course	0.72	0.94	0.1	2.55	2.49	Early post-med	5bi	5b
BVM12	318	D2	E122	318	27	Masonry	NE-SW brick floor	Dark red unfrogged bricks, silty sand bonding, irregular courses	0.84	1.26	0.05	2.46	n/a	Early post-med	5bi	5b
BVM12	319	D2	E122	319	n/a	Cut	Construction cut for surface [317]	Rectangular, steep sides to east, gradual to west, imperceptible break to flat base	0.92	1.28	0.12	2.47	2.34	Early post-med	5bi	5b
BVM12	320	D2	E122	320	27	Cut	NE-SW Construction cut for surface [318]	Squared cut, vertical sides, flat base	0.94	1.2	0.16	2.48	2.31	Early post-med	5bi	5b
BVM12	321	D2	E122	321	27	Layer	Levelling	Soft, brown-grey silty clay, occa sub-ang pebbles/oyster/charcoal/mortar	2	4	0.2	2.47	n/a	Medieval	4b	4b
BVM12	322	D2	E122	323	n/a	Fill	Fill of well? [322]	Soft, grey-brown clay, occa CBM	0.72	2.1	0.43	2.68	n/a	Early post-med	5bii	5b
BVM12	323	D2	E122	323	n/a	Cut	Circular cut - well?	Circular cut, vertical sides, not bottomed	0.72	2.1	0.7	2.47	2.28	Early post-med	5bii	5b
BVM12	324	D2	E122	n/a	27	Fill	Fill of pit [325]	Soft grey-brown silty-clay, occa pot/CBM/bone	1.08	0.46	0.27	2.27	n/a	Medieval	4b	4b
BVM12	325	D2	E122	325	27	Cut	Pit	Rectangular cut, steep sides/nr vertical, flat base	1.08	0.46	0.27	2.27	2	Medieval	4b	4b
BVM12	326	D2	E122	n/a	n/a	Fill	Fill of pit [327]	Soft grey-brown silty-clay, occa pot / CBM / bone	0.3	0.7	0.21	2.22	n/a	Medieval	4b	4b
BVM12	327	D2	E122	327	n/a	Cut	Pit	Rectangular cut, steep sides, flat base	0.3	0.7	0.21	2.26	2.01	Medieval	4b	4b
BVM12	328	D2	E122	n/a	n/a	Fill	Fill of ditch [329]	Soft blue-grey silty clay, occa CBM / chalk / sub-ang gravels				2.22		Medieval	4b	4b
BVM12	329	D2	E122	329	n/a	Cut	N-S ditch	Linear cut, vertical sides, flat base	0.96	0.88	0.2	2.22	2.01	Medieval	4b	4b
BVM12	330	D2	E122				VOID	VOID								

BVM12	331	D2	E122	n/a	24; 36	Layer	Made ground	Loose, yellow-brown silty sand, freq rubble/CBM	n/a	0.6	0.32	4.25	n/a	Modern	7	7
BVM12	332	D2	E122	n/a	24; 36	Layer	Made ground	Loose, grey-brown mortar and rubble	n/a	5	0.32	4.15	3.97	Modern	7	7
BVM12	333	D2	E122	n/a	24; 36	Layer	Made ground	Mixed grey-brown crushed mortar/CBM and silty sand	n/a	5	0.8	3.85	n/a	Modern	7	7
BVM12	334	D2	E122	n/a	24; 27; 36	Layer	Ground consolidation	Compact dark brown silty clay, lenses clay	n/a	n/a	0.65	3.5	n/a	Modern	7	7
BVM12	335	D2	E122	n/a	n/a	Fill	Fill of ditch [336]	Soft dark grey-brown sandy silt, occa CBM / sub-ang gravels	0.59	0.59	0.28	2.27	n/a	Medieval	4b	4b
BVM12	336	D2	E122	336	n/a	Cut	N-S ditch	Linear cut, steep sides, flat base	0.59	0.59	0.28	2.27	1.99	Medieval	4b	4b
BVM12	337	D2	E122	n/a	n/a	Fill	Fill of pit [338]	Soft, mid green-grey sandy-silt, no inc	0.13	0.3	0.1	2.27	n/a	Medieval	4a	4a
BVM12	338	D2	E122	338	n/a	Cut	Pit (truncated)	Unknown shape, concave sides, base unseen	0.13	0.3	0.1	2.27	2.17	Medieval	4a	4a
BVM12	339	D2	E122	n/a	27	Fill	Fill of channel [340]	Soft, dark grey-brown clayey-silt, mod oyster, occa sm sub-ang pebbles	2.52	0.2	0.13	2.23	n/a	Medieval	4b	4b
BVM12	340	D2	E122	340	27	Cut	NW-SE Channel/drainage?	Linear cut, concave sides and base	2.52	0.2	0.13	2.23	2.08	Medieval	4b	4b
BVM12	341	D2	E122	n/a	n/a	Fill	Fill of posthole [342]	Soft red-brown clay-silt, no inc	0.45	0.12	0.07	2.22	n/a	Medieval	4a	4a
BVM12	342	D2	E122	342	n/a	Cut	Posthole	Circular cut, vertical sides, sloped base to west	0.45	0.12	0.07	2.22	2.15	Medieval	4a	4a
BVM12	343	D2	E122	n/a	n/a	Fill	Fill of pit [344]	Soft, blue-brown clay-silt, no inc	0.63	0.13	0.15	2.21	n/a	Medieval	4a	4a
BVM12	344	D2	E122	344	n/a	Cut	Pit (truncated)	Circular (?), vertical sides, flat base	0.63	0.13	0.15	2.27	2.12	Medieval	4a	4a
BVM12	345	D2	E122	n/a	n/a	Fill	Fill of hollow [346]	Plastic grey brown sandy-clayey-silt, occa CBM/charcoal/shell/sub-ang gravels	0.5	1.5	0.1	2.17	n/a	Medieval	4b	4b
BVM12	346	D2	E122	346	n/a	Cut	Natural hollow?	Irregular 'kidney' shaped cut, concave sides and base	0.5	1.5	0.1	2.17	2	Medieval	4b	4b
BVM12	347	D2	E122	n/a	27	Fill	Fill of ditch [349]	Brown-grey silty clay, freq CBM/shell/sub-ang flints	1.5	0.9	0.25	2.17	n/a	Medieval	4a	4a
BVM12	348	D2	E122	n/a	26; 27	Fill	Fill of ditch [349]	Dark blue-grey clay-silt, no inc	2.53	0.75	0.2	2.11	n/a	Medieval	4a	4a
BVM12	349	D2	E122	349	26; 27	Cut	N-S ditch	Linear cut, steep sides, flat base	2.53	0.75	0.34	2.17	1.74	Medieval	4a	4a
BVM12	350	D2	E122	n/a	n/a	Fill	Fill of pit [351]	Soft, yellow-brown clay, occa degraded wood frags	1.3	2.3	0.55	2.23	n/a	Early post-med	5bii	5b
BVM12	351	D2	E122	351a;	n/a	Cut	Pit	Circular cut, vertical sides, flat base	1.3	2.3	0.97	2.23	1.26	Early post-	5bii	5b

				351b										med		
BVM12	352	D2	E122				VOID	VOID								
BVM12	353	D2	E122	n/a	n/a	Fill	Fill of pit [351]	Soft, grey-blue silty clay, occa pot/CBM/mortar/plaster	1.3	2.3	0.6	1.85	n/a	Early post-med	5bii	5b
BVM12	354	D2	E122	354	27	Layer	Alluvium	Firm yellow-brown/blue-grey clay, occa rnd pebbles	2.4	3.6	0.65	2.25	2.03	Medieval	4a	4a
BVM12	355	D2	E122	n/a	n/a	Fill	Fill of pit(?) [356]	Firm, grey-brown silty-clay, occa sub-ang flint/charcoal	0.8	0.3	0.31	2.13	n/a	Medieval	4a	4a
BVM12	356	D2	E122	356	n/a	Cut	Pit (truncated)	Rounded edges, steep sides, flattish base	0.8	0.3	0.31	2.13	1.82	Medieval	4a	4a
BVM12	357	D2	E122	n/a	n/a	Fill	Upper fill of linear cut [360]	Mod compact, dark grey-blue clay-silt, occa oyster/pot	0.7	0.5	0.03	1.85	n/a	Medieval	4a	4a
BVM12	358	D2	E122	358	26, 27	Fill	Secondary fill of linear [360]	Plastic blue-grey silty-clay, freq twigs, mod oyster	1.5	1.05	0.15	1.8	n/a	Medieval	4a	4a
BVM12	359	D2	E122	n/a	26; 27	Fill	Primary fill of [360]	Soft blue-grey clay, mod oyster, occa fe obj	2.57	1.1	0.17	1.75	n/a	Medieval	4a	4a
BVM12	360	D2	E122	360	26; 27	Cut	NW-SE linear	Linear cut, steep sides, flat base sloping down from south to north	2.57	1.11	0.29	1.79	1.5	Medieval	4a	4a
BVM12	361	D2	E122	361	26; 27	Layer	Alluvium	Firm dark blue/brown mottled clay, lenses sandy clay, v occa rnd pebbles/oyster/wood frags	2.55	4.4	0.97	1.89	1.22	Medieval	4a	4a
BVM12	362	D2	E122	n/a	26	Fill	Secondary fill of pit [364]	Firm, dark blue-brown peaty clay, occa pot/CBM/bone/leather	0.97	0.54	0.1	1.49	n/a	Medieval	4a	4a
BVM12	363	D2	E122	n/a	26	Fill	Primary fill of pit [364]	Dark grey-brown silty-peat, occa oyster/pot/CBM/bone/leather/wood	1.19	0.7	0.3	1.41	n/a	Medieval	4a	4a
BVM12	364	D2	E122	364	26	Cut	Pit (truncated)	Sub-rectangular cut, undercut edges steeply sloped, flat/sloping base to east	1.2	0.7	0.34	1.59	1.22	Medieval	4a	4a
BVM12	365	D2	E122	365	26; 27	Layer	Alluvium	Soft, blue-grey alluvial clay, occa shell/limestone/pot/bone	2.6	4.4	0.48	1.27	1.18	Medieval	4a	4a
BVM12	366	D2	E122	373	n/a	Fill	Fill of timber lined pit [371]	Soft light blue-grey silty clay, occa CBM/sm sub-ang pebbles/oyster/mussel/decayed wood	0.6	2	0.89	1.26	n/a	Early post-med	5bi	5b
BVM12	367	D2	E122	373	n/a	Timber	NE-SW Timber lining - plank	Western lining of cut [371], clinker built	1.1	0.06	0.8	1.09	n/a	Early post-med	5bi	5b
BVM12	368	D2	E122	373	n/a	Timber	NW-SE Timber lining of cut [371]	Southern lining of pit [371], clinker built	0.04	1.97	0.8	1.27	n/a	Early post-med	5bi	5b
BVM12	369	D2	E122	373	n/a	Timber	NE-SW Timber lining - plank	Eastern lining of pit [371], clinker built	0.6	0.04	0.78	1.21	n/a	Early post-med	5bi	5b

BVM12	370	D2	E122	n/a	n/a	Fill	Backfill of construction cut [371]	Soft, blue-grey clay, occa wood/oyster/shell/sm pebbles/bone	1.1	2.1	0.89	1.27	n/a	Early post-med	5bi	5b
BVM12	371	D2	E122	371; post-ex	n/a	Cut	Construction cut for timber lined pit	Sub-rectangular, vertical sides, flat base slightly sloped from east to west	1.1	2.1	0.89	1.27	0.38	Early post-med	5bi	5b
BVM12	372	D2	E122	373; post-ex	n/a	Timber	Post, structure [373]	Vertical post, squared with tapered point, boxed heart, to south-west of pit [371]	0.7	0.1	0.1	0.78	n/a	Early post-med	5bi	5b
BVM12	373	D2	E122	373	n/a	Structure	Timber lined pit	Sub-rectangular, timbers [367]/[368]/[369] planking; post [372], cut [371]	1.1	2.1	0.89	n/a	n/a	Early post-med	5bi	5b
BVM12	374	D2	E122	n/a	n/a	Fill	Fill of posthole [375]	Soft grey-brown clay-silt, occa sm sub-ang flint pebbles	0.14	0.14	0.2	0.48	n/a	Medieval	4a	4a
BVM12	375	D2	E122	post-ex	n/a	Cut	Posthole	Circular cut, vertical sides, tapered base	0.14	0.14	0.2	0.48	0.28	Medieval	4a	4a
BVM12	376	D2	E122	post-ex	n/a	Layer	Natural? Alluvial sandy-clay	Soft blue-grey sandy-clay, occa pebbles/shells	0.82	2.1	unseen	0.48	n/a	Medieval	4a	4a
BVM12	911	E1	E929	911	39, 40	Masonry	Wall foundation	SW-NE aligned wall foundation	0.7	0.58	0.76	3.19	2.95	Post-med	6aii	6a
BVM12	912	E1	E929	912	n/a	Masonry	Wall foundation	NW-SE aligned wall foundation	1.29	0.2	0.5	3.25	2.75	Post-med	6aiii	6a
BVM12	913	E1	E929	Pre-ex	n/a	Masonry	Wall foundation	N-S aligned wall foundation	n/a	0.66	0.45	3.32	2.87	Post-med	6b	6a
BVM12	914	E1	E929	914	39	Layer	Made Ground	Loose dark reddish black brown ashy clinker	1.6	1.57	0.34	3.19	3.09	Post-med	6b	6a
BVM12	915	E1	E929	915	n/a	Layer	Demolition deposit	Dark black brown ashy clinker and masonry rubble	0.88	0.92	0.54	3.16	n/a	Post-med	6b	6a
BVM12	916	E1	E929	916	39	Layer	Demolition deposit	Loose light reddish yellow crushed masonry	1.5	1.6	0.22	3.11	2.76	Post-med	6b	6a
BVM12	917	E1	E929	917	n/a	Masonry	Damaged foundation	Irregularly coursed brick foundation	0.48	1	0.4	3.06	2.66	Post-med	6aiii	6a
BVM12	918	E1	E929	918	39	Masonry	Wall foundation	Fragment of E-W aligned wall foundation	0.48	0.7	0.41	3.1	2.76	Post-med	6aiii	6a
BVM12	919	E1	E929	919	n/a	Masonry	Wall foundation	Part of N-S aligned wall foundation	0.33	0.35	0.34	2.99	n/a	Post-med	6aiii	6a
BVM12	920	E1	E929	920	39	Masonry	Wall foundation	Part of N-S aligned wall foundation	0.82	1.9	0.36	3.06	2.91	Post-med	6aiii	6a
BVM12	921	E1	E929	921	39, 40	Masonry	Wall foundation	Fragment of wall foundation	0.26	0.24	0.41	3.12	n/a	Post-med	6aiii	6a
BVM12	922	E1	E929	922	39	Layer	Dumped deposit	Soft black ash and clinker	1.22	0.76	0.12	3.08	2.59	Post-med	6aiii	6a
BVM12	923	E1	E929	923	n/a	Layer	Mortar	Friable light-mid brownish yellow crushed	1.1	0.62	0.1	2.66	2.62	Post-med	6aiii	6a

							surface	mortar								
BVM12	924	E1	E929	924	n/a	Layer	Made Ground	Soft-friable mid greyish brown ashy silt and crushed mortar	1.84	1.1	0.1	2.63	2.51	Post-med	6aiii	6a
BVM12	925	E1	E929	925	39	Masonry	Brick floor	Fragment of brick floor	0.36	0.5	0.09	2.72	n/a	Post-med	6aiii	6a
BVM12	926	E1	E929	926	39	Masonry	Brick floor	E-W aligned brick floor	0.86	1.8	0.1	2.7	2.69	Post-med	6aiii	6a
BVM12	927	E1	E929	927	n/a	Layer	Occupation layer	Fairly firm dark brown black ashy silt	2.24	1.3	0.08	2.57	2.49	Post-med	6aiii	6a
BVM12	928	E1	E929	928	n/a	Cut	Beamslot	NW-SE aligned beam slot	1.02	0.35	0.18	2.69	2.51	Post-med	6aiii	6a
BVM12	929	E1	E929	929	n/a	Layer	Occupation deposit	Compact pinkish brown sandy clinker	0.4	0.61	0.05	2.44	n/a	Post-med	6aii	6a
BVM12	930	E1	E929	930	n/a	Layer	Cobbled surface	Compact black orange red cobbled surface	0.76	0.58	0.1	2.48	n/a	Post-med	6aii	6a
BVM12	931	E1	E929	n/a	n/a	Layer	Remains of coal at base of [932]	Loose black small and medium sized lumps of coal	0.5	0.5	0.08	2.5	n/a	Post-med	6aii	6a
BVM12	932	E1	E929	932	40	Masonry	Floor surface	Base of coal chute?	1	1.8	0.06	2.62	2.42	Post-med	6aii	6a
BVM12	933	E1	E929	933	40	Masonry	Wall foundation	South wall of possible coal chute	0.19	0.6	0.28	2.79	2.73	Post-med	6aiii	6a
BVM12	934	E1	E929	934	n/a	Masonry	Wall foundation	Part of coal chute?	0.15	0.8	0.42	2.98	2.76	Post-med	6aiii	6a
BVM12	935	E1	E929	935	n/a	Layer	Made Ground	Firm mid greenish brown sandy silt	0.4	0.66	0.08	2.64	n/a	Post-med	6aiii	6a
BVM12	936	E1	E929	936	n/a	Layer	Occupation surface	Firm mid dirty yellowish white and black mottled crushed ash and mortar	0.64	0.32	0.03	2.43	n/a	Post-med	6aii	6a
BVM12	937	E1	E929	937	n/a	Layer	Occupation surface	Firm mid dirty yellowish white and black mottled crushed ash and mortar	0.44	0.28	0.04	2.47	n/a	Post-med	6aii	6a
BVM12	938	E1	E929	938	n/a	Masonry	Wall foundation?	Heavily truncated stub of possible wall foundation	0.48	0.44	0.07	2.51	n/a	Early post-med	5biv	5b
BVM12	939	E1	E929	n/a	n/a	Fill	Backfill in [942]	Soft, light orange grey sandy mortar	0.33	0.23	0.04	2.47	n/a	Post-med	6aii	6a
BVM12	940	E1	E929	940	n/a	Layer	Dumped deposit	Very firm mid brown grey sandy silt with coal mottling	1.46	0.74	0.04	2.56	2.43	Post-med	6aiii	6a
BVM12	941	E1	E929	n/a	n/a	Fill	Backfill in [942]	Moderately compact mid bluish grey sandy silt and degraded CBM and mortar	1.04	1.18	1.26	2.61	2.35	Post-med	6aiii	6a
BVM12	942	E1	E929	942	39	Cut	Construction cut for [911]	NE-SW orientated construction cut	1.04	1.18	0.26	2.61	2.35	Post-med	6aii	6a
BVM12	943	E1	E929	943	n/a	Fill	Backfill in [942]	Firm mid bluish grey and mottled red mortar and brick fragments	0.39	0.32	0.11	2.47	2.36	Post-med	6aii	6a
BVM12	944	E1	E929	n/a	n/a	Timber	Timber	Timber plank beneath [911]	0.36	0.5	0.01	2.43	2.42	Post-med	6aii	6a



							plank beneath [911]									
BVM12	945	E1	E929	945	n/a	Fill	Chalk base	Fairly loose white chalk	1.02	1.16	0.03	2.38	2.36	Post-med	6aii	6a
BVM12	946	E1	E929	946	n/a	Layer	Occupation surface	Compact yellow white mortar	0.37	0.59	0.04	2.38	n/a	Early post- med	5biv	5b
BVM12	947	E1	E929	947	n/a	Layer	Construction debris	Firm mid greyish brown clay silt	0.5	1.18	0.02	2.59	n/a	Post-med	6aiii	6a
BVM12	948	E1	E929	948	39	Layer	Occupation surface	Compact yellowish white mortar	0.92	0.73	0.09	2.67	2.64	Post-med	6aiii	6a
BVM12	949	E1	E929	949	n/a	Layer	Occupation surface	Very firm light brownish yellow mortar, clay and sand	0.74	0.84	0.03	2.62	n/a	Post-med	6aiii	6a
BVM12	950	E1	E929	950	n/a	Masonry	Collapsed masonry?	Potential collapsed floor	0.43	0.38	0.07	2.36	2.34	Early post- med	5biv	5b
BVM12	951	E1	E929	n/a	n/a	Fill	Fill of [952]	Firm mid greenish grey silty clay	2.06	0.45	0.3	2.26	2.22	Early post- med	5bii	5b
BVM12	952	E1	E929	952	n/a	Cut	Beamslot	NE-SW orientated beamslot	2.06	0.45	0.3	2.32	2.02	Early post- med	5bii	5b
BVM12	953	E1	E929	n/a	n/a	Fill	Chalk pier	Compacted light yellowish brownish white chalk	0.45	0.54	0.07	2.44	n/a	Post-med	6aii	6a
BVM12	954	E1	E929	954	n/a	Cut	Cut for chalk pier	Cut for chalk pier	0.47	0.55	0.19	2.54	2.35	Post-med	6aii	6a
BVM12	955	E1	E929	955	n/a	Layer	Dumped deposit	Firm mid greenish grey brown clay silt	0.2	0.6	0.04	2.57	n/a	Post-med	6a	6a
BVM12	956	E1	E929	956	n/a	Fill	Fill of [958]	Soft mid greenish grey silty clay	0.22	0.22	0.45	2.55	n/a	Post-med	6aii	6a
BVM12	957	E1	E929	n/a	n/a	Fill	Post packing in [958]	Rubble post packing in posthole [958]	0.48	0.5	0.45	2.55	n/a	Post-med	6aii	6a
BVM12	958	E1	E929	958	n/a	Cut	Posthole	Posthole	0.48	0.5	0.45	2.55	2.1	Post-med	6aii	6a
BVM12	959	E1	E929	959	39	Layer	Slightly organic layer	Firm mid greenish brown grey clay silt	2.25	1.86	0.6	2.56	2.55	Post-med	6aiii	6a
BVM12	960	E1	E929	n/a	n/a	Fill	Timber lining in [954]	Timber lining in chalk pier	0.47	0.6	0.02	2.37	n/a	Post-med	6aii	6a
BVM12	961	E1	E929	961	n/a	Layer	Silty clay layer	Firm mid greenish brown grey silty clay	2.25	1.88	0.27	2.37	n/a	Post-med	6ai	6a
BVM12	962	E1	E929	962	39	Layer	Occupation surface	Fairly loose light brownish yellowish white mortar	0.97	1.86	0.05	2.51	2.41	Early post- med	5biv	5b
BVM12	963	E1	E929	n/a	n/a	Fill	Fill of [964]	Soft light bluish grey sandy silty clay	0.25	0.2	0.2	2.45	n/a	Early post- med	5a	5a
BVM12	964	E1	E929	964	n/a	Cut	Posthole	Posthole	0.25	0.2	0.4	2.45	2.05	Early post- med	5a	5a
BVM12	965	E1	E929	n/a	n/a	Fill	Fill of [966]	Firm light blue grey coarse sandy clay and mortar	0.15	0.14	0.4	2.45	n/a	Early post- med	5a	5a
BVM12	966	E1	E929	966	n/a	Cut	Posthole	Posthole	0.15	0.14	0.4	2.45	2.05	Early post- med	5a	5a

BVM12	967	E1	E929	n/a	n/a	Fill	Fill of [968]	Firm mixed dark green brown and light blue grey coarse mortar and silty clay	0.1	0.1	0.2	2.45	n/a	Early post-med	5a	5a
BVM12	968	E1	E929	968	n/a	Cut	Posthole	Posthole	0.24	0.22	n/a	2.45	n/a	Early post-med	5a	5a
BVM12	969	E1	E929	969	n/a	Timber	Timber drain	Very degraded timber drain	0.1	1.04	0.06	2.33	2.23	Post-med	6ai	6a
BVM12	970	E1	E929	n/a	n/a	Fill	Fill of [971]	Soft mid brownish grey silty clay	0.57	0.3	0.28	2.35	n/a	Post-med	6ai	6a
BVM12	971	E1	E929	971	n/a	Cut	Small pit	Small, circular pit	0.57	0.3	0.28	2.35	2.08	Post-med	6ai	6a
BVM12	972	E1	E929	972	n/a	Layer	Occupation surface	Soft mid bluish grey mortar	0.97	1.86	0.08	2.45	2.35	Early post-med	5biv	5b
BVM12	973	E1	E929	973	n/a	Layer	Possible bedding layer	Soft mid bluish grey mortar	0.97	1.86	0.14	2.46	n/a	Early post-med	5biv	5b
BVM12	974	E1	E929	n/a	n/a	Fill	Fill of [975]	Loose mid greyish white coarse clay silt and mortar	0.8	1.3	0.29	2.26	2.22	Early post-med	5biii	5b
BVM12	975	E1	E929	975	n/a	Cut	Pit	Rectangular mortar filled pit	0.8	1.3	0.29	2.26	1.99	Early post-med	5biii	5b
BVM12	976	E1	E929	976	n/a	Masonry	Tile floor	Fragmentary tile floor surface	1.8	0.04	0.05	2.37	2.23	Early post-med	5bii	5b
BVM12	977	E1	E929	n/a	39	Fill	Fill of [978]	Firm mid brownish blue grey silty clay	1.8	1.7	0.27	2.37	2.34	Post-med	6ai	6a
BVM12	978	E1	E929	978	39	Cut	Pit	Large pit	1.8	1.7	0.27	2.37	2.1	Post-med	6ai	6a
BVM12	979	E1	E929	n/a	n/a	Fill	Fill of [980]	Soft light yellowish white mortar	0.34	0.28	0.24	2.24	n/a	Early post-med	5biii	5b
BVM12	980	E1	E929	980	n/a	Cut	Pit	Circular pit	0.34	0.28	0.24	2.24	n/a	Early post-med	5biii	5b
BVM12	981	E1	E929	981	n/a	Layer	Silty clay layer	Firm light-mid bluish grey silty clay	1	2.05	0.11	2.3	2.17	Early post-med	5bii	5b
BVM12	982	E1	E929	982	n/a	Layer	Alluvium	Firm mid-light bluish green clay	1.66	2.3	0.05	2.09	2.06	Early post-med	5a	5a
BVM12	983	E1	E929	n/a	n/a	Fill	Fill of [984]	Firm mid-dark brown grey sandy clay silt	0.9	1.1	0.25	2.09	n/a	Post-med	6ai	6a
BVM12	984	E1	E929	984	n/a	Cut	Pit	Rubbish pit?	0.9	1.1	0.25	2.09	1.88	Post-med	6ai	6a
BVM12	985	E1	E929	985	n/a	Layer	Remnants of a drain	Soft black silty clay with degraded timber	0.2	2.3	0.07	2	1.95	Early post-med	5biii	5b
BVM12	986	E1	E929	986	n/a	Layer	Alluvium	Firm mid bluish grey silty clay	2.58	2.6	0.05	1.95	n/a	Early post-med	5biii	5b
BVM12	987	E1	E929	987	n/a	Layer	Ashy layer	Loose dark bluish brown silty ash	0.3	0.6	0.15	1.99	n/a	Early post-med	5a	5a
BVM12	988	E1	E929	988	58, 59	Layer	Occupation surface	Firm light greenish yellow silty mortar	1	1.97	0.68	2	1.86	Early post-med	5a	5a
BVM12	989	E1	E929	989	n/a	Cut	Posthole	Posthole	0.11	0.13	0.07	1.95	1.88	Early post-med	5a	5a
BVM12	990	E1	E929	990	n/a	Cut	Posthole	Posthole	0.15	0.08	0.14	1.99	1.85	Early post-med	5a	5a
BVM12	991	E1	E929	991	n/a	Cut	Posthole	Posthole	0.17	0.16	0.2	1.98	1.78	Early post-med	5a	5a

BVM12	992	E1	E929	992	n/a	Cut	Posthole	Posthole	0.15	0.12	0.16	1.94	1.78	Early post-med	5a	5a
BVM12	993	E1	E929	993	n/a	Cut	Posthole	Posthole	0.2	0.14	0.18	2	1.82	Early post-med	5a	5a
BVM12	994	E1	E929	n/a	n/a	Fill	Fill of [989]	Soft mid reddish brown degraded wood	0.11	0.13	0.07	1.95	n/a	Early post-med	5a	5a
BVM12	995	E1	E929	n/a	n/a	Fill	Fill of [990]	Soft mid reddish brown degraded wood	0.15	0.08	0.14	1.99	n/a	Early post-med	5a	5a
BVM12	996	E1	E929	n/a	n/a	Fill	Fill of [991]	Soft mid reddish brown degraded wood	0.17	0.16	0.2	1.98	n/a	Early post-med	5a	5a
BVM12	997	E1	E929	n/a	n/a	Fill	Fill of [992]	Soft mid reddish brown degraded wood	0.13	0.12	0.16	1.94	n/a	Early post-med	5a	5a
BVM12	998	E1	E929	n/a	n/a	Fill	Fill of [993]	Soft mid reddish brown degraded wood	0.2	0.14	0.18	2	n/a	Early post-med	5a	5a
BVM12	999	E1	E929	n/a	n/a	Fill	Fill of [1400]	Soft mixed dark brown and dark grey silty organic clay	1.1	1	0.36	2.11	2.03	Early post-med	5a	5a
BVM12	1007	E1		1017			VOID	VOID								
BVM12	1008	E1		1017			VOID	VOID								
BVM12	1009	E1		1017			VOID	VOID								
BVM12	1010	E1		1017			VOID	VOID								
BVM12	1011	E1		1017			VOID	VOID								
BVM12	1012	E1	E929	1012	n/a	Cut	Stakehole	Stakehole	0.09	0.09	0.1	2.09	1.99	Early post-med	5biv	5b
BVM12	1013	E1	E929	1013	n/a	Cut	Posthole	Posthole	0.24	0.13	0.2	2.38	2.18	Early post-med	5biv	5b
BVM12	1014	E1	E929	1014	n/a	Cut	Posthole	Posthole	0.08	0.1	0.2	2.22	2.02	Early post-med	5biv	5b
BVM12	1015	E1	E929	1015	n/a	Cut	Posthole	Posthole	0.13	0.22	0.3	2.37	2.07	Early post-med	5biv	5b
BVM12	1016	E1	E929	1016	n/a	Cut	Posthole	Posthole	0.19	0.18	0.33	2.38	2.05	Early post-med	5biv	5b
BVM12	1017	E1	VOID	1017	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID
BVM12	1018	E1	E929	1018	n/a	Cut	Posthole	Posthole for [1427]	0.22	0.1	1.09	2	0.99	Early post-med	5a	5a
BVM12	1019	E1	E929	1019	n/a	Cut	Posthole	Posthole for [1430]	0.19	0.11	1.05	1.97	0.92	Early post-med	5a	5a
BVM12	1020	E1	E929	1020	n/a	Cut	Posthole	Posthole for [1420]	0.12	0.2	0.62	2.24	1.62	Early post-med	5a	5a
BVM12	1021	E1	E929	1021	n/a	Cut	Posthole	Posthole for [1421]	0.17	0.18	0.5	2.16	1.66	Early post-med	5a	5a
BVM12	1022	E1	E929	1022	n/a	Cut	Posthole	Posthole for [1422]	0.18	0.16	1.18	1.99	0.81	Early post-med	5a	5a
BVM12	1023	E1	E929	1023	n/a	Cut	Posthole	Posthole for [1458]	0.13	0.14	1.57	2.06	0.49	Early post-med	5a	5a

BVM12	1024	E1	E929	1024	n/a	Cut	Posthole	Posthole for [1459]	0.19	0.2	1.69	2.06	0.37	Early post-med	5a	5a
BVM12	1025	E1	E929	1025	n/a	Cut	Posthole	Posthole for [1460]	0.06	0.12	1.31	2.09	0.78	Early post-med	5biv	5b
BVM12	1026	E1	E929	1026	n/a	Cut	Posthole	Posthole for [1461]	0.16	0.18	1.82	2.08	0.26	Early post-med	5biv	5b
BVM12	1027	E1	E929	1027	n/a	Cut	Posthole	Posthole for [1462]	0.19	0.16	2.05	2.08	0.03	Early post-med	5biv	5b
BVM12	1028	E1	E929	1028	61	Cut	Posthole	Posthole for [1470]	0.25	0.13	n/a	1.58	n/a	Medieval	4b	4b
BVM12	1029	E1	E929	1029	61	Cut	Posthole	Posthole for [1469]	0.3	0.13	n/a	1.56	n/a	Medieval	4b	4b
BVM12	1030	E1	E929	1030	58, 59	Cut	Construction cut for [911]	Cut for timber structure	0.86	1.64	0.78	1.6	0.82	Medieval	4b	4b
BVM12	1031	E1	E929	n/a	59	Fill	Fill of [1030]	Fairly firm dark grey brown clay silt	n/a	0.8	0.84	1.65	1.45	Medieval	4b	4b
BVM12	1032	E1	E929	n/a	59	Fill	Fill of [1030]	Firm mid grey brown silty clay	n/a	0.6	0.45	1.41	1.25	Medieval	4b	4b
BVM12	1033	E1	E929	n/a	58, 59	Fill	Fill of [1030]	Firm dark-mid grey brown slightly silty clay	n/a	0.8	0.47	1.27	1.2	Medieval	4b	4b
BVM12	1400	E1	E929	1400	n/a	Cut	Pit	Sub-circular pit	1.1	1	0.4	2.11	1.52	Early post-med	5a	5a
BVM12	1401	E1	E929	n/a	n/a	Fill	Fill of [1400]	Soft mid yellowish brown clay	1.1	1	0.16	1.68	n/a	Early post-med	5a	5a
BVM12	1402	E1	E929	1402	58, 59	Cut	Pit	Sub-circular pit	0.6	2	0.64	1.96	1.32	Early post-med	5a	5a
BVM12	1403	E1	E929	n/a	n/a	Fill	Fill of [1404]	Soft dark brown organic clay silt	1.1	1.6	0.32	1.88	1.82	Early post-med	5biii	5b
BVM12	1404	E1	E929	1404	n/a	Cut	Pit	Sub-circular pit	1.1	1.6	0.32	1.88	1.56	Early post-med	5biii	5b
BVM12	1405	E1	E929	1405	n/a	Layer	Dumped deposit	Firm dark grey silty clay	2.3	2.5	0.2	1.92	1.88	Early post-med	5biii	5b
BVM12	1406	E1	E929	1406	n/a	Layer	Peat/silt layer	Fairly firm dark brown peaty silty clay	2.3	2.48	0.14	1.83	1.78	Early post-med	5biii	5b
BVM12	1407	E1	E929	1407	n/a	Masonry	Wall foundation	N-S aligned wall foundation	1.8	0.34	0.41	1.87	1.61	Early post-med	5bii	5b
BVM12	1408	E1	E929	1408	n/a	Layer	Clay floor slab	Firm light yellowish brown clay	1.6	2.1	0.13	2.1	2.01	Early post-med	5a	5a
BVM12	1409	E1	E929	n/a	n/a	Fill	Fill within [1433]	Fairly firm light yellowish brown clay with timber inclusions	0.05	2	0.55	1.57	1.47	Early post-med	5bi	5b
BVM12	1410	E1	E929	n/a	n/a	Layer	Clay floor slab	Firm mid grey brown clay	1.8	0.34	n/a	1.74	n/a	Early post-med	5bii	5b
BVM12	1411	E1	E929	n/a	n/a	Fill	Fill of [1412]	Fairly firm mid-dark grey clay	1.7	0.4	0.21	1.87	1.75	Early post-med	5bii	5b
BVM12	1412	E1	E929	1412	n/a	Cut	Construction cut	Construction cut for [1407]	1.9	0.4	0.3	1.82	1.47	Early post-med	5bii	5b
BVM12	1413	E1	E929	1413	n/a	Timber	Post	Sub-circular vertical post	0.16	0.14	1.22	2.17	n/a	Early post-med	5a	5a

BVM12	1414	E1	E929	1414	n/a	Timber	Post	Sub-circular vertical post	0.13	0.11	1.25	2.04	n/a	Early post-med	5a	5a
BVM12	1415	E1	E929	1415	61	Timber	Beam	Horizontal beam	0.22	0.73	0.17	2	1.94	Early post-med	5a	5a
BVM12	1416	E1	E929	n/a	61	Fill	Backfill around [1415] in cut [1417]	Soft mid grey brown clay silt	0.6	1.1	0.3	1.93	n/a	Early post-med	5a	5a
BVM12	1417	E1	E929	1417	61	Cut	Cut for [1415]	E-W aligned construction cut	0.6	1.1	0.3	1.93	1.68	Early post-med	5a	5a
BVM12	1418	E1	E929	1418	n/a	Timber	Beam	N-S aligned crosspiece?> beneath [1415]	0.57	0.55	0.09	1.93	n/a	Early post-med	5a	5a
BVM12	1419	E1	E929	1419	n/a	Timber	Post	Squared vertical post	0.28	0.16	0.8	2.23	n/a	Early post-med	5a	5a
BVM12	1420	E1	E929	1420	n/a	Timber	Post	Rectangular vertical post	0.05	0.18	0.62	2.24	n/a	Early post-med	5a	5a
BVM12	1421	E1	E929	1421	n/a	Timber	Post	Rectangular vertical post	0.13	0.18	0.5	2.16	n/a	Early post-med	5a	5a
BVM12	1422	E1	E929	1422	n/a	Timber	Post	Squared vertical post	0.2	0.19	1.18	1.99	n/a	Early post-med	5a	5a
BVM12	1423	E1	E929	1423	n/a	Layer	Redeposited alluvium	Fairly firm mid bluish grey silty clay	2.58	2.6	0.1	2.1	n/a	Early post-med	5biii	5b
BVM12	1424	E1	E929	1424	61	Layer	Clay levelling layer	Firm mid grey brown silty clay	1.6	2.2	0.2	1.96	1.93	Medieval	4b	4b
BVM12	1425	E1	E929	n/a	n/a	Fill	Fill of [1426]	Firm mid yellowish brown sandy mortar	0.45	0.46	0.17	1.95	n/a	Early post-med	5a	5a
BVM12	1426	E1	E929	1426	n/a	Pit	Truncated pit	Small rounded pit	0.45	0.46	0.17	1.95	1.78	Early post-med	5a	5a
BVM12	1427	E1	E929	1427	n/a	Timber	Post	Rectangular vertical post	0.17	0.11	1.09	2	1.88	Early post-med	5a	5a
BVM12	1428	E1	E929	n/a	n/a	Fill	Fill of [1429]	Soft light brown clay	0.5	0.7	0.33	1.93	n/a	Early post-med	5a	5a
BVM12	1429	E1	E929	1429	n/a	Cut	Small pit	Sub-circular pit	0.5	0.7	0.33	1.93	1.6	Early post-med	5a	5a
BVM12	1430	E1	E929	1430	n/a	Timber	Post	Rectangular vertical post	0.14	0.11	1.05	1.99	1.85	Early post-med	5a	5a
BVM12	1431	E1	E929	1431	n/a	Timber	Post	Vertical sub-rectangular post	0.24	0.1	1.03	1.86	n/a	Early post-med	5a	5a
BVM12	1432	E1	E929	1432	59	Timber	Post	Rectangular vertical post	0.23	0.15	1.06	2.01	n/a	Medieval	4b	4b
BVM12	1433	E1	E929	1433	39, 61	Cut	Channel	E-W aligned channel	2.16	2.7	n/a	1.97	0.5	Early post-med	5a	5a
BVM12	1434	E1	E929	1434	60, 61	Fill	Fill of [1433]	Soft dark bluish grey clay silt	2.62	2.6	0.26	1.71	1.66	Early post-med	5bii	5b
BVM12	1435	E1	E929	1435	59, 61	Layer	Clay slab	Compact dark grey clay	2.24	2.26	0.1	1.78	1.73	Medieval	4b	4b

BVM12	1436	E1	E929	1436	n/a	Timber	Beam	E-W aligned horizontal plank	0.44	0.31	0.03	1.59	1.55	Early post-med	5bii	5b
BVM12	1437	E1	E929	1437	n/a	Timber	Beam	NE-SW aligned horizontal plank	0.2	0.9	0.025	1.59	1.55	Early post-med	5bii	5b
BVM12	1438	E1	E929	1438	n/a	Timber	Beam	E-W aligned horizontal plank	0.21	0.65	0.025	1.59	1.53	Early post-med	5bii	5b
BVM12	1439	E1	E929	n/a	n/a	Fill	Fill of [1433]	Firm light grey silty clay	2.8	2.3	0.08	1.28	1.24	Early post-med	5bii	5b
BVM12	1440	E1	E929	n/a	61	Fill	Fill of [1433]	Fairly firm dark grey silty clay	2.8	2.3	0.08	1.26	1.16	Early post-med	5bii	5b
BVM12	1441	E1	E929	1441	60, 61	Fill	Fill of [1433]	Fairly firm dark greyish brown silt clay	2.8	2.3	0.21	1.27	1.04	Early post-med	5a	5a
BVM12	1442	E1	E929	1442	n/a	Timber	Post	Horizontal circular post	0.14	0.14	1.45	1.22	1.17	Early post-med	5bii	5b
BVM12	1443	E1	E929	1443	n/a	Timber	Beam	E-W aligned horizontal plank	0.18	0.93	0.02	1.23	n/a	Early post-med	5bii	5b
BVM12	1444	E1	E929	1433	60, 61	Fill	Fill of [1433]	Fairly firm dark greyish brown silt clay	2.8	2.3	n/a	1.06	0.95	Early post-med	5a	5a
BVM12	1445	E1	E929	1445	61	Structure	Revetment	E-W aligned wattle revetment	2.56	0.5	0.99	2.03	1.04	Early post-med	5bi	5b
BVM12	1446	E1	E929	1446	54	Timber	Beam	E-W aligned horizontal plank	0.8	0.19	0.05	1.56	n/a	Early post-med	5bi	5b
BVM12	1447	E1	E929	1447	54	Timber	Post	Rounded vertical timber post	0.096	0.096	1.33	2.03	n/a	Early post-med	5bi	5b
BVM12	1448	E1	E929	1448	54	Timber	Post	Circular vertical post	0.09	0.09	0.93	1.63	n/a	Early post-med	5bi	5b
BVM12	1449	E1	E929	1449	n/a	Timber	Post	Rounded vertical timber post	0.12	0.12	0.9	1.5	n/a	Early post-med	5bi	5b
BVM12	1450	E1	E929	1450	n/a	Timber	Post	Rounded vertical timber post	0.08	0.08	0.9	1.49	n/a	Early post-med	5bi	5b
BVM12	1451	E1	E929	1451	54	Timber	Post	Circular vertical post	0.1	0.1	1.2	1.59	n/a	Early post-med	5bi	5b
BVM12	1452	E1	E929	1452	54	Timber	Post	Squared vertical post	0.16	0.12	1.1	1.57	n/a	Early post-med	5bi	5b
BVM12	1453	E1	E929	1453	n/a	Timber	Post	Circular vertical post	0.07	0.07	0.67	1.58	n/a	Early post-med	5bi	5b
BVM12	1454	E1	E929	1454	54	Timber	Wattle panel	Western panel of revetment [1445]	0.24	0.65	0.45	1.24	1	Early post-med	5bi	5b
BVM12	1455	E1	E929	1455	54	Timber	Wattle panel	Central panel of revetment [1445]	0.2	1.63	0.55	1.4	1.04	Early post-med	5bi	5b
BVM12	1456	E1	E929	n/a	54	Timber	Wattle panel	Eastern panel of revetment [1445]	0.2	0.14	0.08	1.1	1.02	Early post-med	5bi	5b
BVM12	1457	E1	E929	1457	58, 59	Layer	Clay layer	Firm mid-light bluish grey silty clay	2.6	2.4	0.83	1.57	1.49	Medieval	4b	4b
BVM12	1458	E1	E929	1458	n/a	Timber	Post	Squared vertical post	0.14	0.12	1.04	1.53	n/a	Early post-med	5a	5a

BVM12	1459	E1	E929	1459	n/a	Timber	Post	Squared vertical post	0.23	0.18	1.2	1.57	n/a	Early post-med	5a	5a
BVM12	1460	E1	E929	1460	n/a	Timber	Post	Rectangular vertical post	0.18	0.09	0.66 1	1.44	n/a	Early post-med	5biv	5b
BVM12	1461	E1	E929	1461	n/a	Timber	Post	Quarter circle vertical post	0.14	0.14	1.13	1.39	n/a	Early post-med	5biv	5b
BVM12	1462	E1	E929	1462	n/a	Timber	Post	Squared vertical post	0.16	0.16	1.52	1.55	n/a	Early post-med	5biv	5b
BVM12	1463	E1	E929	1463	n/a	Timber	Post	Rectangular vertical post	0.17	0.14	1.28	1.53	n/a	Early post-med	5bi	5b
BVM12	1464	E1	E929	1464	n/a	Timber	Post	Circular vertical post	0.2	0.2	1.95	1.29	n/a	Early post-med	5bi	5b
BVM12	1465	E1	E929	1465	n/a	Timber	Post	Circular vertical post	0.12	0.12	1.6	1.24	n/a	Early post-med	5bi	5b
BVM12	1466	E1	E929	1466	n/a	Timber	Post	Rounded vertical timber post	0.15	0.15	1.9	1.27	n/a	Early post-med	5bi	5b
BVM12	1467	E1	E929	1467	n/a	Timber	Post	Rounded vertical timber post	0.19	0.19	1.73	1.25	n/a	Early post-med	5bi	5b
BVM12	1468	E1	E929	1468	58, 59	Timber	Post	Rectangular vertical post	0.16	0.06	1.21	1.73	n/a	Medieval	4b	4b
BVM12	1469	E1	E929	1469	61	Timber	Post	Rectangular vertical post	0.26	0.11	1.54	1.82	n/a	Medieval	4b	4b
BVM12	1470	E1	E929	1470	61	Timber	Post	Rectangular vertical post	0.25	0.16	0.9	1.59	n/a	Medieval	4b	4b
BVM12	1471	E1	E929	1471	58, 59	Timber	Post	Squared vertical post	0.08	0.08	0.68	1	n/a	Medieval	4b	4b
BVM12	1472	E1	E929	1472	n/a	Timber	Post	Rounded vertical timber post	0.07	0.05	0.86 8	1.17	n/a	Medieval	4b	4b
BVM12	1473	E1	E929	1473	n/a	Timber	Post	Circular vertical post	0.16	0.17	2.06	1.31	n/a	Medieval	4b	4b
BVM12	1474	E1	E929	1474	n/a	Timber	Post	Circular vertical post	0.1	0.1	n/a	0.96	n/a	Medieval	4b	4b
BVM12	1475	E1	E929	1475	n/a	Timber	Post	Circular vertical post	0.17	0.17	0.65	1.22	n/a	Medieval	4b	4b
BVM12	1476	E1	E929	1476	n/a	Timber	Post	Rounded vertical timber post	0.1	0.1	0.69	0.78	n/a	Early post-med	5bi	5b
BVM12	1477	E1	E929	1477	n/a	Timber	Post	Circular vertical post	0.12	0.1	n/a	1.04	n/a	Early post-med	5bi	5b
BVM12	1478	E1	E929				VOID	VOID								
BVM12	1479	E1	E929	n/a	60	Timber	Post	Squared vertical post	n/a	0.09	0.49	1.43	n/a	Early post-med	5a	5a
BVM12	1480	E1	E929				VOID	VOID								
BVM12	1481	E1	E929				VOID	VOID								
BVM12	1482	E1	E929	n/a	60	Timber	Post	Squared vertical post	n/a	0.08	0.33	1.53	n/a	Early post-med	5a	5a
BVM12	1483	E1	E929	1483	58	Timber	Post	Rectangular vertical post	0.1	0.17	1.3	1.92	n/a	Early post-med	5a	5a
BVM12	1484	E1	E929	1484	58	Timber	Beam	E-W aligned horizontal plank	0.27	0.82	0.05	1.58	1.16	Early post-med	5a	5a

BVM12	1485	E1	E929	1485	58	Timber	Beam	N-S aligned horizontal plank	0.28	0.24	0.03 5	1.84	n/a	Early post-med	5a	5a
BVM12	1486	E1	E929	1486	58	Timber	Beam	N-S aligned horizontal plank	0.25	0.2	0.02 2	1.57	n/a	Early post-med	5a	5a
BVM12	1487	E1	E929	n/a	58	Timber	Beam	N-S aligned horizontal plank	0.3	0.16	0.02	1.35	n/a	Early post-med	5a	5a
BVM12	1488	E1	E929	1488	58	Timber	Beam	E-W aligned horizontal plank	0.5	0.2	0.02	1.38	1.25	Early post-med	5a	5a
BVM12	1489	E1	E929	1489	58	Timber	Stake	Rectangular vertical stake	0.03	0.09	n/a	1.2	n/a	Medieval	4b	4b
BVM12	1490	E1	E929	n/a	n/a	Timber	Stake	Circular diagonal stake	0.09	0.12	0.9	n/a	n/a	Early post-med	5a	5a
BVM12	1491	E1	E929	1491	60	Timber	Stake	Rectangular vertical stake	0.05	0.05	0.49	1.69	n/a	Early post-med	5bi	5b
BVM12	1492	E1	E929	1492	60	Timber	Stake	Circular vertical stake	0.11	0.11	0.88	1.69	n/a	Early post-med	5bi	5b
BVM12	1493	E1	E929	1493	n/a	Timber	Stake	Circular vertical stake	0.11	0.11	0.44	1.51	n/a	Early post-med	5bi	5b
BVM12	1494	E1	E929	1494	n/a	Timber	Beam	Thin E-W aligned horizontal plank	0.31	0.02	0.7	1.31	n/a	Early post-med	5bi	5b
BVM12	1495	E1	E929	1495	61	Layer	Foreshore deposit	Loose very dark brown grey silty clay sand and coarse grit	1.8	2.4	0.2	0.85	0.8	Medieval	4b	4b
BVM12	1496	E1	E929	1496	59,6 1	Layer	Alluvium	Firm mid blue grey sandy silt clay.	2.4	2.4	0.4	0.84	0.64	Medieval	4b	4b
BVM12	247	E2 (N)	E930	247	46	Masonry	E-W brick wall	Reddish unfrogged bricks, English bond, yellowish brown mortar, truncated	0.24	0.24	0.27	3.36	2.95	Post-med	6bii	6b
BVM12	248	E2 (N)	E930	n/a	n/a	Fill	Fill of construction cut [250]	Loose, dark grey brown sandy clay silt (10:30:60), occa cbm / oyster / pot / glass / CBM / bone, freq mortar frags/flecks.	0.7	0.6	0.55	2.86	n/a	Post-med	6bii	6b
BVM12	249	E2 (N)	E930	250	n/a	Masonry	possible post pad	Red brick, coursed/vaulted, re-used section of culvert?, light grey-yellow coarse sandy lime mortar	0.57	0.3	0.25	2.95	2.81	Post-med	6bii	6b
BVM12	250	E2 (N)	E930	250	n/a	Cut	Construction cut	Sub-square cut, sharp top, vertical sides, undercut to south, sharp base break of sides to flat base	0.7	0.6	0.55	2.95	2.47	Post-med	6bii	6b
BVM12	251	E2 (N)	E930	n/a	n/a	Fill	Upper fill of pit [252]	Loose dark greyish brown silty-sandy-clay (20:40:40), occ pot/CBM/ctp/bone	0.8	1.9	0.4	2.94	n/a	Post-med	6bii	6b
BVM12	252	E2 (N)	E930	252	n/a	Cut	Pit	Semi-circular/ovoid, sharp upper break of slope, straight sides to NW and SE, elsewhere moderate slope of sides to flat base	0.7	2	0.4	2.89	2.48	Post-med	6bii	6b
BVM12	253	E2 (N)	E930	n/a	46	Fill	Fill of construction cut [254]	Moderate darkish grey silt sand mortar (50:25:25), occa ctp/pot	0.4	0.62	0.2	2.95	n/a	Post-med	6bii	6b
BVM12	254	E2 (N)	E930	254	46	Cut	Construction cut for wall [799]	E-W Linear cut, steep/stepped sides to concave base	0.4	0.66	0.2	2.95	2.75	Post-med	6bii	6b



BVM12	255	E2 (N)	E930	n/a	n/a	Fill	Primary fill of [252]	Loose mid brown grey sandy clay silt (10:20:70) freq cbm frags/flecks, occ oyster/charcoal flecks/slate/coal frags/bone	0.95	1.9	0.4	2.93	n/a	Post-med	6bii	6b
BVM12	256	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [257]	Mod compact, dark greyish brown silt sand (60:40), mod oyster shell, freq pot/bone/glass, occ cbm frags	0.57	0.56	0.26	2.95	n/a	Post-med	6bii	6b
BVM12	257	E2 (N)	E930	257	n/a	Cut	Pit?/Linear?	E-W Linear cut, concave sides and base	0.6	0.56	0.26	2.91	2.69	Post-med	6bii	6b
BVM12	258	E2 (N)	E930	258	n/a	Masonry	NE-SW wall stub	Red brick, random coursing, bonded with pale cream lime mortar	0.22	1.22	0.2	2.7	2.52	Post-med	6bi	6a
BVM12	259	E2 (N)	E930	n/a	n/a	Fill	Upper fill of pit [262]	Firm, light orange grey coarse sandy clay (20:80), freq small sub-rnd flints/gravel, mod cbm flecks, occ charcoal/mortar flecks	0.25	0.55	0.2	2.6	n/a	Post-med	6bii	6b
BVM12	260	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [262]	Loose, light brown grey sandy silt and mortar (10:30:60), freq small sub-rnd flint/gravel/cbm frags/rubble, occa pot/CTP/bone	0.35	0.5	0.6	2.5	n/a	Post-med	6bii	6b
BVM12	261	E2 (N)	E930	n/a	n/a	Fill	Primary fill of pit [262]	Firm mid dark brown grey sandy clay silt (10:40:50), freq cbm/mortar flecks, occ charcoal flecks/CBM frags/pot/CTP/bone, v occa slate frags	0.3	0.35	0.2	2.45	n/a	Post-med	6bii	6b
BVM12	262	E2 (N)	E930	262	n/a	Cut	Pit	Semi-circular, sharp break at top with straight near vertical sides to west, truncated to south and east, flat base	0.35	1	0.26	2.6	2.34	Post-med	6bii	6b
BVM12	263	E2 (N)	E930	263	46	Layer	Dump layer	Friable dark brown grey sandy clay silt (10:20:70), freq cbm rubble/mortar frags/flecks, occa small sub-rnd flint/charcoal flecks/pot/CTP, v occa rare slate frags	1	0.5	0.07	3.05	n/a	Post-med	6bii	6b
BVM12	264	E2 (N)	E930	264	46; 47	Masonry	Cobbled floor surface	Multiple materials: reigate stone, halved bricks, large cbm frags, tile (re-used materials). Single course, uncoursed/random	1	1.7	0.08	2.64	2.53	Post-med	6bii	6b
BVM12	265	E2 (N)	E930	265	46; 47	Layer	Bedding layer for floor [264]	Compact, dark brown grey coarse sandy- clay-silt (20:30:50), freq cbm/mortar/charcoal flecks, occa metal/pot/glass/bone	1	1.44	0.1	2.55	2.45	Post-med	6bii	6b
BVM12	266	E2 (N)	E930	266	46; 47	Cut	Construction cut for ctp kiln/floor [264]	Squared cut, steep/near vertical sides to flattish base gently sloping to the east	1.1	1.7	0.6	2.8	2.45	Post-med	6bii	6b
BVM12	267	E2 (N)	E930	267	n/a	Layer	Dump layer	Loose, dark grey-brown silty sand (70:30), occa cbm/pot/oyster	0.8	0.6	0.1	2.7	2.59	Post-med	6bii	6b
BVM12	268	E2 (N)	E930	n/a	46	Fill	Fill of pit [269]	Friable dark brown-grey sandy silt clay (10:20:70) with stiff yellow brown silt clay lenses, freq cbm/rubble/mortar, occa pot/glass/CTP slate frags	1.1	1	0.4	2.72	n/a	Post-med	6bii	6b

BVM12	269	E2 (N)	E930	269	46	Cut	Pit	Sub-circular, sharp top break to straight near vertical sides to south, elsewhere moderate sides, to flat base	1	1	0.4	2.78	2.41	Post-med	6bii	6b
BVM12	270	E2 (N)	E930	n/a	n/a	Fill	Fill of construction cut [271]	Loose dark brown-grey coarse sandy-clay-silt, freq cbm/mortar frags/flecks, occa oyster/pot/bone	0.3	1.6	0.23	2.68	n/a	Post-med	6bii	6a
BVM12	271	E2 (N)	E930	271	n/a	Cut	Construction cut for wall [258]	Linear NE-SW 'L' shaped cut, vertical sides to concave base	0.3	1.2	0.23	2.68	2.45	Post-med	6bi	6a
BVM12	272	E2 (N)	E930	272	46	Layer	Mortar floor	Compact, light yellowish grey mortar (sandy lime mortar) with dark grey-brown sandy silt lenses, no inc	0.64	0.55	0.03	2.78	2.75	Post-med	6bi	6a
BVM12	273	E2 (N)	E930	273	47	Layer	Dump layer	Mod compact, dark grey-brown silty sand (60:40), occ pot/glass/metal/CBM/bone/CTP	1.54	1.14	0.11	2.74	2.63	Post-med	6bi	6a
BVM12	274	E2 (N)	E930	274	46	Layer	Make-up layer	Friable mid brown-grey sandy-clay-silt (10:20:70), occ cbm/charcoal, freq mortar frags/flecks	0.7	0.5	0.08	2.66	n/a	Post-med	6bi	6a
BVM12	275	E2 (N)	E930	n/a	n/a	Fill	Fill of construction cut [277]	Friable dark brown grey sandy clay silt (10:30:60), freq mortar/cbm frags/flecks, occa pot/bone	1.2	0.5	0.4	2.53	2.27	Post-med	6bi	6a
BVM12	276	E2 (N)	E930	276	n/a	Masonry	N-S wall	Reddish unfrogged bricks, English bond, creamy mortar with flecks of chalk	0.9	0.28	0.35	2.62	2.57	Post-med	6bi	6a
BVM12	277	E2 (N)	E930	277	n/a	Cut	Construction cut for wall [276]	N-S Linear cut, terminates to north and south, sharp break at top, vertical sides, steeper to the east, to flat base	1.32	0.5	0.26	2.53	2.27	Post-med	6bi	6a
BVM12	278	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [279]	Firm, light grey orange brown sandy-clay (20:80), occ cbm/oyster/CTP/bone	0.45	0.5	0.2	2.49	n/a	Post-med	6bi	6a
BVM12	279	E2 (N)	E930	279	n/a	Cut	Pit	Sub-squared cut, sharp top break, vertical sides with break at base to flattish base, deepening to the east	0.5	0.5	0.2	2.49	2.27	Post-med	6bi	6a
BVM12	280	E2 (N)	E930	280	48	Layer	Garden soil	Friable/loose dark brown grey sandy-clay-silt (20:20:60), freq cbm/mortar/oyster, occa pot/glass/slag/CTP/bone	1.4	2.4	0.14	2.5	n/a	Post-med	6bi	6a
BVM12	281	E2 (N)	E930	281	n/a	Layer	Dump layer	Firm dark brown grey sandy clay silt (10:30:60), freq cbm frags/mortar, occa pot/CTP	1.52	0.82	0.09	2.5	2.41	Post-med	6bi	6a
BVM12	282	E2 (N)	E930	282	n/a	Layer	Dump layer	Friable dark grey brown sandy clay silt (10:20:70), freq cbm/mortar, occ oyster/small sub-rnd flint/pot/bone	1.2	0.8	0.08	2.47	2.39	Post-med	6bi	6a
BVM12	283	E2 (N)	E930	283	47	Masonry	N-S Curvilinear wall	Red brick, randomly coursed, pale yellow grey sandy lime mortar	2	0.22	0.34	2.62	2.28	Post-med	6bi	6a
BVM12	284	E2 (N)	E930	284	47	Fill	Capping fill of pit [288]	Firm mid yellow brown sandy clay/rubble (50:50), freq cbm/mortar, bricks laid at top of fill to cap pit	0.4	0.6	0.03	2.49	n/a	Post-med	6bi	6a

BVM12	285	E2 (N)	E930	285	50	Structure	E-W Drain	Consists of brick sides [294] and brick floor [295]	0.6	0.84	0.18	2.36	n/a	Post-med	6bi	6a
BVM12	286	E2 (N)	E930	283	47; 50	Fill	Fill of construction cut [284]	Loose dark grey brown silt clay/rubble (50:50), freq cbm frags/rubble, occa CTP	1.7	0.3	1	2.25	n/a	Post-med	6bi	6a
BVM12	287	E2 (N)	E930	283	47; 50	Cut	Construction cut for wall [283]	Curvilinear cut, vertical sides, base not excavated	2	0.6	1	2.62	n/a	Post-med	6bi	6a
BVM12	288	E2 (N)	E930	288	47	Cut	Pit - uncertain function	Sub-circular cut, sharp break at top, straight sides to the east, stepped to west, base not excavated	0.4	0.8	0.5	2.43	1.95	Post-med	6bi	6a
BVM12	289	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [290]	Loose dark brown grey sandy clay silt (20:20:60), freq cbm/mortar, mod oyster/charcoal flecks, occ small sub-rnd flint/pot/metal/CTP/bone, v occa slate frags.	0.5	0.6	0.25	2.45	2.2	Post-med	6bi	6a
BVM12	290	E2 (N)	E930	290	n/a	Cut	Pit - uncertain function	Sub-circular cut, moderate break at top, straight sides to north, truncated to east/west/south, base unknown	0.5	0.6	0.25	2.45	2.2	Post-med	6bi	6a
BVM12	291	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [292]	Firm light blue-grey sandy silt clay with dark brown-grey sand-clay-silt lenses/pockets, freq cbm/mortar flecks, occ oyster/pot/CTP	0.35	0.45	0.25	2.45	n/a	Post-med	6bi	6a
BVM12	292	E2 (N)	E930	292	n/a	Cut	Pit	Uncertain shape, sides uncertain truncated on three sides, seen in section, sides uncertain to flat base	0.2	0.6	0.25	2.45	2.2	Post-med	6bi	6a
BVM12	293	E2 (N)	E930	293	n/a	Masonry	Tiled floor	Tiled floor, single course, unbonded - one tile decorated, random coursing	0.38	0.4	0.03	2.66	n/a	Early post-med	5b	5b
BVM12	294	E2 (N)	E930	285	n/a	Masonry	E-W wall of brick drain [285]	Red brick & tile, single row of bricks on edge over pan tile, pale grey white sandy lime mortar	0.17	0.88	0.18	2.51	2.31	Post-med	6bi	6a
BVM12	295	E2 (N)	E930	285	n/a	Masonry	Floor of brick drain [285]	Brick, on edge, coarse light grey white sandy lime mortar, regular courses (mostly stretcher on edge)	0.5	0.9	0.1	2.34	n/a	Post-med	6bi	6a
BVM12	296	E2 (N)	E930	296	n/a	Cut	Construction cut for drain [285]	E-W Linear cut - truncated, mod steep sides to concave base	0.6	0.9	0.04	2.25	2.21	Post-med	6bi	6a
BVM12	297	E2 (N)	E930	297	46	Fill	Bedding for tile floor [298]	Friable mid brown orange silty sand (30:70), mod mortar frags.	0.4	0.55	0.06	2.63	n/a	Early post-med	5b	5b
BVM12	298	E2 (N)	E930	298	46	Cut	Construction cut for floor [293]	E-W Linear cut, sharp break at top, straight near vertical sides, flat base	0.4	0.6	0.06	2.67	2.61	Early post-med	5b	5b
BVM12	299	E2 (N)	E930	299	46	Layer	Dump layer	Firm light yellow grey sandy silt clay (10:30:60), freq mortar/cbm	0.4	0.6	0.05	2.62	n/a	Early post-med	5b	5b

BVM12	780	E2 (N)	E930	780	47; 48	Layer	Dump layer	Friable mid grey-brown silty-clay, mod cbm, occ pot/ctp/bone	2.14	2.74	0.2	3.2	n/a	Post-med	6bii	6b
BVM12	781	E2 (N)	E930	n/a	n/a	Layer	Demo	Loose greyish brown silty-sand (60:40), occa cbm/ctp/bone	0.7	1.4	0.04	2.9	n/a	Post-med	6bii	6b
BVM12	782	E2 (N)	E930	n/a	47; 48	Fill	Fill of pit [783]	Loose dark brown grey coarse sandy silt (30:70), freq cbm/oyster/mortar flecks/charcoal flecks/frags, occ chalk frags/pot/glass/metal/bone	1.34	1.06	0.6	3	n/a	Post-med	6bii	6b
BVM12	783	E2 (N)	E930	783	47	Cut	Pit	Circular pit, sharp top break of slope, near vertical sides, truncated base	1.34	1.06	0.6	2.95	2.34	Post-med	6bii	6b
BVM12	784	E2 (N)	E930	n/a	n/a	Layer	Demo	Loose whitish-grey silt-sand mortar, freq cbm frags, occ ctp/lg ctp mould frags	0.16	1.4	0.3	2.89	n/a	Post-med	6bii	6b
BVM12	785	E2 (N)	E930	n/a	47	Layer	Demo	Loose whitish-grey silty-sand (40:60), freq brick frags, occ ctp mould frags	0.34	0.75	0.3	2.85	n/a	Post-med	6bii	6b
BVM12	786	E2 (N)	E930	786	46; 47	Masonry	Brick lining of possible ctp kiln	Reddish unfrogged brick, English bond seven courses, bonded with greyish mortar with occ chalk/charcoal frags, NE- SW aligned with NS-SE return to east	1.1	1.72	0.52	3.06	2.84	Post-med	6bii	6b
BVM12	787	E2 (N)	E930	787	47	Masonry	Brick lining of possible ctp kiln	Reddish/yellow unfrogged, English bond five courses, creamy mortar charcoal flecks chalk flecks, NE-SW aligned with NW-SE return to east	0.6	1.46	0.47	2.86	2.82	Post-med	6bii	6b
BVM12	788	E2 (N)	E930	783	48	Masonry	Corner of NE-SW wall	Red brick, randomly coursed, mid yellow grey sandy lime mortar	0.22	0.7	0.7	2.8	2.34	Post-med	6bii	6b
BVM12	789	E2 (N)	E930	789	n/a	Layer	Dump layer	Loose dark greyish brown silt-sand (60:40), occ tile frags/glass/pot/oyster shell/lead/bone	0.94	1.28	0.18	2.93	n/a	Post-med	6bii	6b
BVM12	790	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [791]	Friable dark brown grey sandy clay silt (10:20:70), freq mortar flecks/cbm frags, occ patches of mortar/sm sub-rnd stones/oyster shell frags/glass/bone	0.8	0.9	0.55	2.93	n/a	Post-med	6bii	6b
BVM12	791	E2 (N)	E930	791	n/a	Cut	Pit	Sub-squared pit, sharp break at top to vertical sides at south, near vertical sides to west, truncated base	0.8	0.9	0.55	2.93	2.53	Post-med	6bii	6b
BVM12	792	E2 (N)	E930	n/a	n/a	Fill	Fill of pit [793]	Firm mid-grey orange sandy clay (10:90), occ cbm/oyster/pot/bone, freq mortar flecks.	0.52	0.62	0.15	3.04	n/a	Post-med	6bii	6b
BVM12	793	E2 (N)	E930	793	n/a	Cut	Pit	Sub-rectangular pit, sharp break at top to vertical sides east/west/south, convex to north, convex base east/west/south, imperceptible to north	0.52	0.62	0.15	3.04	2.96	Post-med	6bii	6b
BVM12	794	E2 (N)	E930	794	46	Layer	Dump layer	Loose dark greyish brown silty clay (60:40), occ cbm/mortar flecks/pot/glass/CTP/bone	0.56	0.48	0.3	3.12	3.02	Post-med	6bii	6b
BVM12	795	E2 (N)	E930	n/a	n/a	Fill	Fill of construction	Friable mid brown grey sandy clay silt (10:20:70), freq cbm fragments/rubble, occ	0.6	1.2	0.2	2.94	n/a	Post-med	6bii	6b

							cut [796]	oyster/sub-rnd flint/charcoal frags/flecks/slate frags/pot/glass/metal/CTP/bone								
BVM12	796	E2 (N)	E930	796	n/a	Cut	Construction cut for wall [797]	E-W linear cut, terminates to west, sharp break at top, concave sides and base	0.6	1.4	0.2	2.94	2.74	Post-med	6bii	6b
BVM12	797	E2 (N)	E930	797	n/a	Masonry	E-W wall possible beam pad	Red bricks, randomly coursed, pale grey coarse sandy lime mortar	0.22	1.2	0.3	3.01	2.71	Post-med	6bii	6b
BVM12	798	E2 (N)	E930	n/a	n/a	Fill	Rubble fill of construction cut [796]	Friable-compact mid brown grey sandy clay silt and rubble, freq cbm-brick frags; rubble base of wall [796]	0.4	1.2	0.05	2.8	n/a	Post-med	6bii	6b
BVM12	799	E2 (N)	E930	799	46	Masonry	E-W Wall	Reddish unfrogged brick, english bond, dark grey silty sand mortar	0.18	0.6	0.2	3.14	2.98	Post-med	6bii	6b
BVM12	1100	E2 (N)	E930	n/a	46	Fill	Upper fill of [1102]	Firm/plastic mid orange brown silt clay (30:70), freq cbm/mortar frags	0.4	0.25	0.2	2.71	n/a	Early post-med	5b	5b
BVM12	1101	E2 (N)	E930	n/a	46	Fill	Primary fill of [1102]	Loose , dark grey brown sandy-silt-clay/clay silt with rubble (50:50), freq mortar frags/flecks/cbm	0.5	0.4	0.3	2.59	n/a	Early post-med	5b	5b
BVM12	1102	E2 (N)	E930	1102	46	Cut	Pit - unknown function	Semi-circular cut, top truncated to straight sides, base unknown	0.62	0.42	0.4	2.71	2.29	Early post-med	5b	5b
BVM12	1103	E2 (N)	E930	1103	46; 47; 50; 51	Masonry	Brick lining	Half bricks and stone, irregular bond, 2 courses, no bonding material, NW-SE alignment with E-W return to north	1.5	0.5	0.18	2.59	2.48	Early post-med	5b	5b
BVM12	1104	E2 (N)	E930	1104	46	Masonry	Truncated wall/floor?	Reddish unfrogged brick, stretchers halved, English bond, 2 courses, bonded with yellow mortar with occ chalk frags,	0.5	0.52	0.24	2.57	n/a	Early post-med	5b	5b
BVM12	1105	E2 (N)	E930	n/a	46	Cut	Construction cut for [247]	E-W L-shaped/linear cut, vertical sides, flat base	0.21	0.28	0.15	3.22	2.97	Post-med	6bii	6b
BVM12	1106	E2 (N)	E930	n/a	46	Masonry	Wall - poss return of [786]	Reddish brick, English bond, 6 courses, greyish mortar freq chalk frags/charcoal flecks	0.22	n/a	0.48	3.14	n/a	Post-med	6bii	6b
BVM12	1107	E2 (N)	E930	n/a	47	Masonry	E-W Wall	Red brick, random coursed, decayed light grey white chalky lime mortar	n/a	0.55	0.35	2.95	2.6	Post-med	6bii	6b
BVM12	1108	E2 (N)	E930	1108	46; 47; 50; 51	Layer	Levelling	Mod compact, darkish grey/brown silty clay (60:40), freq cbm/tile frags/charcoal flecks, occ oyster/mortar/chalk flecks	1.06	0.7	0.35	2.6	2.59	Medieval	4b	4b
BVM12	1109	E2 (N)	E930	1109	47; 50; 51	Cut	Construction cut for [1103]	NW-SE L-shaped cut, vertical sides, flattish base	1.5	0.5	0.16	2.52	2.36	Early post-med	5b	5b
BVM12	1111	E2 (N)	E930	n/a	49	Fill	Fill of soakaway(?) [1112]	Loose dark grey brown sandy silt (40:60), occ oyster/cbm frags/pot/glass/CTP/bone	1.1	0.6	0.6	2.32	n/a	Post-med	6bi	6a

BVM12	1112	E2 (N)	E930	1112	49	Cut	Construction cut for unlined well/ soakaway	Semi-circular cut - passes into section to the east, sharp top vertical sides, base unknown	1.1	0.6	0.6	2.32	1.76	Post-med	6bi	6a
BVM12	1113	E2 (N)	E930	1113	n/a	Layer	Dump layer	Friable dark grey brown sandy clay silt (10:30:60), freq oyster/cbm frags/mortar flecks/stone frags/pot/glass/bone	1.78	1.6	0.1	2.32	n/a	Post-med	6bi	6a
BVM12	1114	E2 (N)	E930	1114	n/a	Layer	Dump layer	Firm dark brown grey sandy clay silt (10:30:60), freq cbm/mortar frags, occ oyster frags/pot	0.4	0.45	0.1	2.21	n/a	Post-med	6a	5b
BVM12	1115	E2 (N)	E930	n/a	n/a	Fill	Fill of construction cut [1117]	Plastic light brown grey sandy silt clay (10:20:70), freq cbm frags/flecks/mortar flecks	0.35	0.55	0.4	2.21	n/a	Post-med	6a	5b
BVM12	1116	E2 (N)	E930	1116	n/a	Masonry	Wall stub	Red brick, single course on bed lower course on end, decayed light yellow white sandy lime mortar	0.18	0.22	0.4	2.19	n/a	Post-med	6a	5b
BVM12	1117	E2 (N)	E930	1117	n/a	Cut	Construction cut for [1116]	NW-SE Linear cut, sharp top break to straight/near vertical sides and flat base	0.5	0.6	0.34	2.21	1.82	Post-med	6a	5b
BVM12	1118	E2 (N)	E930	1118	n/a	Masonry	Collapsed wall	Red brick, predominantly header bond with occasional stretcher, bonded with light grey yellow coarse sandy lime mortar	1.2	0.6	0.25	2.27	2.01	Post-med	6a	5b
BVM12	1119	E2 (N)	E930	1119	n/a	Layer	Dump layer	Loose mid brown grey sandy clay silt (10:20:70), freq cbm frags/flecks/mortar frags/flecks, occ oyster/coal frags / pot / glass/metal/CTP/bone	1.76	1.44	0.15	2.15	1.97	Post-med	6a	5b
BVM12	1120	E2 (N)	E930	1120	n/a	Layer	Dump layer	Loose, very dark brown grey coarse sandy clay silt, freq cbm frags/sm sub-rnd flint, occ oyster/charcoal flecks/pot/bone	1.7	1.6	0.2	2.14	1.83	Post-med	6a	5b
BVM12	1121	E2 (N)	E930	n/a	49	Fill	Fill of linear cut [1125]	Soft dark grey-brown silty sand (60:40), occ pot/oyster shell/glass bottle frag/bone	0.4	0.94	0.26	2.03	n/a	Medieval	4b	5b
BVM12	1122	E2 (N)	E930	1125	n/a	Timber	Timber post	Squared vertical post in poss drain, very decayed softwood	0.15	0.15	0.2	1.75	n/a	Medieval	4b	4b
BVM12	1123	E2 (N)	E930	1125	n/a	Timber	Timber plank	NE-SW timber plank on edge, poss pine/softwood, part of drain	0.1	0.54	0.05	1.97	1.71	Medieval	4b	4b
BVM12	1124	E2 (N)	E930	1125	n/a	Timber	Timber plank	NE-SW timber plank on edge, poss softwood, part of drain	0.06	0.42	0.02	2	1.66	Medieval	4b	4b
BVM12	1125	E2 (N)	E930	1125	49	Cut	NW-SE Linear Cut (drain?)	Linear cut, near vertical/steep sides to flatish base	0.4	0.94	0.26	2.03	1.87	Medieval	4b	4b
BVM12	1126	E2 (N)	E930	n/a	46; 51	Fill	Fill of linear cut [1127]	Firm mid brown grey sandy silt clay rubble (5:15:30:50), freq mortar frags/flecks/cbm frags/flecks.	0.75	0.3	0.4	2.26	n/a	Medieval	4b	5b
BVM12	1127	E2 (N)	E930	1127	46; 51	Cut	E-W Linear cut - possible continuation	Linear cut, sharp break at top, straight/near vertical sides to south, unseen to north, truncated to east, sharp break to flat base	0.75	0.3	0.4	2.26	1.85	Medieval	4b	5b

							of [1125]									
BVM12	1128	E2 (N)	E930	1128	n/a	Fill	Fill of channel [1130]	Loose/friable dark brown grey coarse sandy-clay-silt (10:20:70), occ oyster /mussel shell frags/sm sub-ang stone frags/pot/glass/bone, freq mortar flecks/cbm frags	1	0.4	0.15	2.14	1.87	Medieval	4b	4b
BVM12	1129	E2 (N)	E930	1129	51	Fill	Fill of channel [1130] (to west)	Firm light brown blue-grey sandy-clay-silt (10:40:50), occ oyster/cbm frags, occ mortar flecks.	1	0.3	0.15	1.97	1.86	Medieval	4b	4b
BVM12	1130	E2 (N)	E930	1130	50; 51	Cut	Possible NW-SE channel edge	Linear cut, top sides not observed, lower sides irregular, base unknown	0.9	1.6	0.3	2.1	1.82	Medieval	4b	4b
BVM12	1131	E2 (N)	E930	1131	50; 51	Layer	Alluvium	Firm mid grey brown with blue grey mottling, sandy-silt-clay, occ mortar flecks	1.7	0.9	n/a	2.1	1.82	Medieval	4a	4b
BVM12	1132	E2 (N)	E930	1132	49	Fill	Fill of channel [1130]	Loose-friable dark brown grey coarse gritty silt (30:70), occa pot/glass/cbm/CTP/bone	1.1	1.02	0.3	2.01	1.7	Medieval	4b	4b
BVM12	1133	E2 (N)	E930	n/a	50; 51	Layer	Alluvium	Firm mid blue grey sandy silt clay (10:20:70), no inc	0.55	0.15	0.12	1.89	n/a	Medieval	4a	4b
BVM12	700	E2 (S)	E930	n/a	n/a	Fill	Backfill of construction cut [702]	Loose, brown-grey silty-sand, freq mortar/charcoal	2.2	0.8	0.29	3.07	n/a	Post-med	6bii	6b
BVM12	701	E2 (S)	E930	pre-ex; 701	33	Masonry	NE-SW aligned wall	Orange unfrogged brick wall, grey mortar with chalk flecks	0.32	1.84	0.29	3.14	2.79	Post-med	6bii	6b
BVM12	702	E2 (S)	E930	702	31	Cut	Construction cut for [701]	Linear, vertical sides, sloping base from east to west	2	2.05	0.24	2.89	2.69	Post-med	6bii	6b
BVM12	703	E2 (S)	E930	n/a	31; 33	Layer	Demolition layer	Loose, grey crushed mortar and sandy-silt, freq CBM/chalk	0.67	1.58	0.5	3.3	3.16	Post-med	6bii	6b
BVM12	704	E2 (S)	E930	pre-ex; 704	31	Masonry	NE-SW aligned wall	Orange unfrogged brick, dark grey mortar with occa coal	0.1	0.44	0.35	3	n/a	Post-med	6bii	6b
BVM12	705	E2 (S)	E930	705	31; 33	Masonry	Cobbled surface	Re-used half bricks/sandstone bedded into silt, random courses	1.04	2.1	0.07	2.68	2.57	Post-med	6bii	6b
BVM12	706	E2 (S)	E930	pre-ex; 706	32	Masonry	Red brick surface	Soft red/orange unfrogged bricks, randomly coursed, soft yellow-grey mortar	0.96	1.5	0.11	3.07	n/a	Post-med	6a	6a
BVM12	707	E2 (S)	E930	707	30	Layer	Dump/levelling	Loose, grey-brown clay-silt, freq mortar, occa CBM/glass/CTP	1.3	0.6	0.1	2.92	n/a	Post-med	6bii	6b
BVM12	708	E2 (S)	E930	708	30	Layer	Dump layer	Soft red-brown ashy-silt, no inc	1.3	0.6	0.05	2.77	n/a	Post-med	6bii	6b
BVM12	709	E2 (S)	E930	n/a	n/a	Fill	Fill of pit [710]	Firm grey-brown clay-silt, occa coal/mortar	0.48	0.34	0.3	3.03	n/a	Post-med	6bii	6b
BVM12	710	E2 (S)	E930	710	n/a	Cut	Pit	Semi-circular, steep sides flat base	0.48	0.34	0.3	3.03	2.73	Post-med	6bii	6b

BVM12	711	E2 (S)	E930	pre-ex; 711	30; 99	Masonry	NNE-SSW brick wall	Orange unfrogged brick, English bond, lime mortar	1.2	0.29	0.36	3.03	2.8	Post-med	6bi	6a
BVM12	712	E2 (S)	E930	712	30	Cut	Construction cut for wall [711]	Linear cut, vertical sides, flat base	1.2	0.56	0.4	3.03	2.63	Post-med	6bi	6a
BVM12	713	E2 (S)	E930	n/a	30	Fill	Backfill of construction cut [712]	Loose, grey-brown silty-sand, freq mortar / CTP / pot	1.2	0.58	0.3	3.03	n/a	Post-med	6bi	6a
BVM12	714	E2 (S)	E930	714	n/a	Masonry	NE-SW aligned wall	Red unfrogged brick, two courses high, grey sandy mortar	0.52	0.22	0.18	3	n/a	Post-med	6bi	6a
BVM12	715	E2 (S)	E930	n/a	n/a	Fill	Backfill of construction cut [716]	Soft, grey-brown sandy-silty-clay, occa CBM	0.42	0.22	0.05	3	n/a	Post-med	6bi	6a
BVM12	716	E2 (S)	E930	716	n/a	Cut	Construction cut for wall [716]	Linear cut, steep sides, flat base	0.64	0.3	0.18	2.92	2.73	Post-med	6bi	6a
BVM12	717	E2 (S)	E930	717	30	Masonry	NE-SW aligned floor	Red unfrogged brick, yellow-grey mortar, regular courses	1.4	0.7	0.07	2.81	n/a	Post-med	6bi	6a
BVM12	718	E2 (S)	E930	718	30	Layer	Dump layer	Loose, black-brown coarse sandy-silt, occa CBM	1.2	0.64	0.02	2.73	n/a	Post-med	6bi	6a
BVM12	719	E2 (S)	E930	719	n/a	Masonry	NEE-SWW aligned wall	Red unfrogged brick, grey-white mortar, English bond	0.22	0.5	0.4	3.1	3.07	Post-med	6a	6a
BVM12	720	E2 (S)	E930	720	n/a	Layer	Dump layer	Soft grey-brown, silty-clay, occa charcoal/mortar/pot	0.04	0.38	0.16	3.1	n/a	Early post-med	5b	5b
BVM12	721	E2 (S)	E930	721	32	Cut	Construction cut for wall [719]	Linear cut, vertical sides, base slopes from east to west	0.4	1.36	0.15	3.02	2.82	Post-med	6a	6a
BVM12	722	E2 (S)	E930	n/a	32	Fill	Backfill of construction cut [721]	Soft yellow-white mortar, freq chalk	0.22	0.5	0.1	3.02	n/a	Post-med	6a	6a
BVM12	723	E2 (S)	E930	n/a	n/a	Fill	Fill of posthole [724]	Loose, brown-black sandy-mortar and ash, freq charcoal/coal/CBM	0.46	0.24	0.33	3.01	n/a	Post-med	6a	6a
BVM12	724	E2 (S)	E930	724	n/a	Cut	Posthole	Circular cut, near vertical sides, flat base	0.46	0.24	0.33	3.01	2.7	Post-med	6a	6a
BVM12	725	E2 (S)	E930	725	30; 32	Layer	Dump layer	Black charcoal, occa CBM/CTP	0.92	1.54	0.04	3.03	n/a	Early post-med	5b	5b
BVM12	726	E2 (S)	E930	726	30; 32	Layer	Levelling	Soft, green-brown clay-silt, freq charcoal, occa oyster/flint/CBM/gravel/pot/bone	0.9	1.5	0.11	2.99	n/a	Early post-med	5b	5b
BVM12	727	E2 (S)	E930	727	30	Layer	Occupation layer	Soft, red-brown sandy-silt, occa pot	0.28	0.8	0.15	2.93	n/a	Early post-med	5b	5b
BVM12	728	E2 (S)	E930	728	30; 32	Layer	Mortar surface	White-grey mortar-chalk with silty-sand lenses, occa CBM/bone	1.4	1.5	0.03	2.93	n/a	Early post-med	5b	5b
BVM12	729	E2 (S)	E930	729	32	Layer	Occupation layer	Dark red-brown-black silty sand, freq charcoal, occa gravel/crushed mortar/pot	0.92	1.32	0.04	2.89	n/a	Early post-med	5b	5b



BVM12	730	E2 (S)	E930	730	30	Layer	Mortar surface	Firm white lime mortar, freq chalk	1.16	0.9	0.06	2.92	n/a	Early post-med	5b	5b
BVM12	731	E2 (S)	E930	731	30	Layer	Occupation layer	Compacted grey-brown silt (beaten earth floor?), occa CBM/bone	0.5	1	0.005	2.85	n/a	Early post-med	5b	5b
BVM12	732	E2 (S)	E930	n/a	n/a	Fill	Fill of posthole [733]	Loose, grey-white, crushed mortar, no inc	0.15	0.13	0.1	2.77	n/a	Early post-med	5b	5b
BVM12	733	E2 (S)	E930	733	n/a	Cut	Posthole	Sub-circular cut, vertical sides, flat base	0.15	0.13	0.1	2.77	2.69	Early post-med	5b	5b
BVM12	734	E2 (S)	E930	734	30; 32	Layer	Mortar surface	Firm white lime mortar, freq chalk	1.4	1.6	0.004	2.83	n/a	Early post-med	5b	5b
BVM12	735	E2 (S)	E930	735	n/a	Layer	Occupation layer	Friable, dark grey-brown sandy-silt, mod charcoal/sub-rnd gravel, occa oyster	0.68	0.97	0.04	2.86	n/a	Early post-med	5b	5b
BVM12	736	E2 (S)	E930	736	30; 32	Layer	Levelling	Loose, dark grey-brown silty clay, occa mortar/CBM/pot/bone	1.5	1.3	0.008	2.82	2.7	Early post-med	5b	5b
BVM12	737	E2 (S)	E930	737	30; 32	Layer	Occupation layer	Soft green-grey silty-sand, freq sub-rnd gravels, mod charcoal, occa oyster / CBM / mortar/pot/glass	1.46	1.5	0.015	2.81	2.66	Early post-med	5b	5b
BVM12	738	E2 (S)	E930	738	31	Layer	Mortar surface	Firm white lime mortar, freq chalk	0.56	0.2	0.12	2.92	n/a	Early post-med	5b	5b
BVM12	739	E2 (S)	E930	739	31	Layer	Occupation layer	Firm grey-black silt (beaten earth floor?), no inc	0.26	0.2	0.002	2.9	n/a	Early post-med	5b	5b
BVM12	740	E2 (S)	E930	740	31	Layer	Mortar surface	Firm white lime mortar, freq chalk	0.6	0.2	0.04	2.86	n/a	Early post-med	5b	5b
BVM12	741	E2 (S)	E930	n/a	n/a	Fill	Fill of pit [742]	Firm grey-brown, sandy-clay, freq crushed mortar, mod charcoal, occa oyster/coal/CBM/CTP	0.5	0.54	0.1	2.72	n/a	Early post-med	5b	5b
BVM12	742	E2 (S)	E930	742	n/a	Cut	Pit	Sub-squared pit, steep sides, concave base	0.5	0.54	0.19	2.72	2.53	Early post-med	5b	5b
BVM12	743	E2 (S)	E930	743	30; 32	Layer	Repair of surface [745]	Friable yellow-white lime mortar, mod chalk, occa charcoal/CBM	1.14	1.4	0.05	2.78	n/a	Early post-med	5b	5b
BVM12	744	E2 (S)	E930	744	32	Layer	Repair of surface [745]	Indurated white lime mortar, freq chalk, occa charcoal	0.94	1.18	0.02	2.79	n/a	Early post-med	5b	5b
BVM12	745	E2 (S)	E930	745	30; 32	Layer	Mortar surface	Compacted green-white lime mortar, freq chalk	1.42	1.4	0.14	2.8	2.6	Early post-med	5b	5b
BVM12	746	E2 (S)	E930	746	31	Layer	Mortar surface	Firm, white, lime mortar, freq chalk	0.62	0.46	0.1	2.87	n/a	Early post-med	5b	5b
BVM12	747	E2 (S)	E930	747	31	Layer	Mortar surface	Firm green-yellow silty-sand/mortar, occa CBM/pot	0.62	0.54	0.12	2.72	n/a	Early post-med	5b	5b
BVM12	748	E2 (S)	E930	748	n/a	Layer	Occupation layer	Firm, green-yellow lime mortar/silty-sand, occa CBM/pot/oyster/bone	0.9	0.6	0.05	2.7	n/a	Early post-med	5b	5b
BVM12	749	E2 (S)	E930	749	30; 31;	Layer	Dump layer	Soft grey-green silty-clay, freq CBM, occa pot/bone	1.9	2.8	0.12	2.66	n/a	Early post-med	5a	5a

					32											
BVM12	750	E2 (S)	E930	750	n/a	Masonry	Brick surface	Red unfrogged brick, random coursing, bedded into silt	0.24	0.44	0.08	2.58	n/a	Post-med	6a	6a
BVM12	751	E2 (S)	E930	751	n/a	Masonry	Brick foundation	Red unfrogged brick, random coursing, bedded into silty mortar	0.3	0.4	0.06	2.43	n/a	Post-med	6a	6a
BVM12	752	E2 (S)	E930	752	31; 33	Layer	Bedding for cobbled surface	Soft, dark grey-brown silty-sand, freq oyster, occa mortar/pot/CBM	1	1.86	0.1	2.6	n/a	Post-med	6bii	6b
BVM12	753	E2 (S)	E930	753	32; 33	Fill	Fill of hollow [754]	Soft mid grey silty mortar, occa CBM/pot/stone/flint/bone	1.16	1.2	0.16	2.51	n/a	Early post-med	5a	5a
BVM12	754	E2 (S)	E930	754	32	Cut	Hollow/gully	Linear (?), aligned N-S, steep sides, concave base	1.4	1.3	0.16	2.51	2.28	Early post-med	5a	5a
BVM12	755	E2 (S)	E930	755	33	Masonry	NE-SW brick wall	Red unfrogged brick, English bond (9 courses), grey-white mortar	0.22	1.2	1.05	3.38	2.85	Post-med	6bii	6b
BVM12	756	E2 (S)	E930	n/a	n/a	Fill	Backfill of construction cut [757]	Soft grey silty-clay, occa charcoal/mortar/sub-ang gravels/pot/metal/CBM	0.64	0.16	0.06	2.51	n/a	Early post-med	5a	5a
BVM12	757	E2 (S)	E930	757	n/a	Cut	Construction cut	Linear N-S aligned cut, steep sides, gently sloping base	0.64	0.16	0.06	2.51	2.45	Early post-med	5a	5a
BVM12	758	E2 (S)	E930	758	31; 33	Layer	Dump layer	Soft grey-brown silty-clay, freq charcoal/mortar/oyster	1	1.86	0.1	2.55	n/a	Post-med	6bii	6b
BVM12	759	E2 (S)	E930	759	31; 33	Masonry	Brick/stone wall NE-SW and return	Unfrogged red brick and stone, English bone, return to north (NW-SE)	1.7	0.68	0.33	2.53	2.47	Early post-med	5a	5a
BVM12	760	E2 (S)	E930	760	30; 31; 32; 33	Layer	Dump layer	Soft mid grey silty-clay, occa flint/oyster/pot, mod charcoal/CBM	1.7	2.7	0.25	2.55	n/a	Early post-med	5a	5a
BVM12	761	E2 (S)	E930	761	31; 33	Cut	Construction cut for [759]	Linear cut, vertical sides flat base ('L' shaped for NE-SW length with NW-SE return to north)	1.7	0.68	0.28	2.67	2.39	Early post-med	5a	5a
BVM12	762	E2 (S)	E930	762	33	Layer	Demolition layer	Compact dark brown-grey silty clay, freq CBM, occa charcoal/chalk/pot/stone	1	0.92	0.29	2.38	n/a	Medieval	4b	4b
BVM12	763	E2 (S)	E930	763	32; 33	Fill	Fill of ditch (?) [768]	Soft dark grey-brown, silty-clay, occa CBM/oyster/flint/pot/bone, mod mortar	1	0.96	0.15	2.19	n/a	Medieval	4b	4b
BVM12	764	E2 (S)	E930	n/a	30; 32	Fill	Fill of pit [765]	Soft grey-brown silty-clay, occa stone/CBM/fe/bone/pot	0.64	2.1	0.34	2.39	n/a	Medieval	4b	4b
BVM12	765	E2 (S)	E930	765	30; 32	Cut	Shallow pit	Sub-rounded, concave sides, flat base	0.64	2.1	0.34	2.39	2.02	Medieval	4b	4b
BVM12	766	E2 (S)	E930	766; 768b	30; 31; 33	Layer	Alluvium	Soft yellow-grey silty-clay, occa sm ang pebbles	1.4	0.9	0.4	2.36	n/a	Medieval	4a	4b
BVM12	767	E2 (S)	E930	n/a	30; 32; 33	Fill	Fill of ditch (?) [768]	Soft brown-grey silty-clay, mod CBM/oyster, occa bone/pot/slag	1.4	1.54	0.25	1.92	n/a	Medieval	4b	4b

BVM12	768	E2 (S)	E930	768a; 768b; 778	30; 33	Cut	Ditch (?)/Pit (?)	Linear/sub-rectangular (?), steep sides, base unseen	1.4	1.4	1.73	2.36	0.63	Medieval	4b	4b
BVM12	769	E2 (S)	E930	768b; 769	n/a	Timber	Upright stake	Circular stake, tapered point, driven into fill [767]	0.1	0.1	1.22	2.01	n/a	Medieval	4b	4b
BVM12	770	E2 (S)	E930	770	n/a	Cut	Stakehole	Circular cut, vertical sides, tapered point	0.16	0.16	0.1	1.99	1.89	Medieval	4b	4b
BVM12	771	E2 (S)	E930	n/a	n/a	Fill	Fill of [770]	Soft degraded wood	0.16	0.16	0.1	1.99	n/a	Medieval	4b	4b
BVM12	772	E2 (S)	E930	n/a	30	Timber	Upright stake	Decayed post driven into fill [767], part of revetment?	0.14	0.09	0.64	2.22	n/a	Medieval	4b	4b
BVM12	773	E2 (S)	E930	773	31; 33	Layer	Dump/alluvium?	Soft grey clay-silt, freq shell	0.6	1.3	0.15	2.21	n/a	Medieval	4a	4b
BVM12	774	E2 (S)	E930	778	30; 31; 33	Layer	Alluvium	Firm blue-grey clay, no inc	2	2.24	0.4	1.87	n/a	Medieval	4a	4b
BVM12	775	E2 (S)	E930	n/a	30; 32; 33	Fill	Fill of ditch (?) [768]	Soft, dark grey-brown clay-silt, mod CBM/oyster, occa chalk/pot/glass/object/wood/snail shell/bone	2	1.35	0.4	1.79	n/a	Medieval	4b	4b
BVM12	776	E2 (S)	E930	768b	n/a	Timber	Upright stake	Squared stake, tapered point, driven into [770]	0.09	0.09	1.12	1.75	n/a	Medieval	4b	4b
BVM12	777	E2 (S)	E930	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID	VOID
BVM12	778	E2 (S)	E930	778	n/a	Timber	Collapsed stake	Horizontal post, semi-circular, tapered point	0.12	0.04	0.54	1.03	n/a	Medieval	4b	4b
BVM12	779	E2 (S)	E930	768b	33	Fill	Primary fill of linear [768]	Soft blue-grey silty-clay, occa shell	1.3	0.3	0.51	1.32	n/a	Medieval	4b	4b
BVM12	1200	E3	E927	1200	45	Masonry	Brick Drain	N-S aligned brick drain, single skin	4.9	0.35	0.26	4.03	3.51	Modern	7	7
BVM12	1201	E3	E927	n/a	45	Fill	Fill of construction cut [1202]	Loose, dark grey/brown, coarse sandy silt, occa frags brick/mortar flecks	n/a	0.65	0.46	3.95	n/a	Modern	7	7
BVM12	1202	E3	E927	n/a	45	Cut	N-S construction cut	Linear construction cut for brick drain, sharp steep sides, flat bottomed	4.9	0.65	0.46	3.95	3.5	Modern	7	7
BVM12	1203	E3	E927	n/a	45	Layer	Made Ground	Soft/loose, mid orange brown, coarse sandy silt, occa red brick frags/mortar flecks	n/a	1.1	0.3	4.05	3.9	Modern	7	7
BVM12	1204	E3	E927	n/a	45	Layer	Made Ground	Firm, mid whitish grey, coarse sandy silt and mortar, v occa brick frags, freq mortar flecks	n/a	1.1	0.08	3.75	n/a	Modern	7	7
BVM12	1205	E3	E927	n/a	45	Layer	Made Ground	Firm, mid grey brown, clay silt, occa red brick frags/mortar flecks	n/a	1.1	0.12	3.7	n/a	Modern	7	7
BVM12	1206	E3	E927	n/a	44	Layer	Levelling	Firm, mixed mid grey brown/reddish brown, coarse sandy silt, occa chalk/red brick frags/mortar flecks	4.8	n/a	0.3	3.85	n/a	Modern	7	7

BVM12	1207	E3	E927	1207	45; 53; 56	Masonry	Brick Culvert	N-S brick culvert, some re-used bricks, red brick, soft sandy mortar with charcoal flecks, stretcher bond	4.8	1.8	2.12	3.35	1.23	Post-med	6bii	6bi i
BVM12	1208	E3	E927	n/a	45; 53	Fill	Fill of construction cut [1209]	Loose, mid brown to dark brown, sandy silt, freq CBM/mortar frags, occa bricks / chalk / slate frags / pot / metal / CTP / bone	4.8	2.6	0.24	2.15	n/a	Post-med	6bii	6bi i
BVM12	1209	E3	E927	1209	53; 55; 56	Cut	N-S Construction cut for culvert [1207]	Linear, concave sides and base	4.8	2.6	0.98	2.15	1.17	Post-med	6bii	6bi i
BVM12	1210	E3	E927	n/a	n/a	Layer	Accumulated silt at base of culvert [1207]	Soft, dark grey black, silt with organics, coal frags/leather/animal bone/pot/glass frags/oyster/mussel shell	4.8	0.9	0.3	1.71	n/a	Post-med	6bii	6bi i
BVM12	1211	E3	E927	1212	53; 56; 57	Fill	Fill of pit [1212]	Mid dark grey, soft clay/alluvium, freq mortar/CBM frags, mod small chalk frags, layers of charcoal, occa bone	1.4	0.92	0.4	2.25	n/a	Medieval	4b	4b
BVM12	1212	E3	E927	1212	53	Cut	Pit/Channel edge	Irregular shape in plan, sharply sloping sides, rounded base	1.4	0.92	0.4	2.25	1.85	Medieval	4b	4b
BVM12	1213	E3	E927	1213	53	Layer	Redeposited alluvium	Smooth, light grey, clay, mod small organic flecks, occa oyster/charcoal flecks	1.5	0.9	0.72	2.25	n/a	Medieval	4b	4b
BVM12	1214	E3	E927	n/a	57	Fill	Backfill of construction cut [1215]	Loose, sandy silt, dark grey brown, freq mortar frags, mod chalk frags, occa CBM frags/pot	3.2	0.4	0.25	2.04	n/a	Post-med	6bi	6bi
BVM12	1215	E3	E927	1215	57; 64	Cut	Construction cut for drain [1219]	Large, circular, vertically sided pit, severely truncated by Victorian storm drain, not bottomed	3.6	2.6	1.42	2.22	0.71	Post-med	6bi	6bi
BVM12	1216	E3	E927	n/a	n/a	Fill	Fill of pit [1217]	Mod compact, mid grey brown, silty clay, freq mortar flecks, mod chalk/CBM frags, occa shell frags/bone	0.35	0.45	0.3	1.87	n/a	Post-med	6bi	6bi
BVM12	1217	E3	E927	1217	n/a	Cut	Pit	Heavily truncated, irregular in plan, steeply sloping, not bottomed	0.35	0.45	0.4	1.87	1.61	Post-med	6bi	6bi
BVM12	1218	E3	E927				VOID	Void								
BVM12	1219	E3	E927	1219	64	Masonry	Circular drain	Reddish, unfrogged brick, greyish concrete/mortar, single skin brick wall	0.4	0.1	0.87	1.71	0.84	Post-med	6bi	6bi
BVM12	1220	E3	E927	n/a	n/a	Fill	Fill of construction cut [1215]	Loose dark whitish grey, mortar, occa CBM frags	3	0.86	0.1	2.15	n/a	Post-med	6bi	6bi
BVM12	1221	E3	E927	1221	53; 56	Layer	Dump layer	Soft, greyish redeposited clay, freq charcoal flecks	1.4	0.76	0.2	1.52	n/a	Medieval	4b	4b
BVM12	1222	E3	E927	1222	n/a	Timber	Stake	Squared, poorly preserved stake	0.16	0.2	0.16	1.42	n/a	Medieval	4b	4b
BVM12	1223	E3	E927	1222	55	Timber	Stake	Squared, poorly preserved stake	0.14	0.14	0.14	1.47	n/a	Medieval	4b	4b

BVM12	1224	E3	E927	1222	55	Timber	Beam	Horizontal beam, poss boxed heart, poorly preserved	n/a	0.16	0.23	1.92	n/a	Medieval	4b	4b
BVM12	1225	E3	E927	n/a	55	Layer	Dump layer	Firm brownish yellow, clay, occa CBM frags	n/a	0.72	0.55	2.37	n/a	Medieval	4b	4b
BVM12	1226	E3	E927	1222	55; 64	Layer	Dump layer	Firm grey blue clay, freq flecks of charcoal deposits	n/a	0.8	0.75	2.12	1.8	Medieval	4b	4b
BVM12	1227	E3	E927	post-ex	57; 64	Fill	Backfill of drain [1219]	Loose, black, ashey, burnt, freq lumps of ash, occa pot/glass/metal/CBM/clay pipe	3.03	2.11	0.64	1.46	n/a	Post-med	6bi	6bi
BVM12	1228	E3	E927	1228	56	Timber	Post	Squared oak post with tapered point	0.08	0.08	0.57	1.52	n/a	Medieval	4b	4b
BVM12	1229	E3	E927	1229; post-ex	56; 64; 65	Layer	Alluvium	Soft, bluish grey with light brown lens, redeposited clay, freq charcoal flecks	1.42	2.34	0.42	1.23	n/a	Medieval	4b	4b
BVM12	1230	E3	E927	n/a	64	Fill	Secondary fill of drain [1219]	Loose, light yellowish brown, mortar, freq brick frags/small lumps of mortar, demo material	2.15	0.43	0.55	1.28	n/a	Post-med	6bi	6bi
BVM12	1231	E3	E927				VOID	Void								
BVM12	1232	E3	E927	1229	56; 65	Layer	Alluvium	Soft, greyish blue, redeposited clay, freq charcoal, occa mortar/CBM flecks	1.42	2.34	0.43	1.23	n/a	Medieval	4b	4b
BVM12	1233	E3	E927	1233; post-ex	n/a	Layer	Alluvium	Soft, bluish grey, redeposited clay, occa mortar/CBM flecks	0.8	2.32	0.36	1.25	n/a	Medieval	4b	4b
BVM12	1234	E3	E927	1233; post-ex	64	Layer	Alluvium	Soft, bluish grey, redeposited clay, occa charcoal flecks	0.8	2.32	0.36	1.25	n/a	Medieval	4b	4b
BVM12	1235	E3	E927	n/a	45	Layer	Made Ground	Soft/loose, mid orangey brown, coarse sandy silt, occa red brick/mortar flecks	n/a	0.87	0.2	3.95	n/a	Modern	7	7
BVM12	1236	E3	E927	n/a	45	Layer	Made Ground	Firm, mid whitish grey, coarse sandy silt, mortar, v occa brick frag, freq mortar flecks	n/a	0.89	0.06	3.75	n/a	Modern	7	7
BVM12	1237	E3	E927	n/a	45	Layer	Made Ground	Firm, mid grey brown clay silt, occa red brick/mortar flecks	n/a	0.92	0.15	3.6	n/a	Modern	7	7
BVM12	800	F	E940	800	29; 35	Masonry	N-S brick wall	Orange unfrogged brick, alternate header/stretcher bond, soft dark greyish blue/black mortar, freq chalk flecks, occa cbm flecks	2.36	0.36	0.37	3.34	3.21	Modern	7	7
BVM12	801	F (N)	E940	pre-ex; 801	28; 29	Layer	Dump layer	Loose, mid greyish brown, silty-sand, mod mortar/oyster/coal/sub-ang pebbles/CTP, occa bone/pot/glass	1.8	1.84	0.35	2.99	2.95	Post-med	6b	6b
BVM12	802	F (N)	E940	n/a	28	Fill	Fill of Linear [803]	Loose, mid grey-brown, silty sand, freq mortar, occa oyster/charcoal/pot/CTP	1.4	0.8	0.07	2.68	n/a	Post-med	6b	6b
BVM12	803	F (N)	E940	803	28	Cut	NW-SW Linear	Shallow linear feature, near vertical sides, flat base, unknown function	1.4	0.8	0.07	2.68	2.61	Post-med	6b	6b
BVM12	804	F (N)	E940	n/a	28; 29	Fill	fill of rubbish pit [805]	Loose, mid greyish brown, silty sand, freq mortar, mod sub-ang gravels, occa oyster/charcoal/glass/CBM/bone	0.63	1.04	0.35	2.79	2.59	Post-med	6b	6b

BVM12	805	F (N)	E940	805	28; 29	Cut	Rubbish Pit	Truncated, sub-oval pit, near vertical sides to S, steep to N and W, flat base	0.63	1.04	0.35	2.79	2.44	Post-med	6b	6b
BVM12	806	F (N)	E940	n/a	n/a	Fill	fill of rubbish pit [807]	Loose, dark brown, sandy silt, mod mortar, occa charcoal/oyster/CBM	0.22	0.56	0.08	2.6	n/a	Post-med	6b	6b
BVM12	807	F (N)	E940	807	n/a	Cut	Rubbish Pit	Semi-circular, rubbish pit, sloping sides, base unseen	0.22	0.56	0.08	2.6	unseen	Post-med	6b	6b
BVM12	808	F (N)	E940	808	29	Layer	Occupation layer	Compact mid-dark grey-brown, ashy burnt sand/clinker, mod coal/ang gravels, occa oyster/metal	0.94	0.5	0.09	2.72	2.67	Post-med	6a	6a
BVM12	809	F (N)	E940	809	n/a	Layer	Demolition layer	Loose, mixed mid-brown/off-white, sandy silt and crushed white lime mortar, occa CBM/pot/CTP/charcoal	0.98	0.34	0.11	2.69	2.66	Post-med	6b	6b
BVM12	810	F (N)	E940	810	29	Masonry	Brick floor	Orange-red unfrogged brick, soft yellow-white mortar bonding, reg courses	1	0.5	0.06	2.67	n/a	Post-med	6a	6a
BVM12	811	F (N)	E940	811	29	Layer	Bedding layer for [810]	Firm, off-white lime mortar, occa oyster	0.8	0.9	0.03	2.61	n/a	Post-med	6a	6a
BVM12	812	F (N)	E940	812	28	Layer	Bedding layer	Soft, mid-greyish white, lime mortar	0.12	0.74	0.03	2.59	n/a	Post-med	6a	6a
BVM12	813	F (N)	E940	813	n/a	Layer	mortar spread	Friable, light greyish white, lime mortar, mod chalk flecks	0.8	0.2	0.02	2.61	n/a	Post-med	6a	6a
BVM12	814	F (N)	E940	814	28; 29	Fill	Fill of Linear [815]	Loose, mid-grey, sandy silt, mod charcoal, occa oyster/mortar/pot/bone	1.54	1.26	0.13	2.6	n/a	Early Post-med	5b	5
BVM12	815	F (N)	E940	815	28; 29	Cut	N-S Linear	Linear feature of unknown function, sloping sides, flat base	1.38	0.9	0.13	2.61	2.48	Early Post-med	5b	5
BVM12	816	F (N)	E940	n/a	28	Fill	Fill of irregular cut [819]	Soft, mid-grey to yellowish brown, sandy clay (60:40), freq mortar, mod oyster/charcoal/sub-ang to sub-rnd stones, occa wood fragments/pot/glass/metal/CTP/bone/leather/CBM	1.74	1.24	1.99	2.51	2.49	Post-med	6b	6b
BVM12	817	F (N)	E940	817	28	Layer	Industrial waste?	Friable, dark reddish to greyish brown sandy silt, mod oyster, occa charcoal/sub-rnd stones/pot/CBM/bone	1.74	0.74	0.14	2.57	2.45	Early Post-med	5b	5
BVM12	818	F (N)	E940	818	29	Layer	Burnt dump layer	Friable, dark greyish brown sandy silt, mod charcoal/oyster, occa mortar/sub-rnd stones/pot/CBM/bone	1.02	0.5	0.05	2.55	n/a	Early Post-med	5b	5
BVM12	819	F (N)	E940	819	28	Cut	N-S Linear	Large, linear cut of unknown function, near vertical sides, gradual break of slope to concave base	1.76	1.24	1.99	2.51	0.52	Post-med	6b	6b
BVM12	820	F (N)	E940	n/a	28; 29	Fill	fill of rubbish pit [821]	Loose, dark grey, silty-clayey-sand (30:30:40), mod oyster/charcoal, occa sub-rnd stones/mortar/pot/CBM/bone	0.98	0.81	0.16	2.5	n/a	Early Post-med	5b	5
BVM12	821	F (N)	E940	821	28; 29	Cut	Rubbish pit	Circular, rubbish pit, gently sloping sides to concave base	0.98	0.81	0.16	2.5	2.34	Early Post-med	5b	5
BVM12	822	F (N)	E940	n/a	28	Fill	fill of rubbish pit [823]	Soft, dark grey silty clay, mod oyster, occa charcoal/clinker/pot/CBM/bone/CTP	0.56	0.66	0.15	2.45	n/a	Early Post-med	5b	5

BVM12	823	F (N)	E940	823	28	Cut	Rubbish pit	Truncated circular rubbish pit, gently sloping sides to concave base	0.56	0.66	0.15	2.45	2.3	Early Post-med	5b	5
BVM12	824	F (N)	E940	824	28; 29	Layer	Dump layer	Soft, mid grey silty clay, mod oyster/shell/gravels, occa mortar/charcoal/CBM/pot/bone	1.42	1.5	0.34	2.5	2.3	Early Post-med	5b	5
BVM12	825	F (N)	E940	825	28; 29	Layer	Dump layer	Soft, mid grey to greenish grey sandy clay, occa oyster/shell/charcoal/manganese staining/sub-rnd gravels/mortar/pot/metal/CBM/bone	1.4	1.5	0.15	2.16	2.11	Medieval	4b	4b
BVM12	826	F (N)	E940	n/a	28	Fill	fill of rubbish pit [827]	Loose, light grey, sandy clay, mod gravel/mortar, occa charcoal/oyster/shell/chalk/pot/slag/CBM/bone	1.14	0.82	0.26	1.93	n/a	Medieval	4b	4b
BVM12	827	F (N)	E940	827	28	Cut	Rubbish Pit	Oval rubbish pit, sloping sides shallower to south, concave base	1.14	0.82	0.26	1.93	1.67	Medieval	4b	4b
BVM12	828	F (N)	E940	828	28; 29	Layer	Dump layer	Firm, dark brown silty clay, occa charcoal/mortar/oyster/shell/sub-ang to sub-rnd stones/pot/metal/CBM/bone	1.8	1.54	0.23	1.93	1.67	Medieval	4b	4b
BVM12	829	F (N)	E940	n/a	n/a	Fill	fill of pit [830]	Loose, dark reddish brown silty clay, mod charcoal, occa oyster/sub-rnd gravels/mortar/pot/bone	1.02	0.26	0.12	1.7	n/a	Medieval	4b	4b
BVM12	830	F (N)	E940	830	n/a	Cut	Rubbish Pit	Semi-circular, rubbish pit, sloping sides, base unseen	1.02	0.26	0.12	1.7	1.58	Medieval	4b	4b
BVM12	831	F (N)	E940	n/a	29	Fill	fill of pit [832]	Soft, dark grey sandy clay, occa oyster/sub-rnd gravels/charcoal/CBM/bone	0.4	0.3	0.05	1.76	n/a	Medieval	4b	4b
BVM12	832	F (N)	E940	832	29	Cut	Shallow pit	Sub-rectangular, very shallow pit, sloping sides to flat base	0.4	0.3	0.05	1.76	1.71	Medieval	4b	4b
BVM12	833	F (N)	E940	n/a	28; 29	Fill	fill of pit [834]	Soft, mid greenish grey sandy clay, mod mortar/charcoal, occa oyster/shell/sub-rnd gravels/pot/metal/CBM/bone	0.82	0.4	0.22	1.76	1.66	Medieval	4b	4b
BVM12	834	F (N)	E940	834	28; 29	Cut	Rubbish Pit	Smei-circular, rubbish pit, steep sides, flat base	0.82	0.4	0.22	1.76	1.54	Medieval	4b	4b
BVM12	835	F (N)	E940	n/a	n/a	Fill	fill of pit [836]	Soft, light grey sandy clay, mod mortar, occa charcoal/oyster/sub-rnd gravels/pot/CBM/bone	0.54	0.6	0.19	1.76	1.71	Medieval	4b	4b
BVM12	836	F (N)	E940	836	n/a	Cut	Rubbish Pit	Sub-rectangular, rubbish pit, sloping sides to flat base	0.54	0.6	0.19	1.76	1.57	Medieval	4b	4b
BVM12	837	F (N)	E940	837	28; 29	Layer	Dump layer	Soft, mid bluish grey silty clay, mod charcoal/mortar/oyster/shell/gravels/green sandstone/pot/metal/CBM/bone	1.28	1.3	0.11	1.76	1.54	Medieval	4b	4b
BVM12	855	F (N)	E940	855	28; 29	Layer	Clay dump	Soft (sticky), light grey silty clay (20:80), mod charcoal/chalk, occa mortar / shell /gravel/pot/metal/CBM/bone	1.28	1.3	0.66	1.64	1.53	Medieval	4b	4b
BVM12	856	F (N)	E940	856	28	Cut	Pit	Pit or NW-SE linear feature, steeply sloping sides, base unseen	1.28	0.2	0.26	1.55	1.29	Medieval	4b	4b
BVM12	857	F (N)	E940	n/a	28	Fill	fill of pit [856]	Firm, mid greenish grey, sandy clay, mod shell, occa charcoal / mortar / chalk /	1.28	0.2	0.36	1.65	n/a	Medieval	4b	4b

								gravels/CBM/bone								
BVM12	889	F (N)	E940	889	28; 29	Layer	Dump layer	Soft, mid grey silty clay, mod gravels / oyster/shell/CBM, occa chalk / wood / charcoal/pot/bone	1.3	1.46	0.27	1.07	n/a	Medieval	4b	4b
BVM12	890	F (N)	E940	n/a	28; 29	Layer	Alluvium	Soft mid grey silty clay, occa shell/sub-ang to sub-rnd gravels/organic flecks	1.3	1.62	0.35	1.14	1.09	Medieval	4a	4a
BVM12	891	F (N)	E940	post-ex	28; 29	Layer	Alluvium	Soft/sticky, light brown grey clay, occa black flecks	1.3	2.13	0.3	0.61	n/a	Medieval	4a	4a
BVM12	892	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, dark brown peaty clay, occa degraded tree roots	n/a	n/a	0.14	0.2	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	893	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, light bluish grey with black mottling, sandy clay	n/a	n/a	0.24	0.06	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	894	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, light grey clay, no inc	n/a	n/a	0.1	- 0.75	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	895	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, very light grey with occasional white lenses, clay, no inc	n/a	n/a	0.16	- 0.85	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	896	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, light grey sandy clay, no inc	n/a	n/a	0.2	- 1.15	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	897	F (N)	E940	n/a	n/a	Layer	Alluvium	Soft, mid greyish brown sand, no inc	n/a	n/a	0.1	- 1.35	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	898	F (N)	E940	n/a	n/a	Layer	Alluvium	Very soft, light grey sandy clay, no inc	n/a	n/a	0.1	- 1.45	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	899	F (N)	E940	n/a	n/a	Layer	Alluvium	Very soft, light grey silty clay, no inc	n/a	n/a	0.14	- 2.02	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	838	F (S)	E940	838	34	Masonry	N-S Brick Drain	Red, yellow and orange unfrogged brick and slate, stretcher bond with soft grey mortar	1.26	0.4	0.19	3	2.83	Post-med	6b	6b
BVM12	839	F (S)	E940	n/a	34	Fill	infill of brick drain [838]	Soft, mid greyish brown clay silt, occa charcoal/mortar/pot	1.26	0.18	0.02	2.87	n/a	Post-med	6b	6b
BVM12	840	F (S)	E940	n/a	34	Fill	backfill of construction cut [841]	Soft, mid grey silty clay, occa mortar/charcoal/sub-rnd gravels/pot/metal/CBM/bone	1.32	0.5	0.29	3.01	3	Post-med	6b	6b
BVM12	841	F (S)	E940	841	34	Cut	N-S Construction cut for drain [838]	Linear construction cut for drain, near vertical sides, gently sloping base (slopes down towards north)	1.32	0.5	0.29	3.01	2.72	Post-med	6b	6b
BVM12	842	F (S)	E940	pre-ex	34; 35	Fill	infill of soakaway/ cesspit [843]	Loose, dark reddish to yellowish brown/black silty sand, freq mortar, mod charcoal/oyster/shell/degraded wood/lg rnd stones/paving slab fragments/pot/glass/metal/CBM/bone/leather/CTP/slag	1.9	0.93	1.35	3.02	n/a	Post-med	6b	6b
BVM12	843	F (S)	E940	pre-ex; 843(a) ; 843(b)	34	Masonry	Sub-circular brick soakaway/ cesspit	Red and purplish red unfrogged brick, stretcher bond, hard grey mortar with chalk, single skin	1.9	0.6	1.41	3.06	n/a	Post-med	6b	6b



BVM12	844	F (S)	E940	pre-ex	34	Fill	backfill of construction cut [845]	Soft, mid grey silty clay, mod mortar, occa charcoal/sub-rnd gravels/pot/CBM	1.5	0.14	1.41	3.02	2.94	Post-med	6b	6b
BVM12	845	F (S)	E940	pre-ex; 845	34; 35	Cut	construction cut of brick soakaway /cesspit [843]	Sub-rectangular construction cut, near vertical sides to flat base	1.5	1.14	1.73	3.02	1.29	Post-med	6b	6b
BVM12	846	F (S)	E940	n/a	34	Fill	fill of irregular cut [847]	Soft, mid grey sandy clay, mod mortar/charcoal/sub-ang to sub-rnd stones/oyster, occa mussel/shell/degraded wood/clay lenses/pot/glass/metal/CBM/bone/CTP/slag	1.28	0.52	2.63	3.02	2.79	Post-med	6b	6b
BVM12	847	F (S)	E940	847(a) ; 847(b)	34	Cut	Irregular cut	Sub-rectangular cut of unknown function, near vertical sides with undercut south-eastern edge, flat base	1.28	0.52	2.63	3.02	0.39	Post-med	6b	6b
BVM12	848	F (S)	E940	pre-ex; 848	34	Layer	Occupation layer	Friable, dark brown-black sandy-silt, mod mortar, occa charcoal/sub-rnd gravels/fe rusting/CTP/pot/CBM	1.44	0.5	0.06	3.02	2.94	Post-med	6a	6a
BVM12	849	F (S)	E940	849	34	Layer	Mortar floor/bedding	Firm, white and mid greyish brown, mortar and sandy silt (60:40), mod charcoal/sub-rnd gravels/CBM	1.5	0.44	0.05	2.95	n/a	Post-med	6a	6a
BVM12	850	F (S)	E940	850	34	Layer	bedding layer for [849]	Loose, mid yellowish brown, sand, patches of brown sandy silt, mod mortar lenses, occa charcoal/metal/CBM	1.44	0.5	0.04	2.91	n/a	Post-med	6a	5
BVM12	851	F (S)	E940	851	34	Layer	Tile and mortar floor	Firm, white and greyish brown, mortar and sandy silt, mod tiles, occa charcoal	0.72	0.7	0.02	2.86	n/a	Early Post-med	5b	5
BVM12	852	F (S)	E940	852	34	Layer	Occupation layer	Friable, dark brown to reddish brown sandy silt, freq charcoal/clinker, occa mortar/fe rusting/CBM	1.42	1	0.07	2.87	n/a	Early Post-med	5b	5
BVM12	853	F (S)	E940	853	34	Layer	Floor	Loose, white and mid greyish brown, mortar and silty sand and broken brick, occa clinker/charcoal, mod gravels	1.42	1	0.03	2.8	n/a	Early Post-med	5b	5
BVM12	854	F (S)	E940	n/a	34	Masonry	Brick Floor	Red and orange red, unfrogged brick, one course, bonded with light grey mortar with occa chalk	n/a	0.42	0.09	3.05	n/a	Post-med	6a	6a
BVM12	858	F (S)	E940	858	34	Layer	Occupation layer	Friable, black to dark grey sandy silt, freq charcoal/clinker, occa mortar/chalk/pot/CBM	1.94	1.08	0.02	2.74	n/a	Early Post-med	5b	5
BVM12	859	F (S)	E940	859	35	Layer	Surface	Firm, white and greyish brown, mortar and sandy silt, mod charcoal/chalk, occa bone (horn core)	0.2	0.38	0.06	2.72	n/a	Early Post-med	5b	5
BVM12	860	F (S)	E940	n/a	34	Fill	fill of truncated pit [861]	Soft mid green-grey brown, sandy clay, mod charcoal/mortar, occa oyster/gravel/pot/CBM/bone	0.72	0.98	0.17	2.67	n/a	Early Post-med	5b	5
BVM12	861	F	E940	861	34	Cut	E-W linear	Linear or pit, near vertical sides, gently	0.72	0.98	0.17	2.67	2.5	Early	5b	5

		(S)					or pit	sloping base to east							Post-med		
BVM12	862	F (S)	E940	862	n/a	Layer	Occupation layer	Friable, mid grey clay silt, mod charcoal/clinker/mortar, occa oyster/sub-rnd stones/pot/metal/CBM/bone	0.72	0.52	0.1	2.69	n/a	Early Post-med	5b	5	
BVM12	863	F (S)	E940	863	n/a	Layer	Industrial waste	Friable, black to dark greyish brown sandy silt, freq charcoal/clinker, occa mortar/oyster/metal/CBM/bone	0.72	0.54	0.02	2.59	n/a	Early Post-med	5b	5	
BVM12	864	F (S)	E940	864	n/a	Layer	Mortar surface	Firm, white greyish brown mortar and silty clay, occa charcoal/rnd stones	0.54	0.84	0.04	2.54	n/a	Early Post-med	5b	5	
BVM12	865	F (S)	E940	865	34	Layer	Industrial waste	Friable, dark grey silty sand, freq charcoal/clinker, occa mortar/oyster/shell/bone	1.32	0.94	0.04	2.57	2.5	Early Post-med	5b	5	
BVM12	866	F (S)	E940	866	34	Layer	Industrial waste	Friable, dark reddish brown to black sandy silt, freq charcoal/clinker, occa mortar/oyster shell/gravels/CBM/pot/Fe obj, mod bone	1.32	0.94	0.08	2.53	2.46	Early Post-med	5b	5	
BVM12	867	F (S)	E940	867	34	Layer	Dump layer	Soft, mid greenish grey silty sandy clay (20:20:60), mod charcoal, occa oyster/mortar/sub-ang to sub-rnd stones/pot/CBM/bone	1.32	0.94	0.78	2.46	n/a	Early Post-med	5b	5	
BVM12	868	F (S)	E940	n/a	34; 35	Fill	Fill of soakaway/cesspit [?] [872]	Very soft, black silt, mod oyster/mussel/pot/CTP, occa flint/wood fragments/rnd river cobbles/glass/bone/leather	1.4	0.6	0.32	1.65	n/a	Post-med	6b	6b	
BVM12	869	F (S)	E940	n/a	34; 35	Fill	primary fill of cesspit [843]	Soft/spongy, mid brown to reddish brown silt, occa gravels, very organic	1.4	0.6	0.16	1.81	1.7	Post-med	6b	6b	
BVM12	870	F (S)	E940	870	34	Layer	Clay dump	Soft mid grey clay-silt, occa CBM flecks/mortar flecks/sm sub-ang stones/pot/bone, v occa oyster	1.64	1.26	0.6	1.62	n/a	Early Post-med	5b	5	
BVM12	871	F (S)	E940	n/a	34	Fill	fill of truncated pit [872]	Soft, mid yellowish grey sandy clay, occa charcoal/shell/chalk/gravels	1.34	0.34	0.3	1.55	n/a	Medieval	4b	4b	
BVM12	872	F (S)	E940	872	34	Cut	Pit	Semi-circular pit of unknown function, steep sides, base unseen	1.34	0.34	0.3	1.55	1.25	Medieval	4b	4b	
BVM12	873	F (S)	E940	873	34; 35	Layer	Dump layer	Soft/sticky, mid grey silty clay (20:80), mod organics (degraded wood in bands), occa sub-ang flints/gravels/chalk/charcoal/oyster/shell/pot/metal/CBM/bone	1.3	1.9	0.28	1.55	1.29	Medieval	4b	4b	
BVM12	874	F (S)	E940	n/a	34; 35	Fill	Fill of Pit [875]	Soft, dark brown silty peat, mod oyster, occa degraded wood fragments/sub-ang stones/mussel/cockle/pot/metal/CBM/worked stone	1.3	1.8	0.28	1.09	0.98	Medieval	4b	4b	
BVM12	875	F (S)	E940	875	34; 35	Cut	Pit	Sub-rectangular pit, near vertical sides to flat base	1.26	1.82	0.33	1.1	0.67	Medieval	4b	4b	
BVM12	876	F (S)	E940	n/a	34; 35	Fill	lower fill of pit [875]	Soft, mid grey silty clay, mod oyster shell / sub-ang stones / chalk / ragstone / flint	1.26	1.82	0.13	0.93	n/a	Medieval	4b	4b	

								/CBM/bone, occa charcoal/wood/pot/metal								
BVM12	877	F (S)	E940	877	34; 35	Layer	Dump layer	Soft, mid grey silty clay, mod oyster/flint gravels/CBM, occa chalk / ragstone / charcoal / pot / bone / metal obj	1.28	2.13	0.41	1.1	0.67	Medieval	4b	4b
BVM12	878	F (S)	E940	878; post-ex	34; 35	Layer	Alluvium	Soft, mid grey silty clay, occa shell/sub-ang to sub-rnd gravels/organic flecks/degraded wood	1.3	2.13	0.25	0.57	n/a	Undated	4a	4a
BVM12	879	F (S)	E940	n/a	34	Fill	upper fill of pit [875]	Soft, yellowish grey clay sand, occa CBM/chalk/charcoal flecks	n/a	1.2	0.13	1.11	1.04	Medieval	4b	4b
BVM12	880	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, mid brownish grey silty clay, occa organics/degraded wood, v occa shell	n/a	n/a	0.1	- 0.18	- 0.48	Natural/ Prehistoric	1; 2	4a
BVM12	881	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, mid brownish grey silty clay, occa organics, v occa shell	n/a	n/a	0.31	- 0.64	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	882	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, light to dark grey clay, occa wood flecks	n/a	n/a	0.11	- 0.95	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	883	F (S)	E940	n/a	n/a	Layer	Alluvium	Very soft, light grey clay sand, occa lenses dark grey clay	n/a	n/a	0.45	- 1.06	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	884	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, dark grey clay, occa wood/shell flecks	n/a	n/a	0.12	- 1.51	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	885	F (S)	E940	n/a	n/a	Layer	Alluvium	Very soft, light grey sandy clay, occa chalk/shell flecks	n/a	n/a	0.4	- 1.63	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	886	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, dark grey clay sand, v occa shell flecks/sand lenses	n/a	n/a	0.06	- 2.03	n/a	Natural/ Prehistoric	1; 2	4a
BVM12	887	F (S)	E940	n/a	n/a	Layer	Alluvium	Soft, mid grey sandy clay, occa gravel/sand lenses	n/a	n/a	0.08	- 2.09	n/a	Natural	1	1
BVM12	888	F (S)	E940	n/a	n/a	Layer	Alluvium	Loose, mid grey sandy gravel, occa wood flecks	n/a	n/a	0.07	- 2.17	n/a	Natural	1	1
BVM12	1600	G	E951	1600	66	Masonry	Cellar wall	19th century NE-SW aligned cellar wall	5.6	0.37	1.1	4.04	3.86	Post-med	6bii	6b
BVM12	1601	G	E951	n/a	66	Fill	Fill of [1602]	Loose, mid-dark greyish brown ashy clinker	5.8	0.45	0.65	3.76	n/a	Post-med	6bii	6b
BVM12	1602	G	E951	1602	66	Cut	Cut for [1600]	Linear northwest-southeast aligned construction cut	5.6	0.74	0.64	3.76	3.12	Post-med	6bii	6b
BVM12	1603	G	E951	1603	66; 67	Layer	Made Ground	Soft, mid-dark greenish grey-brown sandy silty clay	5	3	0.38	4.11	4.06	Modern	7	6b
BVM12	1604	G	E951	1604	66; 67	Layer	Made Ground	Loose, mid-dark greyish brown silty sand	2.2	2.3	0.4	3.83	3.75	Post-med	6bii	6b
BVM12	1605	G	E951	n/a	66; 67	Layer	Ashy Layer	Firm, dark reddish brown sandy ash	0.13	3	0.1	3.43	3.41	Post-med	6bii	6b
BVM12	1606	G	E951	1606	66; 67	Layer	Made Ground	Loose, light- mid brownish-grey silty sand	2.74	3	0.36	3.47	2.97	Post-med	6bii	6b
BVM12	1607	G	E951	n/a	67	Fill	Fill of [1608]	Fairly loose, friable mottled light grey brown and dark grey brown slightly clay sandy silt	3.35	1.6	0.86	3.8	3.7	Post-med	6bii	6b
BVM12	1608	G	E951	1608	67	Cut	Post-medieval/early modern	Curvi-linear truncation against wall [1600]	3.35	1.6	0.86	3.8	2.9	Post-med	6bii	6b

							truncation									
BVM12	1609	G	E951	1602	n/a	Layer	Made Ground	Firm dark brown-grey slightly clay silt	3.8	2.55	0.8	3.85	3.8	Post-med	6bii	6b
BVM12	1610	G	E951	1610	n/a	Masonry	Wall foundation	NW-SE aligned wall foundation	2.4	0.52	0.69	3.42	3.11	Post-med	6bi	6b
BVM12	1611	G	E951	1611	n/a	Cut	Cut for [1610]	NW-SE aligned construction cut for wall foundation [1610]	2.8	0.8	0.27	2.63	2.36	Post-med	6bi	6b
BVM12	1612	G	E951				VOID	Void								
BVM12	1613	G	E951	1613	n/a	Layer	Made Ground	Loose, dark grey brown silty sand	0.2	0.2	0.3	2.9	n/a	Post-med	6bii	6b
BVM12	1614	G	E951	1614	n/a	Layer	Made Ground	Firm, mid grey brown slightly clay silt	2.43	1.7	0.04	2.62	n/a	Post-med	6bi	6b
BVM12	1615	G	E951	1615	n/a	Layer	Made Ground	Fairly firm, whitish grey silt	1.4	1.4	0.2	2.61	2.38	Post-med	6bi	6b
BVM12	1616	G	E951	1616	n/a	Layer	Possible floor level	Fairly firm, dark greyish brown silty ash	2.38	2.04	0.12	2.86	n/a	Post-med	6bi	6b
BVM12	1617	G	E951	1617	n/a	Masonry	Possible 'step'	NW-SE aligned 'step'	0.62	0.46	0.15	2.62	n/a	Post-med	6bi	6b
BVM12	1618	G	E951				VOID	Void								
BVM12	1619	G	E951	1619	71	Masonry	Wall foundation	L' shaped brick wall foundation	0.8	0.94	0.3	2.84	2.79	Post-med	6a	6b
BVM12	1620	G	E951	1620	70	Masonry	Wall foundation	NW-SE aligned wall foundation	2.5	0.38	0.3	2.8	2.79	Post-med	6a	6b
BVM12	1621	G	E951	1621	70	Masonry	Floor	Remnant of possible floor	1.6	1.1	0.07	2.82	n/a	Post-med	6bi	6b
BVM12	1622	G	E951	1622	71	Masonry	Floor	Possible floor	0.8	0.52	0.07	2.43	n/a	Post-med	6bi	6b
BVM12	1623	G	E951	1623	71	Masonry	Wall foundation	L' shaped brick wall foundation	2.32	1.5	0.48	3.08	2.8	Post-med	6bi	6b
BVM12	1624	G	E951	n/a	n/a	Fill	Fill of [1611]	Fairly firm, greyish brown silty sand	2.4	0.1	0.4	2.79	n/a	Post-med	6bi	6b
BVM12	1625	G	E951	n/a	71	Layer	Levelling	Fairly firm, greyish brown silty sand	1.95	0.68	0.5	2.78	n/a	Post-med	6bi	6b
BVM12	1626	G	E951	1626	71	Cut	Cut for [1623]	NW-SE aligned construction cut for wall foundation [1623]	2.36	1.3	0.15	2.47	2.32	Post-med	6bi	6b
BVM12	1627	G	E951	n/a	71	Fill	Fill of [1628]	Rubble and dark greyish brown silty sand	2.3	1.3	0.17	2.77	2.73	Post-med	6bi	6b
BVM12	1628	G	E951	1628	71	Cut	Irregular cut	Robber cut?	2.3	1.3	0.17	2.77	2.6	Post-med	6bi	6b
BVM12	1629	G	E951	1629	70	Layer	Possible floor level	Firm, yellowish brown mortar spread	1.1	1.58	0.18	2.77	n/a	Post-med	6a	6b
BVM12	1630	G	E951	1630	n/a	Layer	Possible floor level	Firm, yellowish brown mortar spread	0.48	0.8	0.1	2.73	n/a	Post-med	6a	6b
BVM12	1631	G	E951	n/a	71	Fill	Fill of [1632]	Loose, grey brown rubble	0.5	0.3	0.08	2.73	n/a	Post-med	6bi	6b
BVM12	1632	G	E951	1632	71	Cut	Circular cut feature	Semi-circular pit	0.5	0.22	0.37	2.73	2.65	Post-med	6bi	6b

BVM12	1633	G	E951	1633	70; 71	Layer	Possible floor level	Firm, mid grey with brown grey lenses of sandy silty clay and ash	2.5	1.9	0.04	2.63	2.58	Post-med	6a	6b
BVM12	1634	G	E951	1634	n/a	Masonry	Floor	Remnant of possible floor	0.54	1.1	0.05	2.68	2.65	Post-med	6a	6b
BVM12	1635	G	E951	1635	70; 71	Cut	Possible construction cut	L' shaped construction cut	1.6	2.6	0.5	2.8	2.3	Early Post-med	5b	5b
BVM12	1636	G	E951	n/a	71	Fill	Fill of [1635]	Loose, greyish brown silty sand	1.6	2.6	0.15	2.8	2.56	Early Post-med	5b	5b
BVM12	1637	G	E951	1637	n/a	Masonry	Floor	Brick floor surface	1.4	1.5	0.15	2.48	2.43	Post-med	6bi	6b
BVM12	1638	G	E951	n/a	n/a	Fill	Fill of [1639]	Firm whitish grey silty sand	0.38	0.5	0.19	2.54	2.35	Early Post-med	5b	5b
BVM12	1639	G	E951	1639	n/a	Cut	Pit	Fairly shallow oval shaped pit	0.3	0.5	0.19	2.54	2.35	Early Post-med	5b	5b
BVM12	1640	G	E951				VOID	Void								
BVM12	1641	G	E951	n/a	n/a	Fill	Fill of [1642]	Firm, grey brown silty sand	0.3	0.26	0.09	2.57	n/a	Early Post-med	5b	5b
BVM12	1642	G	E951	1642	n/a	Cut	Posthole	Posthole	0.3	0.26	0.09	2.57	2.48	Early Post-med	5b	5b
BVM12	1643	G	E951				VOID	Void								
BVM12	1644	G	E951	n/a	70	Fill	Fill of [1645]	Firm, mid-dark greyish brown sandy silt	0.22	0.3	0.08	2.5	n/a	Early Post-med	5b	5b
BVM12	1645	G	E951	1645	70	Cut	Posthole	Posthole	0.22	0.36	0.08	2.58	2.5	Early Post-med	5b	5b
BVM12	1646	G	E951	1646	70	Layer	Mortar surface	Loose, mid yellowish brown crushed mortar	1.14	1.2	0.09	2.61	2.55	Early Post-med	5b	5b
BVM12	1647	G	E951	1647	n/a	Layer	Mortar surface	Indurated, creamish white mortar	0.3	0.3	0.04	2.58	n/a	Early Post-med	5b	5b
BVM12	1648	G	E951	1648	n/a	Layer	Mortar surface	Indurated, creamish white mortar	0.4	0.19	0.04	2.58	n/a	Early Post-med	5b	5b
BVM12	1649	G	E951	1649	n/a	Layer	Mortar surface	Indurated, creamish white mortar	0.3	0.2	0.04	2.55	n/a	Early Post-med	5b	5b
BVM12	1650	G	E951	1650	70; 71	Layer	Bedding layer	Firm, mid reddish yellow sand	1.46	1.51	0.1	2.62	2.54	Early Post-med	5b	5b
BVM12	1651	G	E951	1651	70, 71	Layer	Made Ground	Loose, mid greenish brown sandy silty gravel	1.7	1.94	0.12	2.52	2.49	Early Post-med	5b	5b
BVM12	1652	G	E951	1652	n/a	Layer	Made Ground	Fairly firm greenish grey silty sandy clay	4.45	2.5	0.15	2.39	2.21	Early Post-med	5b	5b
BVM12	1653	G	E951	1653	n/a	Layer	Organic dump layer	Fairly firm dark grey silty sandy clay	4.46	2.1	0.1	2.36	2.28	Medieval	4bii	4b
BVM12	1654	G	E951	1654	n/a	Layer	Organic dump layer	Fairly firm greyish green brown silty and sand	1.3	2.3	0.26	2.2	2.17	Medieval	4bii	4b
BVM12	1655	G	E951	1655	n/a	Layer	Organic dump layer	Fairly firm whitish grey silty sand	4.46	2.06	0.1	2.4	2.22	Medieval	4bii	4b

BVM12	1656	G	E951	1656	72, 73	Layer	Dumped deposit	Compact dark grey with white and mid greenish brown mottling coarse sandy clay silt	4.46	2.5	0.3	2.3	2.02	Medieval	4bii	4b
BVM12	1657	G	E951	1657	72, 73	Layer	Gravel layer	Gravel deposit	4.45	1.92	0.48	2.15	1.98	Medieval	4bii	4b
BVM12	1658	G	E951	n/a	n/a	Fill	Fill of [1659]	Soft, greyish brown silt	0.16	0.16	0.1	2.01	1.4	Medieval	4bii	4b
BVM12	1659	G	E951	1659	n/a	Cut	Posthole	Posthole	0.16	0.16	0.6	2.01	1.4	Medieval	4bii	4b
BVM12	1660	G	E951	n/a	n/a	Fill	Fill of [1661]	Soft, dark greyish brown silt	0.16	0.16	0.3	1.89	n/a	Medieval	4bii	4b
BVM12	1661	G	E951	1661	n/a	Cut	Posthole	Posthole	0.16	0.16	0.3	1.89	1.64	Medieval	4bii	4b
BVM12	1662	G	E951	n/a	n/a	Fill	Fill of [1663]	Soft, dark greyish brown silt	0.12	0.12	0.28	2.04	n/a	Medieval	4bii	4b
BVM12	1663	G	E951	1663	n/a	Cut	Posthole	Posthole	0.12	0.12	0.28	2.04	1.76	Medieval	4bii	4b
BVM12	1664	G	E951	n/a	n/a	Fill	Fill of [1665]	Silt	0.19	0.19	0.31	2.05	n/a	Medieval	4bii	4b
BVM12	1665	G	E951	1665	n/a	Cut	Posthole	Posthole	0.19	0.19	0.31	2.05	1.74	Medieval	4bii	4b
BVM12	1666	G	E951	1666	n/a	Cut	Pit	Semi-circular pit	1.5	1.2	0.82	2.29	1.47	Medieval	4bi	4b
BVM12	1667	G	E951	n/a			VOID	Void								
BVM12	1668	G	E951	1668	73	Layer	Dumped deposit	Mortar layer	2.07	0.46	0.26	1.98	1.96	Medieval	4bi	4b
BVM12	1669	G	E951	n/a	n/a	Fill	Fill of [1666]	Soft, dark bluish grey sandy silt	1.4	1.2	0.8	2.29	n/a	Medieval	4bi	4b
BVM12	1670	G	E951				VOID	Void								
BVM12	1671	G	E951	1671	75, 78	Structure	Wall foundation	Wall foundations [1674], [1675] and [1676]	2.2	0.76	0.52	2.19	n/a	Medieval	4bii	4b
BVM12	1672	G	E951	1672	n/a	Layer	Floor? Demolition layer	Fairly firm, whitish mortar and silty clay	1.5	1.46	0.2	2.1	2.05	Medieval	4bii	4b
BVM12	1673	G	E951	1673	n/a	Layer	Floor	Fairly firm, whitish grey lime mortar with occasional chalk fragments	1.3	0.58	0.1	1.97	1.93	Medieval	4bii	4b
BVM12	1674	G	E951	1671	n/a	Masonry	Wall foundation	Part of NW-SE aligned structure; red unfrogged brick, bonded with brown clay and mortar, irregular courses, repair	0.8	0.24	0.4	2.19	2.12	Medieval	4bii	4b
BVM12	1675	G	E951	1671	n/a	Masonry	Wall foundation	Part of NW-SE aligned structure; chalk and ragstone, irregular coursing, bonded with sandy-chalk mortar	2.1	0.2	0.3	2.08	1.97	Medieval	4bii	4b
BVM12	1676	G	E951	1676	75, 78	Masonry	Wall foundation	Part of NW-SE aligned structure; Tile chalk and flint wall, bonded with mortar, random uncoursed	2.04	0.6	0.52	1.4	1.37	Medieval	4bii	4b
BVM12	1677	G	E951	n/a	78	Fill	Fill of [1678]	Soft, dark yellowish grey silty clay	2.2	0.15	0.5	1.87	n/a	Medieval	4bii	4b
BVM12	1678	G	E951	1678	75, 78	Cut	Construction cut	Partial rectangular cut for [1676]	2.2	0.76	0.52	1.91	1.39	Medieval	4bii	4b

BVM12	1679	G	E951	1679	76	Layer	Dumped deposit	Compact mid reddish yellow sandy silt	0.92	1.96	0.25	2.06	1.96	Medieval	4bi	4b
BVM12	1680	G	E951	1680	n/a	Layer	Dumped deposit	Loose mid greyish brown sandy silt	1.34	1.4	0.23	1.92	1.89	Medieval	4bi	4b
BVM12	1681	G	E951	1681	n/a	Layer	Dumped deposit	Firm, dark bluish grey sandy silt	2.4	2.5	0.2	1.74	1.72	Medieval	4bi	4b
BVM12	1682	G	E951	n/a	n/a	Fill	Fill of [1683]	Fairly firm greyish brown sandy silt	1	1	0.15	2	n/a	Medieval	4bi	4b
BVM12	1683	G	E951	1683	n/a	Cut	Irregular cut	L' shaped cut	0.42	1.14	0.26	2	1.74	Medieval	4bi	4b
BVM12	1684	G	E951	n/a	76	Layer	Dumped deposit	Fairly firm dark grey greenish brown silt	1.4	1.18	0.27	2	n/a	Medieval	4bi	4b
BVM12	1685	G	E951				VOID	Void								
BVM12	1686	G	E951	1686	n/a	Timber	Post	Broken horizontal post used in construction of [1676]	0.88	0.23	0.16	1.52	1.43	Medieval	4bii	4b
BVM12	1687	G	E951				VOID	Void								
BVM12	1688	G	E951	n/a	n/a	Fill	Fill of [1689]	Accumulated silt	0.14	0.14	0.8	1.78	n/a	Medieval	4bi	4b
BVM12	1689	G	E951	1689	n/a	Cut	Posthole	Posthole	0.14	0.14	0.8	1.78	0.98	Medieval	4bi	4b
BVM12	1690	G	E951	1690	n/a	Layer	Made Ground	Fairly firm whitish yellow mortar	0.46	2.4	0.06	1.75	1.65	Medieval	4bi	4b
BVM12	1691	G	E951	1691	n/a	Fill	Fill of linear [1695]	Firm brownish yellow clay	0.94	0.64	0.23	1.69	n/a	Medieval	4bi	4b
BVM12	1692	G	E951	n/a	n/a	Fill	Fill of [1693]	Void within posthole [1693]	0.12	0.16	0.17	1.69	n/a	Medieval	4bi	4b
BVM12	1693	G	E951	1693	n/a	Cut	Posthole	Posthole	0.12	0.16	0.17	1.69	1.52	Medieval	4bi	4b
BVM12	1694	G	E951	n/a	78	Layer	Dumped deposit	Fairly loose dark grey brown clay silt	1.5	1.46	0.2	1.99	n/a	Medieval	4bii	4b
BVM12	1695	G	E951	1695	n/a	Cut	Linear cut	Small N-S orientated linear cut	0.7	0.44	0.2	1.61	1.46	Medieval	4bi	4b
BVM12	1696	G	E951	1696	n/a	Layer	Dumped deposit	Fairly firm dark grey silty clay	3	1.8	0.2	1.69	1.5	Medieval	4bi	4b
BVM12	1697	G	E951	1697	78	Layer	Clay deposit	Fairly firm dark grey clay silt	1.26	1.22	0.53	1.88	1.79	Medieval	4bii	4b
BVM12	1698	G	E951	1698	n/a	Layer	Dumped deposit	Fairly firm dark grey silty clay	3	1.8	0.1	1.55	1.49	Medieval	4bi	4b
BVM12	1699	G	E951	n/a	n/a	Fill	Fill of [2202]	Soft dark blue grey sandy silt and degraded timber	0.8	0.65	0.18	1.26	n/a	Medieval	4bi	4b
BVM12	2200	G	E951	n/a	n/a	Fill	Fill of [2202]	Firm dark bluish grey clay silt	0.15	0.15	0.17	1.27	n/a	Medieval	4bi	4b
BVM12	2201	G	E951	2201	n/a	Timber	Wattle	Poorly preserved wattle within [2202]	0.83	0.86	0.06	1.3	1.24	Medieval	4bi	4b
BVM12	2202	G	E951	2202	n/a	Cut	Possible cess pit	Circular pit	1.25	1.38	0.13	1.27	1.1	Medieval	4bi	4b
BVM12	2203	G	E951	2203	76, 77	Layer	Dirty' alluvial deposit	Firm dark bluish grey clay silt	2	2.6	0.3	1.65	1.45	Medieval	4bi	4b
BVM12	2204	G	E951	2204	76, 77	Layer	Dirty' alluvial deposit	Firm mid bluish grey clay silt	4.46	2.6	0.3	1.59	1.5	Medieval	4bi	4b
BVM12	2205	G	E951	2205	76, 77,	Layer	Dirty' alluvial deposit	Firm light-mid bluish grey silty clay	4.45	2.6	0.3	1.37	n/a	Medieval	4a	4a

					80, 81											
BVM12	2206	G	E951	2206	n/a	Timber	Stake	Stake	0.04	0.03	0.13	1.24	1.11	Medieval	4a	4a
BVM12	2207	G	E951	2207	n/a	Timber	Stake	Stake	0.02	0.01	0.15	1.27	1.12	Medieval	4a	4a
BVM12	2208	G	E951	2208	n/a	Timber	Stake	Stake	0.05	0.02	0.21	1.33	1.12	Medieval	4a	4a
BVM12	2209	G	E951	2209	n/a	Timber	Post	Post	0.14	0.12	0.15	1.19	1.1	Medieval	4a	4a
BVM12	2210	G	E951	n/a	n/a	Fill	Fill of [2214]	Fairly loose dark brownish grey silty clay	0.58	0.33	0.23	1.09	n/a	Medieval	4a	4a
BVM12	2211	G	E951	n/a	n/a	Fill	Fill of [2202]	Firm light bluish grey silty clay	1.25	1.38	0.07	1.21	1.14	Medieval	4bi	4b
BVM12	2212	G	E951	2212	n/a	Layer	Organic layer	Firm mid greenish yellow sandy clay	1.72	1.49	0.32	1.37	1.31	Medieval	4a	4a
BVM12	2213	G	E951	2213	n/a	Fill	Fill of [2214]	Soft/ friable dark yellowish green silty clay	0.56	0.5	0.23	1.09	n/a	Medieval	4a	4a
BVM12	2214	G	E951	2214	n/a	Cut	Posthole	Posthole	0.56	0.5	0.23	1.09	0.86	Medieval	4a	4a
BVM12	2215	G	E951	2215	n/a	Layer	Organic layer	Soft/friable dark yellowish green silty clay	0.81	0.7	0.16	1.09	n/a	Medieval	4a	4a
BVM12	2216	G	E951	2216	80,8 1	Layer	Organic layer	Friable mid greenish grey silty clay	4.46	2.6	0.25	1	0.9	Medieval	4a	4a
BVM12	2217	G	E951	2217	80,8 1	Layer	Redeposited alluvium	Soft light bluish grey silty clay	4.5	2.45	0.2	0.78	0.71	Medieval	4a	4a
BVM12	2218	G	E951	Post-ex	80, 81	Layer	Alluvium	Firm light bluish grey sandy clay	3.1	2.56	n/a	0.52	n/a	Medieval	4a	4a
BVM12	2219	G	E951	B/H location	n/a	Layer	Alluvium	Soft dark bluish grey	n/a	n/a	0.11	n/a	n/a	Medieval	4a	4a
BVM12	2220	G	E951	B/H location	n/a	Layer	Organic layer	Soft mid brownish grey silty clay	n/a	n/a	0.12	n/a	n/a	Medieval	4a	4a
BVM12	2000	H1	E957	2000	79	Layer	Made ground	Loose light grey sandy silt with frequent rubble	4.6	2.8	1.1	2.51	2.25	Modern	7	6b
BVM12	2001	H1	E957	2001	n/a	Masonry	Wall foundation	E-W turning N-S cellar wall	3.9	1.56	1.68	2.59	2.22	Post-medieval	6b	6b
BVM12	2002	H1	E957	2002	n/a	Masonry	Wall foundation	E-W earlier wall foundation?	0.34	0.47	1.66	2.49	n/a	Post-medieval	6b	6b
BVM12	2003	H1	E957	2003	79	Masonry	Wall foundation	E-W partition wall foundation	0.54	0.94	0.56	2.44	2.28	Post-medieval	6b	6b
BVM12	2004	H1	E957	2004	n/a	Masonry	Brick drain	N-S brick drain	3.5	0.72	0.74	1.52	1.41	Post-medieval	6b	6b
BVM12	2005	H1	E957	2005	n/a	Masonry	Brick pier	Brick pier	0.6	0.56	0.11	1.51	1.46	Post-medieval	6b	6b
BVM12	2006	H1	E957	2006	n/a	Masonry	Wall foundation?	NW-SE orientated fragment of possible wall foundation or internal basement structure	0.94	0.22	0.17	1.62	1.45	Post-medieval	6b	6b
BVM12	2007	H1	E957	2007	n/a	Layer	Infill around basement	Compact dark yellow crushed brick and mortar	3.36	0.9	0.55	1.45	1.38	Post-medieval	6b	6b



							structures [2004], [2005] and [2006]									
BVM12	2008	H1	E957	2008	n/a	Layer	Bedding layer for structures [2005] and [2006]	Firm greyish white silt and mortar	1.3	0.4	0.61	1.46	n/a	Post- medieval	6b	6b
BVM12	2009	H1	E957				VOID	VOID								
BVM12	2010	H1	E957	2010	n/a	Cut	Construction cut	Rectangular construction cut for cellar	4.56	2.2	0.61	1.44	0.83	Post- medieval	6b	6b
BVM12	2011	H1	E957	2011	79	Layer	Clay layer	Firm mid greyish brown silty clay	4.58	2.9	0.6	1.44	0.83	Medieval	4a	4b
BVM12	2012	H1	E957	n/a	n/a	Fill	Fill of cut [2013]	Firm mid grey yellow sandy gravel	3.24	0.86	0.2	0.89	0.79	Post- medieval	6a	6b
BVM12	2013	H1	E957	2013	n/a	Cut	Linear cut	N-S orientated cut possibly the edge of a large pit or a construction cut for a demolished/robbed out structure	3.24	0.88	0.2	0.89	0.69	Post- medieval	6a	6b
BVM12	2014	H1	E957	n/a	79	Fill	Fill of [2015]	Firm mid grey brown clay silt	0.51	-	0.06	1.88	n/a	Post- medieval	6b	6b
BVM12	2015	H1	E957	2015	79	Cut	Construction cut	E-W orientated construction cut for [2003]	0.51	0.91	0.06	1.88	1.82	Post- medieval	6b	6b
BVM12	2016	H1	E957	2016	79	Layer	Clay layer	Firm mid brown grey clay	4.6	2.92	0.29	0.86	0.83	Undated	4a	4a
BVM12	2017	H1	E957	2017	n/a	Masonry	Concrete slab	Concrete slab	1.8	0.74	0.7	1.56	1.51	Post- medieval	6b	6b
BVM12	2018	H1	E957	2018	n/a	Masonry	Concrete slab	Concrete slab	3.5	0.78	0.64	1.55	1.46	Post- medieval	6b	6b
BVM12	2019	H1	E957	2019	79	Layer	Alluvium	Firm brownish blue grey clay	4.6	2.9	0.07	0.64	0.61	Undated	4a	4a
BVM12	2020	H1	E957	2020	79	Layer	Alluvium	Firm mid greyish blue clay silt	4.6	2.9	0.44	1.88	1.83	Post- medieval	6a	6b
BVM12	2021	H1	E957	2021	79	Layer	Made ground	Firm mid grey brown silt and rubble	4.6	2.9	1.55	3.8	n/a	Modern	7	7
BVM12	1900	H2	E957	1900	n/a	Layer	Made Ground	Loose, light brownish grey rubble and clay silt	4.76	3	1.27	3.88	3.86	Modern	7	7
BVM12	1901	H2	E957	1901	n/a	Masonry	Wall foundation	N-S orientated cellar wall	4.76	0.5	1.04	2.64	1.6	Post- medieval	6b	6b
BVM12	1902	H2	E957	1902	n/a	Masonry	Floor	Concrete floor	2.27	1.34	0.37	1.65	1.64	Post- medieval	6b	6b
BVM12	1903	H2	E957	1903	n/a	Masonry	Wall foundation	E-W orientated wall	0.24	1.6	0.05	1.67	1.62	Post- medieval	6b	6b
BVM12	1904	H2	E957	1904	n/a	Masonry	Possible foundation	Concrete remnant	1.78	0.3	0.4	1.59	n/a	Post- medieval	6b	6b
BVM12	1905	H2	E957	1906	n/a	Fill	Backfill in [1906]	Loose dark blackish brown silty clay with frequent mortar inclusions	4	1.54	0.75	1.97	1.49	Post- medieval	6b	6b
BVM12	1906	H2	E957	1906	n/a	Masonry	Brick drain	N-S orientated culvert with an E-W orientated branch connecting to manholes	4.18	1.5	0.89	2.11	1.52	Post- medieval	6b	6b

								in the north								
BVM12	1907	H2	E957	1907	n/a	Cut	Cut for [1906] and [1914]	N-S linear cut with E-W branch	4.71	1.54	0.94	1.65	0.71	Post-medieval	6b	6b
BVM12	1908	H2	E957				VOID	VOID								
BVM12	1909	H2	E957				VOID	VOID								
BVM12	1910	H2	E957	1910	n/a	Masonry	Wall foundation	E-W orientated wall fragment	0.26	0.73	0.06	1.64	1.58	Post-medieval	6b	6b
BVM12	1911	H2	E957	1911	n/a	Masonry	Flag stone	Fairly large stone flagstone	0.48	0.3	0.08	1.61	n/a	Post-medieval	6b	6b
BVM12	1912	H2	E957	1912	82	Layer	Dirty' clay layer	Firm mid greyish brown clay with lenses of charcoal and CBM	4.71	3	0.27	1.65	1.5	Medieval	4a	4b
BVM12	1913	H2	E957	1913	83	Layer	Dirty' clay layer	Firm brownish grey clay	4.71	3	0.41	1.27	1.18	Medieval	4a	4b
BVM12	1914	H2	E957	1914	n/a	Masonry	Manhole	Brick manhole with ceramic pipe	0.84	0.86	0.81	1.52	n/a	Post-medieval	6b	6b
BVM12	1915	H2	E957	1915	n/a	Masonry	Foundation	Concreted slab	1.04	1.88	0.07	1.28	1.22	Medieval	4a	4b
BVM12	1916	H2	E957				VOID	VOID								
BVM12	1917	H2	E957				VOID	VOID								
BVM12	1918	H2	E957				VOID	VOID								
BVM12	1919	H2	E957				VOID	VOID								
BVM12	1920	H2	E957				VOID	VOID								
BVM12	1921	H2	E957	n/a	82	Fill	Fill of [1922]	Firm mid blackish brown sandy clay	0.56	0.34	0.15	1.59	n/a	Post-medieval	6b	6b
BVM12	1922	H2	E957	1922	82	Cut	Construction cut	N-S orientated cut for flagstone [1911]	0.56	0.34	0.18	1.61	1.43	Post-medieval	6b	6b
BVM12	1923	H2	E957	1923	83	Layer	Alluvium	Firm mid brown bluish grey silty clay	4.72	3	0.5	1.15	n/a	Medieval	4a	4a
BVM12	1924	H2	E957	1924	84	Layer	Natural deposit	Fairly firm greyish brown silty clay	4.72	3	0.49	0.71	0.53	Roman	3	4a
BVM12	1925	H2	E957	1925	84	Layer	Natural deposit	Fairly firm mid yellowish brown sandy clay	4.72	3	0.23	0.25	0.2	Roman	3	3
BVM12	1926	H2	E957	1926	84	Layer	Natural sand	Fairly firm mid-light yellowish brown sand	4.72	3	n/a	0.05	0.07	Natural	1	1
BVM12	1927	H2	E957	n/a	84	Timber	Timber stake	Decomposed fragment of timber	0.07	0.04	0.04	0.61	n/a	Roman	3	3
BVM12	1700	H3	E956	n/a	68, 69	Masonry	Floor	Yellow brick unbonded floor	0.8	1.9	0.08	3.94	3.92	Modern	7	6b
BVM12	1701	H3	E956	n/a	68, 69	Layer	Made Ground	Fairly loose light brownish grey ashy silt	0.15	1.95	0.1	3.85	3.82	Modern	7	6b
BVM12	1702	H3	E956	n/a	68, 69	Cut	Cut for [1700]	Construction cut for brick floor [1700]	0.8	2.1	0.2	3.92	3.72	Modern	7	6b
BVM12	1703	H3	E956	n/a	69	Layer	Made Ground	Fairly loose light-mid brownish grey ashy silt	2	n/a	0.12	4.02	3.94	Modern	7	6b

BVM12	1704	H3	E956	n/a	69	Layer	Clay deposit	Firm mid grey brown clay	0.9	n/a	0.5	4	3.97	Post-med	6bii	6b
BVM12	1705	H3	E956	n/a	69	Fill	Fill of [1707]	Fairly firm mid grey sandy silt	1.07	n/a	0.85	4	3.9	Modern	7	6b
BVM12	1706	H3	E956	n/a	69	Pipe	Ceramic pipe	Ceramic pipe in cut [1707]	0.1	n/a	0.1	3.29	n/a	Modern	7	6b
BVM12	1707	H3	E956	n/a	69	Cut	Cut for [1706]	E-W aligned construction cut for ceramic pipe [1706]	1.07	n/a	0.86	4	3.11	Modern	7	6b
BVM12	1708	H3	E956	n/a	68	Fill	Backfill in construction cut [1711]	Firm mid greyish brown clay	n/a	1.35	0.75	4	3.91	Post-med	6bii	6b
BVM12	1709	H3	E956	Pre-ex	68	Fill	Fill in construction cut [1712]	Loose mid greyish brown sandy silty clay	n/a	0.72	0.45	3.3	3.25	Post-med	6bii	6b
BVM12	1710	H3	E956	n/a	68	Fill	Fill in construction cut [1712]	Firm mid greyish brown silty clay	n/a	1.85	1.37	3.77	3.73	Post-med	6bii	6b
BVM12	1711	H3	E956	Pre-ex	68	Masonry	Culvert	N-S orientated culvert	3.2	0.4	1	3.4	3	Post-med	6bii	6b
BVM12	1712	H3	E956	Pre-ex	68	Cut	Construction cut for [1711]	N-S orientated construction cut for brick culvert [1711]	3.2	1.35	1.4	3.74	2.4	Post-med	6bii	6b
BVM12	1713	H3	E956	n/a	68,69	Fill	Fill of [1718]	Compact mid grey demolition rubble	0.45	1.34	0.95	2.85	2.73	Post-med	6bii	6b
BVM12	1714	H3	E956	n/a	69	Layer	Demolition deposit	Loose demolition rubble	2.02	n/a	0.6	4	3.85	Post-med	6bii	6b
BVM12	1715	H3	E956	n/a	69	Layer	Clay deposit	Fairly firm mid grey brown mottled clay	3.26	n/a	0.5	3.45	3.35	Post-med	6bii	6b
BVM12	1716	H3	E956	n/a	69	Layer	Demolition deposit	Demolition rubble	1.65	n/a	0.45	3.38	3.32	Post-med	6bii	6b
BVM12	1717	H3	E956	n/a	69	Fill	Fill of [1723]	Loose dark grey brown and blackish brown ashy silt	3.62	n/a	0.6	3.1	2.9	Post-med	6bii	6b
BVM12	1718	H3	E956	n/a	68,69	Cut	Pit	Heavily truncated pit	0.45	1.39	0.95	3.85	2.92	Post-med	6bii	6b
BVM12	1719	H3	E956	n/a	68,69	Fill	Fill of [1720]	Soft mid reddish brown silty clay	1.95	2.25	0.63	2.7	2.47	Post-med	6bii	6b
BVM12	1720	H3	E956	1720	68,69	Cut	Pit	Shallow linear pit	1.95	2.25	0.63	2.7	2.07	Post-med	6bii	6b
BVM12	1721	H3	E956	n/a	68,69	Fill	Fill of [1720]	Soft light mid brown slightly silty clay	1.02	1.77	0.33	3	2.7	Post-med	6bii	6b
BVM12	1722	H3	E956	1722	68,69	Layer	Redeposited alluvium	Fairly firm mid yellowish brown clay	4.2	2.5	0.5	2.42	2.04	Post-med	6bii	6b
BVM12	1723	H3	E956	n/a	69	Cut	Possible pit	Possible pit filled by ashy deposit [1717]	4.1	0.8	0.6	2.85	2.42	Post-med	6bii	6b
BVM12	1724	H3	E956	1724	69	Fill	Fill of [1727]	Loose/friable light brownish grey mortar, CBM and sand	1.33	1.94	0.54	1.88	1.83	Post-med	6bii	6b
BVM12	1725	H3	E956	1725	68,69	Layer	Demolition deposit	Loose mid whitish grey sandy mortar	3.15	2.74	0.3	2.02	1.92	Post-med	6bii	6b
BVM12	1726	H3	E956	1726	68,69	Layer	Possible surface	Compact yellowish grey sandy mortar	4.8	2.5	0.04	1.92	1.9	Post-med	6bi	6b

BVM12	1727	H3	E956	1727	69	Cut	Pit	Sub rectangular pit	1.36	2.5	0.54	1.92	1.38	Post-med	6bii	6b
BVM12	1728	H3	E956	1728	69	Layer	Dumped deposit	Soft light-mid grey clay	3.94	2.5	0.36	1.68	1.41	Early Post-med	5b	5b
BVM12	1729	H3	E956	1729	69	Masonry	Mortar foundation	Compact light yellowish brown mortar	3	2.5	0.2	1.71	1.7	Post-med	6bi	6b
BVM12	1730	H3	E956	1730	68	Cut	Cut containing foundation	Construction cut for brick floor [1700]	1.05	2.5	0.43	1.63	1.2	Post-med	6bi	6b
BVM12	1731	H3	E956	1731	n/a	Masonry	Concrete basement floor	Concrete basement floor	0.86	1.52	0.12	1.45	1.4	Post-med	6bi	6b
BVM12	1732	H3	E956	n/a	69	Fill	Fill of [1738]	Fairly firm dark grey clay silt	2	1.8	0.18	1.68	1.51	Post-med	6a	5b
BVM12	1733	H3	E956	1733	68, 69	Masonry	Possible foundation	Concrete/ mortar trench built foundation	4.74	2.5	0.49	1.9	1.6	Post-med	6bi	6b
BVM12	1734	H3	E956	1734	n/a	Masonry	Footing	Yellow grey sandy mortar foundation	1.03	1.8	0.19	1.53	1.38	Post-med	6bi	6b
BVM12	1735	H3	E956	1735	n/a	Cut	Foundation trench	E-W linear trench	1.03	1.8	0.59	1.4	0.81	Post-med	6bi	6b
BVM12	1736	H3	E956	1736	68, 69	Layer	Bedding layer	Friable mid grey brown coarse gravel	1.12	2.41	0.19	1.40	1.3	Post-med	6bi	6b
BVM12	1737	H3	E956	1737	n/a	Masonry	Concrete foundation	Mid grey concrete	1.02	1.8	0.12	1.34	1.32	Post-med	6bi	6b
BVM12	1738	H3	E956	1738	69	Cut	Rubbish pit	Rubbish pit	2	1.8	0.16	1.68	1.52	Post-med	6a	5b
BVM12	1739	H3	E956	1739	69	Layer	Dumped deposit	Soft mid yellow grey sandy clay	2.3	2.5	0.15	1.47	1.2	Early Post-med	4a	5b
BVM12	1740	H3	E956	1740	n/a	Layer	Surface	Compact dark-mid brown gravelly sand	2.55	1.5	0.1	1.38	1.2	Early Post-med	4a	5b
BVM12	1741	H3	E956	1741	n/a	Masonry	Wall foundation	Chalk wall foundation	0.44	1.24	0.14	1.46	1.26	Early Post-med	4a	5b
BVM12	1742	H3	E956	1742	69	Masonry	Wall foundation	N-S coarse sand, gravel and ragstone foundation	3.96	1.43	0.11	1.3	1	Early Post-med	4a	5b
BVM12	1743	H3	E956	1743	n/a	Fill	Bedding deposit in [1744]	Loose-fairly firm coarse gravel	0.5	1.97	0.13	1.24	1.17	Early Post-med	4a	5b
BVM12	1744	H3	E956	1744	n/a	Cut	Construction cut	E-W orientated construction cut	0.5	1.98	0.18	1.24	1.06	Early Post-med	4a	5b
BVM12	1745	H3	E956	1745	69	Cut	Construction cut	N-S orientated construction cut	4.07	1	0.43	1.24	0.81	Early Post-med	4a	5b
BVM12	1746	H3	E956	1746	69	Fill	Bedding deposit in [1745]	Loose-fairly firm coarse gravel	4.07	1	0.16	1.1	0.96	Early Post-med	4a	5b
BVM12	1747	H3	E956	1747	n/a	Fill	Mortar remnant in [1744]	Compact light yellowish brown sandy mortar	0.28	0.32	0.08	1.27	n/a	Early Post-med	4a	5b
BVM12	1748	H3	E956	n/a	n/a	Fill	Fill of [1749]	Firm dark greyish brown silty clay	0.39	0.52	0.24	1.2	n/a	Early	4a	5b

														Post-med		
BVM12	1749	H3	E956	1749	n/a	Cut	Pit	Small oval pit	0.39	0.52	0.24	1.21	0.97	Early Post-med	4a	5b
BVM12	1750	H3	E956	1750	68, 69	Layer	Alluvium	Firm dark bluish grey clay	4.85	2.8	0.46	1.25	1.19	Medieval	4a	4a
BVM12	1751	H3	E956	1751	68, 69	Layer	Alluvium	Firm mid bluish grey silty clay	4.83	2.8	0.3	0.85	0.78	Medieval	4a	4a
BVM12	1000	n/a	E39	TST	86	Masonry	E-W wall	Reddish brick, English bond, 14 courses, stepped foundation, grey/white mortar with occasional chalk frags	1.12	3.12	1.04	4.01	2.96	Post-med	6b	6b
BVM12	1001	n/a	E39	TST	86	Masonry	Concrete foundation	Concrete slabs, creamy mortar with chalk frags	5.75	6.84	0.8	2.96	n/a	Post-med	6b	6b
BVM12	1002	n/a	E39	n/a	86	Masonry	Concrete	Concrete slab between [1000] and [1001]	n/a	0.37	0.24	3.19	n/a	Post-med	6b	6b
BVM12	1003	n/a	E39				VOID	VOID								
BVM12	1004	n/a	E39	TST	n/a	Masonry	Brick corbelled foundation	Reddish brick, English bond, 6 courses, greyish/white mortar	2.5	1.4	0.4	n/a	n/a	Post-med	6b	6b
BVM12	1005	n/a	E39	TST	n/a	Masonry	Brick wall	Red unfrogged brick, english bond, greyish white mortar, east-west wall	1.2	4.44	0.26	n/a	n/a	Post-med	6b	6b
BVM12	1006	n/a	E39A	n/a	n/a	Masonry	Brick culvert	Red purple yellow frogged brick, stretcher bond with occasional header courses, concreted grey mortar with occasional gravel, north-south aligned	3.1	2.16	1.55	n/a	n/a	Post-med	6b	6b
BVM12	1500	n/a	E122	TST	n/a	Masonry	Brick surface	E-W aligned unfrogged red brick surface, re-used materials, set into silt, no bonding, random coursed	1.42	6	0.1	2.99	n/a	Post-med	6bi	6bi
BVM12	1501	n/a	E122	TST	n/a	Masonry	Soakaway	Red unfrogged brick, circular soakaway, no bonding	1	0.98	n/a	2.96	n/a	Post-med	6bi	6bi
BVM12	1502	n/a	E122	n/a	n/a	Fill	Backfill of soakaway [1501]	Mod compact, dark grey brown silty-sand, freq pot; occa oyster/CTP/bone/glass	0.92	0.85	n/a	2.96	n/a	Post-med	6bi	6bi
BVM12	1503	n/a	E122	TST	n/a	Cut	Construction cut	Circular cut, vertical sides, base unseen	1.1	1	n/a	2.96	n/a	Post-med	6bi	6bi
BVM12	1504	n/a	E122	E122 post-ex; TST	n/a	Masonry	Boundary wall	Boundary wall for irregular/cruciform industrial building, red-brown unfrogged brick, off-white mortar bonding	4.26	6.35	n/a	2.82	2.75	Post-med	6bi	6bi
BVM12	1505	n/a	E122	E122 post-ex; TST	87	Masonry	Soakaway	Sub-circular soakaway, red unfrogged brick, no bonding	1.68	1.35	0.12	2.79	n/a	Post-med	6bii	6bi i
BVM12	1506	n/a	E122	E122 post-ex; TST	n/a	Masonry	NE-SW boundary wall	Boundary wall for irregular/cruciform industrial building, red-brown unfrogged brick, off-white mortar bonding	1	9.5	n/a	2.82	n/a	Post-med	6bi	6bi
BVM12	1507	n/a	E122				VOID	VOID								

BVM12	1508	n/a	E122	E122 post-ex; TST	n/a	Masonry	Manhole	Squared manhole, red unfrogged brick, random coursing, soft mortar with chalk flecks	1.1	1.1	n/a	2.84	n/a	Post-med	6bii	6bi i
BVM12	1509	n/a	E122	E122 post-ex; TST	n/a	Masonry	Floor	Red unfrogged brick floor associated with [1504]; random coursing, bedded on white lime mortar	3.86	4.6	n/a	2.8	n/a	Post-med	6bi	6bi
BVM12	1510	n/a	E122	E122 post-ex; TST	n/a	Fill	Fill of soakaway [1505]	Loose, grey-brown sandy silt, freq mortar, mod pot/CTP, occa glass	1.5	1.1	n/a	2.79	n/a	Post-med	6bii	6bi i
BVM12	1511	n/a	E122	E122 post-ex; TST	n/a	Layer	Levelling	Compact orange-brown sandy-silt and ash, occa CBM, freq charcoal/ash, subjected to high heat from [1504]	2	9.6	n/a	2.8	n/a	Early Post-med	5b	5b
BVM12	1512	n/a	E122	n/a	87	Layer	Levelling	Loose, dark grey sandy-silty ash, mod charcoal/CBM	3	10	n/a	3.29	n/a	Post-med	6bi	6bi
BVM12	1513	n/a	E122	TST	n/a	Fill	Fill of pipe trench [1514]	Firm, mid yellow-brown clay, mod charcoal	2.84	0.87	0.44	2.67	n/a	Post-med	6bii	6bi i
BVM12	1514	n/a	E122	TST	n/a	Cut	Pipe trench	NW-SE linear cut, not fully excavated	2.84	0.87	0.44	2.67	n/a	Post-med	6bii	6bi i
BVM12	1515	n/a	E122	n/a	n/a	Fill	Fill of pipe trench [1516]	Firm, mid yellow-brown clay, mod charcoal	1.03	0.3	n/a	2.64	n/a	Post-med	6bii	6bi i
BVM12	1516	n/a	E122	TST	n/a	Cut	Pipe trench	Oval cut, not fully excavated	1.03	0.3	n/a	2.64	n/a	Post-med	6bii	6bi i
BVM12	1517	n/a	E122	n/a	n/a	Fill	Fill of pipe trench [1518]	Firm, mid yellow-brown clay, mod charcoal	0.55	0.25	n/a	2.62	n/a	Post-med	6bii	6bi i
BVM12	1518	n/a	E122	TST	n/a	Cut	Pipe trench	NW-SE linear cut, not fully excavated	0.55	0.25	n/a	2.62	n/a	Post-med	6bii	6bi i
BVM12	1519	n/a	E122	E122 post-ex; TST	n/a	Fill	Fill of manhole [1508]	Loose, mid grey-brown sandy-silt, freq CBM, mod mortar	1.1	1.1	n/a	2.84	n/a	Post-med	6bii	6bi i
BVM12	1520	n/a	E122	TST	n/a	Masonry	NW-SE squared wall	Red unfrogged brick bonded with light brown lime mortar with chalk flecks	1.45	1.65	0.24	2.68	n/a	Post-med	6bi	6bi
BVM12	1521	n/a	E122	TST	n/a	Masonry	Boundary wall (corner)	Red unfrogged brick bonded with light brown lime mortar with chalk flecks	n/a	n/a	n/a	2.71	n/a	Post-med	6bi	6bi
BVM12	1522	n/a	E122	n/a	87	Layer	Made ground	Mod compact, mid grey-brown sandy-silt, freq CBM/mortar, occa pipe frags	n/a	n/a	0.67	3.89	n/a	Post-med	6bi	6bi
BVM12	1523	n/a	E123	n/a	88	Layer	Demo	Friable grey-brown sandy-silt, freq CBM/mortar	n/a	3	0.12	4.09	n/a	Modern	7	7
BVM12	1524	n/a	E123	n/a	88	Layer	Demo	Light brown clay-silt, freq CBM/mortar, mod chalk	n/a	3	0.08	3.97	n/a	Modern	7	7

BVM12	1525	n/a	E123	n/a	88	Layer	Demo	Grey-white mortar, freq CBM/chalk	n/a	3	0.1	3.89	n/a	Modern	7	7
BVM12	1526	n/a	E123	n/a	88	Layer	Demo	Dark brown clay-silt, freq CBM/charcoal, mod chalk	n/a	3	0.1	3.79	n/a	Modern	7	7
BVM12	1527	n/a	E123	n/a	88	Layer	Make up layer	Light brown silty sand, mod flints	n/a	3	0.15	3.69	n/a	Modern	7	7
BVM12	1528	n/a	E123	n/a	88	Layer	Demo	Friable dark grey-brown sandy-silt, freq CBM/mortar/pot	n/a	3	0.1	3.64	n/a	Post-med	6b	6b
BVM12	1529	n/a	E123	n/a	88	Layer	Dump layer	Loose, dark grey-black clayey-silt, freq CBM/chalk/mortar, mod shel	n/a	3	0.45	3.54	n/a	Post-med	6b	6b
BVM12	1530	n/a	E123	n/a	88	Layer	Make up layer	Dark grey silty-clay, freq charcoal/mortar, occa chalk/CBM	n/a	3	0.27	3.09	n/a	Post-med	6b	6b
BVM12	1531	n/a	E123	E123 post-ex	88	Masonry	Boundary wall of storm drain	NW-SE aligned red unfrogged brick, bonded with white lime mortar	13.2	0.72	n/a	3.54	n/a	Post-med	6b	6b
BVM12	1532	n/a	E123	E123 post-ex	n/a	Masonry	Culvert?	Vaulted E-W wall, red unfrogged brick, hard grey mortar with chalk	0.52	3.49	n/a	2.57	n/a	Post-med	6b	6b
BVM12	1533	n/a	E123	E123 post-ex	n/a	Masonry	Culvert?	Vaulted E-W wall, red unfrogged brick, hard grey mortar with chalk	0.52	3.49	n/a	2.57	n/a	Post-med	6b	6b
BVM12	1534	n/a	E122	E122 post-ex; TST	n/a	Layer	Dump layer	Compact orange-brown sandy-silt and ash, occa CBM, freq charcoal/ash, subjected to high heat from [1504]	n/a	n/a	n/a	2.8	n/a	Early Post-med	5b	6b
BVM12	1535	n/a	E122	E122 post-ex; TST	87	Cut	Construction cut	Circular cut for soakaway [1505]	1.68	1.35	0.12	2.79	n/a	Post-med	6bii	6bi i
BVM12	1536	n/a	E122	E122 post-ex; TST	n/a	Cut	Construction cut	Squared cut for manhole [1508]	1.1	1.1	n/a	2.84	n/a	Post-med	6bii	6bi i
BVM12	1537	n/a	E122	E122 post-ex; TST	n/a	Cut	Construction cut	Linear cut for wall [1506]	1	9.5	n/a	2.82	n/a	Post-med	6bi	6bi
BVM12	1538	n/a	E122	E122 post-ex; TST	n/a	Cut	Construction cut	Construction cut for boundary wall [1504]	4.26	6.35	n/a	2.82	n/a	Post-med	6bi	6bi
BVM12	1034-1049						unused	unused								

## APPENDIX 2: DOCUMENTARY RESEARCH

Julian Munby

**Site 10:** London Bridge Station

**Location:** East of Borough High Street, south of Tooley Street, north of St Thomas Street.

**Street names:** Tooley Street, Joiner Street, Dean Street (later Stainer Street), The Maze (later Weston Street), Bermondsey Street, St Thomas Street, and Maze Pond.

**Admin:** Parishes of St Olave and St Thomas, Southwark, in the County of Surrey (e.g. Vestry). Metropolitan Borough of Southwark from 1899.

**Manor:** Great Liberty Manor of the Archbishops of Canterbury (until 1899).

**Topography:** The primary topography consists of the large precinct of St Thomas's Hospital on the east side of Borough High Street (which extended as far east as The Maze), and the land south of Tooley Street, which was low-lying fields surrounded by ditches. This was obscured first by the building of streets south of Tooley and Bermondsey Streets, and then by the opening of London Bridge Station (1836), and finally the sale of the St Thomas's Hospital site (after its comprehensive rebuilding) to the South Eastern Railway in 1862.

**Medieval properties:** The south end of the site [A Trenches] is partly within the medieval precinct of St Thomas Hospital (Carlin *Gazetteer*. no. 129), about which little is known of its internal arrangement (e.g. it will have had a cemetery but only the location of post-medieval burial grounds are known; one was on the south of St Thomas's Street and just west of the south end of Dean Street).

There were medieval properties along the south side of Tooley Street (Carlin *Gazetteer*. Nos. 160-168) and on the west side of Bermondsey Street (*Gazetteer*. Nos. 169-182).

West of Dean/Stainer Street was the Prior of Canterbury's town house (*Gazetteer*. No. 162), surrounded by ditches and with a row of shops, possibly on Tenter Alley (i.e. Dean Street). By 1512-13 there were 37 tenements and six gardens, presumably representing development both on Tooley Street and in the tenter ground to the south. By 1555 this had become Flower-de-lis inn (still named as such by Rocque, 1746).

East of Dean/Stainer Street [Trenches C & H, and probably Trenches B, D, E & F] was a large property (*Gazetteer*. No. 163), originally the garden of the 'walks and gardens' of the Abbot of Battle's house on the north side of Tooley Street, and passed through a disputed ownership to the Copley family. In 1555 they owned a mansion called the Maze with 17 tenements. It extended south and



east of Maze Street and Maze Pond, and in c. 1560 comprised a capital mansion, 18 tenements and 5 small tenements, 27 gardens, and orchard and other grounds.

East of Maze/Weston Street [**G** and **?E & F**] were smaller properties (*Gazetteer*. Nos 164-168) along the streetside, with additional tenements in alleys, including The Rose (No. 166), named as Rose Alley by Rocque (1746).

**Post-Medieval change:** The site is shown in detail on Rocque's 1746 map, almost fully built on with a series of roads and a web of alleyways, yards and courts, representing the gradual infilling of gardens. Horwood's maps in the 1790s give some indication of the various classes of residence, with larger houses with gardens on the west side of Dean Street and the north side of Broad Way, but the majority of smaller houses with undistinguished spaces between them. Subsequent street mapping shows minor changes (e.g. with Dean Street being extended southwards across the former precinct of St Thomas's Hospital before 1828).

**Railway and Station development:** The development history of the London Bridge Stations has been treated at length in the Alan Baxter report, with detailed mapping of the growth of the stations (but lacking references to the source material). For each stage of the station's growth the deposited plans (Surrey Archives and Parliamentary Archives) indicate the properties lying within the Limits of Deviation, and where the Schedules survive these give the names of occupiers. The relevant earlier plans been identified in the Parliamentary Archives (by Chris Place), and copies of some of these are to be found in the Southwark Library). A key map for most of the site is the 1846 plan (on which the trenches have now been plotted). The process of the gradual expansion of the stations on the north and south side means that most of the properties between Tooley Street and St Thomas's Street have now been covered by railway infrastructure.

**Map evidence:** The general development of the site is shown on the more informative maps (Rocque 1746, Horwood 1799-1819, the OS skeleton plan of 1830, the detailed 10ft Map of Southwark in 1853 (Southwark Library), and large-scale OS 1:1056 plan of 1873 (sheet VII.76). The series of deposited railway plans are described above.

**Research potential:** The lack of early maps or detailed property descriptions may make any research into the earlier (medieval – 16th-century) period difficult, while the complexity of the post-medieval habitation of the site may make the identification of any properties almost impossible. Nonetheless, the possibility of individual deeds and property maps can be explored, together with parish rate books and the earlier census returns. For the latest phase the deposited Railway plans (Parliament Archives/Surrey Record Office) will give property shapes and owners/ occupiers for much of the site, and possibly lead back to other record sources.

**Stainer Street Burials:** Preliminary research was undertaken on the Stainer Street (Dean Street) burials in October 2012. These were found in the road, close to where the Dean Street cul-de-sac was extended south to St Thomas Street before 1828. The relevant railway property map (Alan

Baxter 2009, fig. 92) is consequently not of much use but, given the burials' likely medieval date, their location within the precinct of St Thomas's Hospital (Carlin 1996, fig. 7) suggests a possible context. There were two other burial grounds in the St Thomas's precinct, and a further one just north of the Ship Inn (and adjacent to TAA1: Station Approach); all are shown on Horwood's 1799 map.

In general this and adjacent streets seem on all early railway (and pre-railway) plans to have contained houses with few institutions that could have created a need for burials, and it is therefore most likely that they were hospital burials.

It may be very difficult to identify individual properties and uses within the precinct without a map or survey, and many of these had been removed by the railway era for the new hospital buildings. The earlier hospital records are in London Metropolitan Archives (LMA), and the later Medical School records are in King's College London.

## **Bibliography**

Alan Baxter, 2009. *London Bridge Station Historical Study*.

Carlin, M., 1996. *Medieval Southwark*. London, Hambledon Press.

## APPENDIX 3: ROMAN POTTERY ASSESSMENT

Katie Anderson

A small assemblage totalling 124 sherds, weighing 3574g was recovered from the site. 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 primarily medium sized sherds, with a relatively high mean weight of 28.8g. Twenty-nine different contexts yielded Roman pottery, of which only five were Roman in date, the remainder being post-Roman. 44% of the assemblage (by count) comprised residual sherds, with the remaining 66% coming from Roman features.

23 different fabric types were identified (Table 1), of which Romano-British coarseware fabrics dominated, representing 61.3% of the total assemblage. The remaining 38.7% comprised imported wares, of which Samian vessels were the most commonly occurring, totalling 28% of the entire assemblage and 72% of all imported wares (35 sherds, 469g). All three production centres were represented in similar quantities. Two Curle 15 dishes were identified, along with Dr18 dishes, three Dr31 dishes, one Dr27 cup and one Dr37 bowl. Two KOLN fineware sherds from a beaker were also identified (1932g). The remainder of the imported ware assemblage comprised 11 amphora sherds (344g), including examples of BAET and GAUL.

Unsourced SAND fabrics represented the largest Romano-British coarseware group, totalling 29 sherds (790g). Sourced wares identified in the assemblage included ten BB2 sherds, two VRW sherds, two HOO sherds and two AHFA.

Fabric	No.	Wt(g)
AHFA	2	85
AMPH	3	344
BAET	3	600
BB1	1	19
BB2	10	214
BBS	6	102
GAUL	5	246
GROG	1	6
HOO	2	23
HWC	1	4
KOLN	2	5
LOMI	1	15

MICA	3	26
NKGW	2	23
OXID	9	115
SAM	9	205
SAMCG	10	148
SAMEG	9	80
SAMSG	7	36
SAND	29	790
VRW	2	64
WS	2	74
WW	5	350
<b>TOTAL</b>	<b>124</b>	<b>3574</b>

Table 1: All Roman pottery by fabric

A range of vessel forms were identified (Table 2), representing a minimum of 36 different vessels. Dishes were the most common form, with a minimum of 15 different vessels identified, which included fineware Samian vessels as well as BB2 beaded versions. A minimum of 12 different jars were recorded, occurring in either SAND or OXID fabrics. The vessel forms identified within this assemblage are indicative of a small, domestic repertoire, with vessels used for the storage, production and consumption of foodstuffs.

Form	No.	Wt(g)	MNV
Amphora	10	1178	0
Beaker	2	5	0
Bowl	14	198	3
Closed form	13	227	0
Cup	3	47	2
Dish	29	425	15
Flagon	4	105	1
Jar	14	681	12
Lid	1	12	1
Mortaria	4	303	0
Open form	10	125	2
Unknown	20	268	0

Table 2: All Roman pottery by form

### Assemblage Date

The pottery ranges in date from the early to later Roman period, albeit in varying quantities. Chart 1 shows the assemblage plotted by earliest sherd date, and shows a peak in the early Roman period at AD 50. There is a second peak in AD 100, with AD 120 and AD 150 also well represented. The latest dating sherds consisted of two AHFA sherds, comprising one bowl and one dish and dating AD 250-400. The mixed date of this small assemblage suggests longevity of the site in the Roman period,

although the quantity of material recovered suggests that activity may have been fairly limited, with this site perhaps representing the extent of rather than the foci of the settlement. That said, the reuse of the site in the post-Roman period, may account in part, for the relatively small assemblage size.

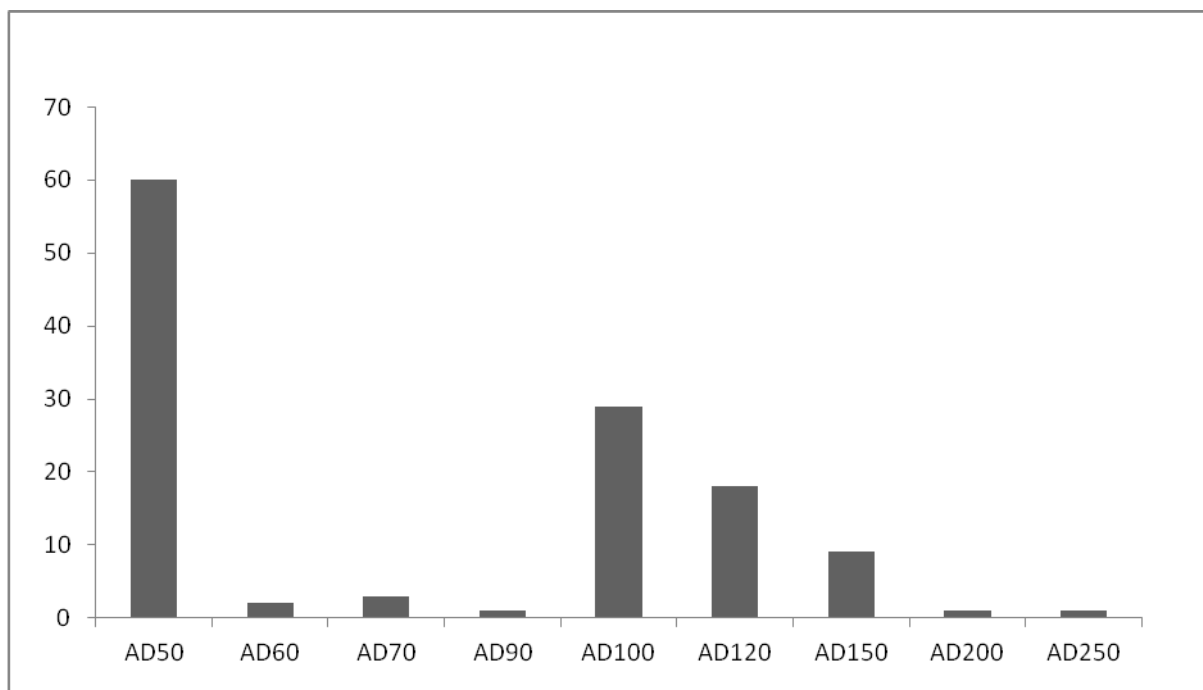


Chart 1: All Roman pottery by earliest sherd date

### Recommendations

All of the pottery has been fully recorded and therefore does not require any further analysis, with the exception of two decorated Samian sherds, which may require investigation by a Samian specialist. With the possible exception of these two vessels, it is not recommended that any of the material is illustrated.

Context	Context Spotdate	Residual?	No.	Wt(g)
57	AD50-100	Y	1	20
59	AD50-300	Y	1	365
99	AD50-300	Y	1	59
187	AD200-300	Y	1	51
201	AD50-300	Y	1	4
246	AD120-300	Y	3	45
270	AD120-300	Y	1	20
339	AD70-160	Y	1	4
353	AD70-300	Y	1	47
361	AD50-100	Y	4	36
366	AD50-100	Y	1	4
415	AD50-200	Y	2	97
528	AD50-400	Y	1	6
541	AD50-100	Y	1	13
577	AD50-250	Y	1	83
651	AD50-250	Y	1	208
873	AD50-100	Y	1	3
877	AD60-170	Y	1	46
903	AD100-150	N	3	94
904	AD120-300	N	13	723
905	AD100-150	N	9	119
906	AD120-300	N	31	521
1912	AD50-300	Y	1	159
1913	AD120-300	Y	3	19
1915	AD50-250	Y	1	9
1923	AD100-400	Y	4	68
1924	AD100-250	N	26	607
1932	AD50-150	Y	8	61
2203	AD50-250	Y	1	83
<b>TOTAL</b>			<b>124</b>	<b>3574</b>

### Bibliography

Symonds, R., 2002. *Recording Roman pottery: a description of the methodology used at Museum of London Specialist Services (MoLSS) and Museum of London Archaeology Service (MoLAS)* (Unpublished document available from MoLSS)

Perrin, R., 2011. *A Research Strategy and Updated Agenda for the Study of Roman Pottery in Britain*. Study Group for Roman Pottery. Occasional Paper No.1

## APPENDIX 4: POST-ROMAN POTTERY ASSESSMENT

Chris Jarrett

### Introduction

A medium sized assemblage of pottery was recovered from the site (65 boxes). The pottery dates from the medieval and post-medieval periods. Very few sherds show evidence for abrasion (0.2% by sherd count) and were probably deposited fairly rapidly after breakage. Residual sherds made up 6.3% by sherd count of the total assemblage and intrusive material is low at 0.2%. The fragmentation of the pottery ranges from sherd material to vessels with complete profiles, although two post-medieval items are intact, but fragmentary. The pottery was quantified by sherd count and estimated number of vessels (ENV), besides weight. Pottery was recovered from 374 contexts and individual deposits produced small (fewer than 30 sherds) to medium (less than 100 sherds) groups of pottery, while five groups of pottery are large in size (over 100 sherds).

All the pottery (4751 sherds, 3232 ENV and weighing 200.29kg, of which 182 sherds, 9 ENV and 7.605kg are unstratified) was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in an ACCESS database, by fabric, form and decoration. The classification of the pottery types is according to the Museum of London Archaeology. 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: 466 sherds, 324 ENV, 8.982kg

Post-medieval: 4285 sherds, 2908 ENV, 191.047kg

### Medieval wares

#### *Early medieval*

Early medieval flint-tempered ware (EMFL), 970-1100, 1 sherd, 1 ENV, 2g form: jar.

Early medieval sand- and shell-tempered ware (EMSS), 1000-1150, 1 sherd, 1 ENV, 8g, form: unidentified.

Early medieval shell-tempered ware (EMSH, 1050-1150, 4 sherds, 2 ENV, 127g, forms: jar.

Early Surrey ware (ESUR), 1050-1150, 1 sherd, 1 ENV, 19g, form: unidentified.

Organic ware (with voids) (MORG), 1000-1200, 1 sherd, 1 ENV, 6g, form: unidentified.

Early medieval wares (Vince and Jenner 1991) account for eight sherds/6 ENV/162g and occur in typical forms for these pottery types, *i.e.* jars or cooking pots. The majority of the early medieval wares are residual or occur as small sized sherds and indicate that they are not associated with

activity dated c. 1000-1150 pertaining to the site. Of interest is the occurrence of the sherd of organic ware (MORG) which has a distribution more so in West London.

#### *London area glazed wares*

Coarse London-type ware (LCOAR), 1080-1200 8 sherds, 8 ENV, 109g, form: jug.

Coarse London-type ware with calcareous inclusions (LCOAR CALC), 1080-1200 2 sherds, 2 ENV, 22g, forms: jug.

Coarse London-type ware with north-French style decoration (LCOAR NFR), 1180-1200 1 sherd, 1 ENV, 19g, form: jug.

Late London-type slipware (LLSL), 1400-1500 4 sherds, 4 ENV, 150g, forms: unidentified.

Late London-type ware (LLON), 1400-1500 22 sherds, 19 ENV, 800g, forms: bowl, cauldron, bung-hole jar, jug and pitcher.

London-type ware (LOND), 1080-1350 21 sherds, 19 ENV, 742g, forms: jug: early type and pipkin.

London-type ware baluster jug (LOND BAL), 1180-1350 1 sherd, 1 ENV, 26g, form: unidentified.

London-type ware tulip-necked baluster jug (LOND TUL), 1270-1350 1 sherd, 1 ENV, 7g, form: unidentified.

Pottery whose origin falls within the London-type ware industries (Pearce *et al.* 1985) is found as 60 sherds/55 ENV/1.875kg. Jug forms could only be positively identified in the early coarse (LCOAR) and finer (LOND) industries and this is typical for their repertoire. The 15th-century Late London ware industries (LLON and LLSL) is fairly well represented on the excavation and occurs in a comparatively diverse range of forms compared to that of the pre c. 1350 dated industries, and reflects a change in the material culture of pottery from a dominance of jugs to a more varied range of forms in the late medieval period.

#### *Non-local glazed wares*

Late medieval Hertfordshire glazed ware (LMHG), 1340-1450, 10 sherds, 9 ENV, 176g, form: jug.

Medieval non-local glazed wares are poorly represented in the assemblage and are provided by only one source: Hertfordshire. LMHG and occurs in the identifiable form of some nine good quality jugs recovered from mostly layers, which may be derived from offsite activity. An unglazed, sooted sherd may have been derived from a cooking form and this was found in layer [2216].

#### *Surrey-whitewares*

Cheam whiteware (CHEA), 1350-1500 52 sherds, 43 ENV, 1.018kg, forms: jar and jug: conical.

Coarse Surrey-Hampshire border ware (CBW), 1270-1500 213 sherds, 118 ENV, 2.487kg, forms: bowl or dish, cauldron, cooking pot, cup, drinking jug, jar, jug and lid.

Coarse Surrey-Hampshire border ware bung-hole jug (CBW CIST), 1340-1500 4 sherds, 3 ENV, 178g.



Coarse Surrey-Hampshire border ware cooking pot with bifid rim (CBW BIF), 1380-1500 8 sherds, 4 ENV, 197g..

Coarse Surrey-Hampshire border ware cooking pot with flat-topped rim (CBW FT), 1340-1500 7 sherds, 4 ENV, 244g.

Coarse Surrey-Hampshire border ware large rounded jug (CBW LGR), 1340-1500 26 sherds, 14 ENV, 959g.

Kingston-type ware (KING), 1240-1400 12 sherds, 11 ENV, 212g, forms: cauldron, cup and jug.

Kingston-type ware 'wheatear' stamped boss decoration (KING WSBOS), 1340-1400 1 sherd, 1 ENV, 5g, form: unidentified.

Kingston-type ware in the highly decorated style (KING HD), 1240-1300 1 sherd, 1 ENV, 8g, form: unidentified.

Kingston-type ware tulip-necked baluster jug (KING TUL), 1340-1400 1 sherd, 1 ENV, 8g.

Kingston-type ware with pellet decoration (KING PELL), 1270-1350 1 sherd, 1 ENV, 148g, form: jug.

'Tudor green' ware (TUDG), 1350-1500 5 sherds, 4 ENV, 57g, forms: cup: lobed and jug.

The Surrey whitewares (Pearce and Vince 1988) account for 331 sherds/203 ENV/5.521kg of the pottery in the assemblage. Pottery from this origin is mostly from the Surrey-Hampshire borders and as coarse border ware (CBW), found as 258 sherds/142 ENV/4.065kg. This pottery type was first marketed to London from c. 1270 and from c. 1360-1500 it was the main pottery type used in the city (Pearce and Vince 1988, fig. 9). CBW is represented by a fairly diverse range of forms and particularly of types dated to the late medieval period (see above). Cheam ware, the other late medieval Surrey whiteware found in London, is also fairly well represented in the assemblage as identifiable jug forms (see above), while the fineware, 'Tudor Green' ware is typically minimally represented and is noted as a lobed cup (found in context [2216]) and a jug fragment (context [237]).

The earlier Kingston-type ware, dated 1240-1340 is fairly poorly represented in the assemblage and found as sixteen sherds/15 ENV/381g and occurs as both 13th- and 14th-century jug sherds, although more unusual finds are the occurrence of a cauldron (context [57]) and a cup (context [2216]).

#### *Wheel-thrown coarse wares*

Limpfield-type ware (LIMP), 1150-1300, 2 sherds, 2 ENV, 55g, form: jar.

Shelly-sandy ware (SSW), 1140-1220, 6 sherds, 4 ENV, 85, form: jar and jug.

South Hertfordshire-type greyware (SHER), 1170-1350, 7 sherds, 5 ENV, 183, form: unidentified.

This class of pottery is poorly represented in the assemblage as a total of 15 sherds/11 ENV/213 and seven sherds are residual. The material is fragmentary although typically forms are present as jars occurring in all three pottery types, while a mortised handle from a jug was found in South Hertfordshire greyware and present in context [876].

## **Imported pottery**

### France

Saintonge ware with even green glaze (SAIG), 1280-1350, 1 sherd, 1 ENV, 11g, form: unidentified.

Saintonge ware with mottled green glaze (SAIM), 1250-1650, 2 sherds, 1 ENV, 25g, form: jug.

### Germany

Siegburg stoneware (SIEG), 1300-1630, 3 sherds, 3 ENV, 14g, form: drinking vessels.

Siegburg stoneware jakobakanne (SIEG JAKO), 1370-1500, 2 sherds, 2 ENV, 27g.

Siegburg stoneware Trichterhalsbecher/krug (SIEG TRIC), 1400-1500, 2 sherds, 2 ENV, 97g.

### Low Countries

Dutch red earthenware (DUTR), 1300-1650, 29 sherds, 27 ENV, 718g, forms: beaker; pedestal, bowl or dish, cauldron: type 3, jar and skillet.

Dutch slipped red earthenware (DUTSL), 1300-1650, 1 sherd, 1 ENV, 11g, form: jug.

Imported medieval pottery (Hurst *et al.* 1986) is present as 37 sherds/34 ENV/865g and mostly dates from the later medieval period. There are three sources for the imports: France, Germany and the Low Countries. Drinking and drink serving forms are mostly restricted to the French and German wares, while a wider range of vessel shape are noted in the Dutch redwares. All the imported pottery types would be expected to occur on archaeological sites in the City of London and Southwark, while during the 15th century Southwark and particularly Bermondsey was noted for a concentration of Dutch migrants.

### *Miscellaneous medieval wares*

Miscellaneous unsourced medieval pottery (MISC), 900-1500 1 sherd, 1 ENV, 3g, form: unidentified.

The only unidentified medieval ware consists of a hard, fine sandy fabric with a smooth feel and it belongs to the late medieval transitional tradition (context [363]). It has buff coloured surfaces and a light reddish yellow core and clear and dark brown glaze drips. It was probably manufactured in one of the Home Counties and probably dates to the 15th-16th centuries.

## **Post-Medieval**

### *Surrey-Hampshire border wares*

Surrey-Hampshire border whiteware (BORD), 1550-1700, 6 sherds, 4 ENV, 30g, forms: bowl or dish.

Surrey-Hampshire border whiteware/redware (BORD/RBOR), 1550-1700, 1 sherd, 1 ENV, 18g, form: tripod pipkin.

Surrey-Hampshire border whiteware with brown glaze (BORDB), 1600-1700, 2 sherds, 2 ENV, 63g, forms: chamber pot (type 2).

Surrey-Hampshire border whiteware with green glaze (BORDG), 1550-1700, 82 sherds, 61 ENV, 2.105kg, forms: bowl; flared, carinated, rounded, bowl or dish, chamber pot; type 1, dish; flared, rounded, drinking jug; rounded, money box (knobbed), porringer, skillet, stove tile and tripod pipkin.

Surrey-Hampshire border green-glazed whiteware flat-rimmed chamber pot (BORDG CHP2), 1650-1750, 2 sherds, 2 ENV, 38g.

Surrey-Hampshire border whiteware with olive glaze (BORDO), 1550-1700, 16 sherds, 9 ENV, 721g, forms: bowl or dish, chamber pot, colander; flared, dish; rounded and tripod pipkin.

Surrey-Hampshire border whiteware with yellow glaze (BORDY), 1550-1700, 71 sherds, 48 ENV, 1763g, forms: bowl; rounded, carinated, bowl or dish, chamber pot, colander, costrel; standing, dish; flared, porringer: carinated and tripod pipkin; types 1 and 2.

Early Surrey-Hampshire border whiteware (EBORD), 1480-1550, 38 sherds, 35 ENV, 485g, forms: bowl: small, dish, drinking jug; rounded, goblet, jug and money box.

Early Surrey-Hampshire border whiteware with yellow-glaze (EBORDY), 1480-1550, 1 sherd, 1 ENV, 12g, form: bowl; small, rounded.

Early Surrey-Hampshire border redware (ERBOR), 1480-1550, 1 sherd, 1 ENV, 5g, form: unidentified.

Surrey-Hampshire border redware (RBOR), 1550-1900, 173 sherds, 113 ENV, 19.014kg, forms: bowl: rounded, carinated, flared, bowl or dish, chamber pot, colander, dish; flared, rounded, flower pot, jar; rounded, paint pot, pipkin, porringer and tripod pipkin: type 2.

Surrey-Hampshire border redware with brown glaze (RBORB), 1580-1800, 18 sherds, 14 ENV, 558g, forms: bowl or dish, chamber pot and jar; rounded.

Surrey-Hampshire border redware with green glaze (RBORG), 1580-1800, 2 sherds, 2 ENV, 200g, form: chamber pot.

Surrey-Hampshire border redware with slip-trailed decoration (RBORSL), 1580-1800, 4 sherds, 4 ENV, 458g, forms: dish; flared, rounded and small.

The post-medieval Surrey-Hampshire border ware industries (Pearce 1992; 1999; 2007) are present as a total of 417 sherds/297 ENV/25.470kg. The early wares EBORD/Y, dated 1480-1550 are fairly well represented and in quite a diverse range of forms (see above), a EBORD goblet recovered from context [2204] being of note, while EBORDY is a rare occurrence on London archaeological excavations and here occurs as a small rounded bowl (found in context [479]). A sherd of early red border ware (ERBOR) is also a rare London find and it was found in context [828] and has an under-fired internal glaze.

The later red and whitewares (RBOR/BORD), which date from c. 1550, occur as forms typical for the repertoire of this industry. Items of note are a BORDY standing costrel in (context [1511]) and a fragment of a BORDG stove tile edge made in a coarser sandy fabric (context [429]). A jar in RBOR is notable for having an external lid seated rim and was externally sooted. It was recovered from context [193]. A plate shaped dish in Red border ware is slip decorated with crude vertical white slip lines and it was found in context [1303] and dates to the late 18th century.

A tripod pipkin is of interest as it appears to have been formed from two layers of white (exterior) and red clay (interior), which have then been wheel-thrown (BORD/RBOR). The vessel was recovered from context [846].

#### *Coarse London area redwares and whiteware*

'Peninsula House' ware (PEN), 1650-1700, 1 sherd, 1 ENV, 10g, form: crucible.

London-area post-medieval bichrome redware (PMBR), 1480-1600, 124 sherds, 68 ENV, 4.317kg, forms: bowl or dish, cauldron: type 1, cauldron or pipkin, jar; rounded, jug and tripod pipkin: type 1,

London-area post-medieval redware (PMR), 1580-1900, 415 sherds, 304 ENV, 33.635kg, forms: bowl or dish: carinated type 2, bowl; flared, rounded, handled, large, cauldron, cauldron or pipkin, chafing dish, chimney pot, colander; carinated, rounded, dish; flared, rounded, flower pot, jar: bung-hole, rounded, syrup collecting, jug; baluster, rounded, lid; pipkin, pitcher, tripod pipkin, watering pot.

London-area early post-medieval redware (PMRE), 1480-1600, 945 sherds, 642 ENV, 38.142kg, forms: bottle/flask: distillation, bowl or dish; carinated type 2, bowl; carinated, flared, rounded, small, cauldron; types 1 and 2, colander; rounded, dish; carinated, flared, dripping, rounded, jar: basket-handled, bung-hole, rounded, shouldered, jug; conical, rounded, lid; conical, pipkin, porringer: carinated and skillet.

London-area early post-medieval calcareous redware (PMREC), 1480-1600, 5 sherds, 5 ENV, 153g, form: bowl or dish.

London-area early post-medieval redware with metallic glaze (PMREM), 1480-1600, 5 sherds, 5 ENV, 108g, form: jar; rounded.

London-area post-medieval slip-decorated redware (PMSL), 1480-1600, 48 sherds, 29 ENV, 2.119kg, forms: jar: bung-hole and pitcher (rounded).

London-area post-medieval slipped redware (PMSR), 1480-1650, 9 sherds, 9 ENV, 311g, forms: bowl: carinated, cauldron and jar.

London-area post-medieval slipped redware with green glaze (PMSRG), 1480-1650, 57 sherds, 39 ENV, 1.535kg, forms: bowl or dish: carinated, type 2, bowl: carinated, deep, handled, cauldron or pipkin, jug, mug; cylindrical, tripod pipkin.

London-area post-medieval slipped redware with clear (yellow) glaze (PMSRY), 1480-1650, 236 sherds, 180 ENV, 9.043kg, forms: bowl or dish: carinated, types 1 and 2, bowl: carinated, types 1 and 2, flared, handled, rounded, cauldron (and or pipkin), chafing dish, colander; carinated, dish; flared, rounded, frying pan, jar; cylindrical, rounded and jug; rounded.

The London post-medieval coarseware (Nenk and Hughes 1999) are found in the assemblage as a total of 1845 sherds/1282 ENV/89.373kg and except for a single fragment of a Peninsular House crucible, with an internal honey-coloured self glaze (found in context [782]) were otherwise as redwares. The earlier redwares, dated mostly c. 1480-1600 are well represented and particularly the

bichrome ware (PMBR). Amongst the PMRE is a conical lid of note and it was found in context [566]. Additionally in PMRE there is the rim and handle from a lobed vessel with an internal glaze and this was recovered from context [599]. The only industrial forms recorded in PMRE are flasks and three examples found in context [548] have a white internal deposit, while another vessel and an example from deposit [566] were used to make nitric acid, employed in assaying, as these items contained tell-tale internal red, iron oxide deposits, except for one with a white deposit.

The slipwares (PMSRG/Y), dated 1480-1650 are notable for two dishes (contexts [566] and [674] and a cylindrical jar (context [677]) all with sgraffito decoration. A late 16th-century thumb decorated PMSRG cylindrical mug is also of note and found in context [1403], while a PMSRY frying pan was noted in deposit [537].

The later PMR, dated 1580-1900, produced a fairly typical range of forms for this industry, the majority of which were domestic in nature, although additionally there is a fairly notable quantity of flower pots 36 sherds/28 ENV/4.628kg, while the only industrial forms are the rims of two syrup collecting jars, which are almost certainly anomalies on the site. PMR forms of note are a dish with a thumb rim, dated to the end of the 16th century (context [473]), a late 16th-early 17th century dated carinated colander (context [820]), while forms found in 19th-century dated deposits are a bichrome glazed jar (context [1119]), although this may have been from a non-local sandy redware industry, besides a baluster shaped jug (context [842]).

### *Delftware*

English tin-glazed ware (TGW), 1570-1846, 66 sherds, 44 ENV, 1.739kg, forms: albarello, bowl; rounded, punch, bowl dish, chamber pot, charger, dish; fluted, rounded, lid, ointment pot, plates; types FBI, L and K and saucer.

Tin-glazed ware with external lead glaze (Orton style A) (TGW A), 1612 -1650, 8 sherds, 5 ENV, 299g, forms: charger.

Tin-glazed ware with manganese-mottled glaze (Orton style B) (TGW B), 1630-1680, 2 sherds, 1 ENV, 19g, forms: porringer.

Biscuit-fired tin-glazed ware (TGW BISC), 1570-1846, 7 sherds, 2 ENV, 98g, forms: albarello, bowl; rounded, lid.

Tin-glazed ware with plain pale-blue glaze (TGW BLUE), 1630-1846, 22 sherds, 14 ENV, 365g, forms: bowl; rounded, ointment pot and patty pan.

Tin-glazed ware with plain white glaze (Orton style C) (TGW C), 1630-1846, 31 sherds, 22 ENV, 492g, forms: chamber pot, dish, lid; teapot, mug; rounded, ointment pot, plate; type FBJ, porringer and salt.

Tin-glazed ware with external lead glaze/polychrome painted (Orton style D) (TGW D), 1630-1680, 38 sherds, 32 ENV, 1.497kg, forms: albarello, bowl; rounded, charger and dish; rounded.

Tin-glazed ware with 'Chinaman among grasses' decoration (Orton style F) (TGW F), 1670-1690, 4 sherds, 4 ENV, 118g, forms: bowl or dish, dish; rounded, plate: type FBJ.

Tin-glazed ware with pale blue glaze and dark blue decoration (Orton and Pearce style H) (TGW H), 1680-1800, 36 sherds, 26 ENV, 718g, forms: albarello, bowl; rounded, dish, plates; types FBI and K, tea bowl and vase.

Late tin-glazed ware (TGW LATE), 1745-1846, 1 sherd, 1 ENV, 24g, form: ointment pot.

Tin-glazed ware with 'Persian blue' decoration (Orton style M) (TGW M), 1680-1710, 2 sherds, 1 ENV, 62g, form: unidentified.

Tin-glazed ware with sponged decoration (TGW SPNG), 1700-1760, 2 sherds, 1 ENV, 21g, form: dish.

The London/English tin-glazed wares (Orton 1988) account for 220 sherds/154 ENV/5.453kg of the pottery in the assemblage. One or two items date to the late 16th-early 17th century from the evidence of decoration and vessel shape, although the majority of this class of pottery dates from the mid 17th century, through to the 18th century, while a small quantity of vessels date to the early 19th century and those are mostly as ointment pots. The range of forms is fairly typical for the industry, although an unusual 18th-century salt in plain white glazed ware (TGW C) was recovered from context [1616]. This salt takes the form of two equal sized triangles placed on top of each other and separated by three scroll like legs, while the top triangle has a circular depression.

#### *Essex fine red earthenwares*

Metropolitan slipware (METS), 1630-1700, 13 sherds, 9 ENV, 449g, forms: bowl or dish, chamber pot, dish; flared, rounded, jug.

Post-medieval Essex black-glazed redware (PMBL), 1580-1700, 13 sherds, 9 ENV, 266g, forms: jar; rounded and jug; rounded.

Post-medieval fine redware (PMFR), 1580-1700, 86 sherds, 44 ENV, 3.425kg, forms: bowl: flared, rounded, bowl or dish, dish, cauldron, cauldron or pipkin, chamber pot, dish; flared, rounded, jar; rounded and jug: rounded.

Post-medieval fine redware with brown glaze (PMFRB), 1580-1700, 5 sherds, 3 ENV, 110g, forms: bowl: flared and mug.

Post-medieval fine redware with green glaze (PMFRG), 1580-1700, 1 sherd, 1 ENV, 15g, forms: unidentified.

The Essex fine redwares were marketed to London during the period 1580-1700 and occur in the assemblage as 118 sherds/65 ENV/4.265kg. The forms found in these wares typically consist of bowls, dishes and drinking forms, besides the occasional jug and chamber pot.

#### *Non-local wares*

Agate ware (AGAT), 1730-1780, 4 sherds, 3 ENV, 128g, forms: bowl; flared, rounded, dish; rounded.

Blackware BLACK), 1600-1900, 6 sherds, 5 ENV, 1255g, forms: bowl; flared, rounded, jar; rounded.

Cistercian ware (CSTN), 1480-1600, 13 sherds, 13 ENV, 247g, forms: cup; rounded, mug; rounded.

Midlands orange ware (MORAN), 1400-1820, 11 sherds, 5 ENV, 922g, forms: butter pot.

North Devon gravel-tempered ware (NDGT), 1600-1800, 3 sherds, 1 ENV, 263g, forms: unidentified.

Rockingham mottled brown-glazed ware (ROCK), 1800-1900, 1 sherd, 1 ENV, 4g, form: unidentified.

Staffordshire-type coarse earthenware (STCO), 1650-1800, 2 sherds, 1 ENV, 10g, form: unidentified.

Staffordshire-type mottled brown-glazed ware (STMO), 1650-1800, 1 sherd, 1 ENV, 18g, form: unidentified.

Staffordshire-type redware (STRE), 1600-1800, 2 sherds, 1 ENV, 1.017kg, forms: bowl; flared and handled.

Combed slipware (STSL), 1660-1870, 16 sherds, 11 ENV, 549g, forms: dish; rounded and porringer.

Sunderland-type coarseware (SUND), 1800-1900, 9 sherds, 5 ENV, 438g, forms: bowl; flared, chamber pot,

Sunderland-type coarseware with brown mottled glaze (SUND MOT), 1775-1850, 11 sherds, 6 ENV, 384g, forms: bowl or dish, bowl; rounded.

Verwood ware (VERW), 1600-1900, 10 sherds, 7 ENV, 244g, forms: dish, jar; rounded

Wealden buff ware (WEAL), 1480-1900, 6 sherds, 6 ENV, 188g, forms: bowl; rounded.

Plain yellow ware (YELL), 1820-1900, 22 sherds, 16 ENV, 523g, forms: bowl; rounded, chamber pot, colander, dish; oval and mug; cylindrical,

Yellow ware with industrial slip decoration (YELL SLIP), 1820-1900, 31 sherds, 17 ENV, 1015g, forms: bowl; deep, carinated, rounded, chamber pot, jug; baluster, mug; cylindrical; tankard and water closet.

The non-local post-medieval pottery-types account for 152 sherds/101 ENV/7.271kg. The earliest pottery types consist of Cistercian ware cups and a rounded mug sherds, whilst amongst the long-lived Midlands orange ware butter pots is an example with an illegible circular pad, dated to the late 17th century (Egan 1992) and this was found in context [35]. A Wealden buff ware bowl is in the shape of an Italian Montelupo tin-glazed ware tazza and it was derived from context [548], deposited c. 1480-1550 as dated by associated pottery. The forms present in the 18th-century (AGAT and STSL) and 19th-century wares (SUND/MOT and YELL/SLIP) are fairly typical for their respective industries. Of interest are a blackware medium rounded bowl and a medium sized rounded jar with respectively a complete and nearly intact profiles and both were found in context [842].

### *English Stonewares*

Black basalt stoneware (BBAS), 1770-1900, 8 sherds, 5 ENV, 532g, forms: lid; tea pot and tea pot; rounded, oval.

Black basalt stoneware with glaze (BBASG), 1770-1880, 1 sherd, 1 ENV, 32g, forms: tea pot; oval.

Derbyshire stoneware (DERBS), 1700-1900, 7 sherds, 7 ENV, 264g, forms: bowl; flared and jar; rounded.

English stoneware (ENGs), 1700-1900, 12 sherds, 10 ENV, 1.905kg, forms: bottle; annatto, blacking, cylindrical, ginger beer, shouldered.

English stoneware with Bristol glaze (ENGs BRST), 1830-1900, 3 sherds, 3 ENV, 186g, forms: bottle; cylindrical.

London stoneware (LONS), 1670-1926, 85 sherds, 57 ENV, 8.912kg, forms: blacking paste pot, bottle; blacking, cylindrical, flat, ink, shouldered, bottle or jar, jar: shouldered, jug: rounded, lid; flanged, ?mortar, mug; cylindrical and tankard.

Midlands purple ware (MPUR), 1400-1750, 14 sherds, 14 ENV, 5.154kg, forms: butter pot.

Nottingham stoneware (NOTS), 1700-1800, 4 sherds, 4 ENV, 150g, forms: bowl; rounded, flared and jug.

Red stoneware (REST), 1730-1780, 1 sherd, 1 ENV, 40g, forms: lid; teapot.

Staffordshire-type brown salt-glazed stoneware (STBRS), 1690-1730, 1 sherd, 1 ENV, 21g, forms: unidentified.

White salt-glazed stoneware (SWSG), 1720-1780, 34 sherds, 26 ENV, 532g, forms: bowl; rounded, chamber pot, plate; dinner, saucer, tankard and tea bowl.

Dipped white salt-glazed stoneware (SWSL), 1710-1760, 4 sherds, 3 ENV, 57g, forms: bowl, rounded, saucer.

White stoneware (WHIST), 1790-1900, 2 sherds, 1 ENV, 18g, forms: possible flower.

The English stonewares are recorded as a total of 176 sherds/133 ENV/17.803kg. The forms present in the different stonewares are typical for those industries, e.g. tea wares confined to the black basalt wares, bottles prevalent in the English stoneware, bottles, jars and jugs in the London stoneware industry, while drinking, sanitary, table, and tea wares are found in white salt-glazed stonewares. Context [1227] produced three intact bottles, two for annatto and one for ginger beer and all in ENGS. The ginger beer bottle is stamped 'EX', as is another stoneware bottle sherd in this context and this mark relates to an excise duty in operation between 1817 and 1834. Also of note is an early 19th-century possible flower brick or vase, moulded in white stoneware and recovered from contexts [248] and [256].

### *English porcelains*

English porcelain (ENPO) 1745-1900 1 sherd, 1 ENV, 8g, form: tea bowl.

English porcelain with under-glaze blue painted decoration (ENPO BW) 1745 -1830 3 sherds, 3 ENV, 26g, forms: bowl and tea cup; octagonal.

A small quantity of English porcelain was recovered from the site as a total of 4 sherds/3ENV/34g. All of this material appears to be 19th century in date, except for an earlier, late 18th-century, unstratified tea bowl in ENPO. These porcelains occur typically as tea wares, which includes a probable slop bowl.

### *Factory made earthenwares/industrial finewares*

Bone china (BONE), 1794-1900, 18 sherds, 10 ENV, 298g, forms: bowl; rounded, coffee can, cup coffee, plate, saucer and tea cup; cylindrical, waisted shapes.

Creamware (CREA), 1740-1830, 3 sherds, 2 ENV, 55g, forms: plate.



Creamware with developed pale glaze (CREA DEV), 1760-1830, 375 sherds, 187 ENV, 13.301kg, forms: bowl; flared, rounded, bowl or dish, chamber pot, cup, dish; oval, rectangular, jar; cylindrical, rounded, jug; cylindrical, lid; oval, tureen, mug; cylindrical, plate; dinner, large, soup, tea sizes, saucer, tankard and tea pot.

Early creamware (CREA EAR), 1750-1770, 2 sherds, 2 ENV, 100g, forms: plate; dinner and tea sizes.

Green-glazed creamware (CREA GRN), 1760-1830, 4 sherds, 1 ENV, 41g, forms: plate; dinner size.

Creamware with industrial slip decoration (CREA SLIP), 1775-1830, 16 sherds, 8 ENV, 537g, forms: bowl; rounded, lid; teapot and saucer.

Creamware with tortoiseshell glaze (CREA TORT), 1740-1770, 3 sherds, 3 ENV, 32g, forms: dish and plate.

Creamware with under-glaze transfer-printed decoration (CREA UTR), 1790-1830, 3 sherds, 2 ENV, 214g, forms: plate: dinner size.

English yellow-glazed refined earthenware (EYGE), 1785-1835, 3 sherds, 3 ENV, 67g, forms: bowl; rounded and mug; cylindrical.

Factory-made slipware (dark brown earthenware) (FMSL), 1790-1900, 1 sherd, 1 ENV, 7g, form: tea cup; porringer shape.

Lustreware (dark brown earthenware without slip) (LUST), 1805-1900, 1 sherd, 1 ENV, 4g, form: unidentified.

Majolica (MAJO), 1850-1900, 4 sherds, 2 ENV, 106g, forms: bowl; flared, oval and jug.

Pearlware (PEAR), 1770-1840, 34 sherds, 19 ENV, 891g, forms: bowl; carinated, rounded, chamber pot, dish; oval, figurine, mug; cylindrical, plate; dinner size and tea cup; London shape.

Pearlware with under-glaze blue painted decoration (PEAR BW), 1770-1820, 93 sherds, 54 ENV, 2.224 kg, forms: bowl; rounded, carinated, slop, jug; cylindrical, ladle, mug; cylindrical, plate; dessert, dinner, large, soup, tea bowl and tea cup; London and porringer shapes.

Pearlware with under-glaze polychrome painted decoration (earth colours) (PEAR EARTH), 1790-1820, 36 sherds, 18 ENV, 834g, forms: jug; pear-shaped, plate: dessert, dinner and tea shapes, saucer, tea bowl and tea cup; Bute and London shapes.

Pearlware with under-glaze painted decoration (PEAR PNTD), 1770-1840, 1 sherd, 1 ENV, 11g, form: saucer.

Pearlware with industrial slip decoration (PEAR SLIP), 1775-1840, 11 sherds, 10 ENV, 383g, forms: bowl; rounded, jug and mug; cylindrical.

Pearlware with under-glaze transfer-printed decoration (PEAR TR), 1770-1840, 93 sherds, 68 ENV, 1.378 kg, forms: bowl; carinated, flared, chamber pot, dish; oval, jug, plate; dessert, dinner, soup and tea sizes, saucers, tea bowls and tea cup; London and porringer shapes

Pearlware with type 1 blue transfer-printed decoration (Chinoserie style line engraving) (PEAR TR1), 1770-1800, 42 sherds, 30 ENV, 884g, forms: bowl; deep, flared, rounded, slop, dish; small, plate: large, dessert, dinner, saucer, tea bowl and tea cup; Bute shape.

Pearlware with type 2 blue transfer-printed decoration (stipple and line) (PEAR TR2), 1807-1840, 5 sherds, 4 ENV, 74g, forms: bowl; slop, dish and tea bowl.

Pearlware with type 4 transfer-printed decoration (new colours) (PEAR TR4), 1825-1840, 1 sherd, 1 ENV, 22g, form: plate: tea sized.

Refined red earthenware (REFR), 1740-1800, 1 sherd, 1 ENV, 7g, form: jar.

Plain refined white earthenware (REFW), 1805-1900, 95 sherds, 32 ENV, 2.815kg, forms: bowl; rounded, chamber pot, cup, dish; oval, jar; cylindrical, mug; cylindrical, plate; dinner, octagonal, soup, tea sizes, saucer and tankard.

Refined white earthenware with under-glaze painted decoration (chrome colours) (REFW CHROM), 1830-1900, 8 sherds, 6 ENV, 483g, forms: bowl; rounded, dish; oval, rectangular, jar; cylindrical, rounded, jug; cylindrical, lid; oval, tureen, mug; cylindrical, plate, saucer and Tea cup; London shape.

Refined white earthenware with industrial slip decoration (REFW SLIP), 1805-1900, 3 sherds, 2 ENV, 36g, forms: bowl; rounded and jug.

Transfer-printed refined whiteware (TPW), 1780-1900, 41 sherds, 23 ENV, 1.319kg, forms: bowl; rounded, slop, chamber pot, plate; dessert and dinner sizes and tea cup; London, porringer and waisted shapes

Transfer-printed refined whiteware with 'flow blue' decoration (TPW FLOW), 1830-1900, 7 sherds, 5 ENV, 165g, forms: saucer, tea cup; French and porringer shapes.

Blue transfer-printed refined whiteware with stipple and line decoration (type 2) (TPW2), 1807-1900, 2 sherds, 2 ENV, 21g, forms: saucer, tea cup; London shape.

Brown or black transfer-printed refined whiteware (type 3) (TPW3), 1810-1900, 2 sherds, 1 ENV, 41g, form: tea cup; porringer shape.

Transfer-printed refined whiteware with new colour decoration (type 4) (TPW4 1825-1900, 3 sherds, 2 ENV, 47g, forms: plate; dessert size, saucer and tea cup; porringer shape.

Transfer-printed refined whiteware with under-glaze printed and over-glaze painted decoration (type 6) (TPW6), 1840-1900, 3 sherds, 2 ENV, 45g, forms: saucer and tea cup; London shape.

The factory made earthenwares consist of a total of 914 sherds/502 ENV/26.442g. There is quite a diverse range of pottery types, which include a small number of rarely encountered versions, such as slip decorated Creamware. The forms found in this class of pottery are recorded typically as sanitary, table and tea wares. Other items of interest are three TPW plates: two have 'Eating House' (unstratified and context [842]) and 'S.Howard' and 'Dark-House-Lane' (context [868]).

### *Imported wares*

#### *China*

Chinese blue and white porcelain (CHPO BW), 1590-1900, 28 sherds, 19 ENV, 690g, forms: bowl; rounded, dish; pedestal, mug; cylindrical, plate; dinner, saucer and tea bowl.

Chinese Imari porcelain (CHPO IMARI), 1680-1900, 4 sherds, 3 ENV, 31g, forms: bowl; rounded, plate and tea bowl.

Chinese porcelain with famille rose decoration (CHPO ROSE), 1720-1800, 4 sherds, 4 ENV, 102g, forms: bowl; flared, rounded.

## France

French chafing dish (FRCHAF), 1500-1650, 1 sherds, 1 ENV, 83 g.

Martincamp-type ware type II flask (dark brown stoneware) (MART2), 1500-1600, 1 sherd, 1 ENV, 9g.

Martincamp-type ware type III flask (red earthenware) (MART3), 1600-1650, 1 sherd, 1 ENV, 6g.

Saintonge ware with mottled green glaze (SAIM), 1250-1650, 1 sherd, 1 ENV, 6g, form: jug.

Saintonge ware (SAIN), 1250-1650, 1 sherd, 1 ENV, 84g, form: jug.

Unglazed Saintonge ware (SAIU), 1250-1650, 2 sherds, 1 ENV, 17g, forms: unidentified.

## Germany

Frechen stoneware (FREC), 1550-1700, 43 sherds, 35 ENV, 978g, forms: jug; bartmannen, rounded.

Frechen stoneware inscribed band jug (FREC INSCR), 1550-1580, 1 sherd, 1 ENV, 19g, form: jug; rounded.

Unsourced German stoneware (GERST), 1480-1900, 3 sherds, 2 ENV, 38g, forms: bottle.

German whiteware (GERW), 1550-1630, 2 sherds, 2 ENV, 23g, forms: unidentified.

Cologne or Frechen stoneware (KOLFREC), 1550-1580, 12 sherds, 11 ENV, 293g, forms: drinking jug, jug; rounded.

Cologne stoneware (KOLS), 1500-1580, 5 sherds, 5 ENV, 132g, form: drinking jug, jug; rounded.

Langerwehe/Raeren stoneware (LARA), 1450-1500, 3 sherds, 3 ENV, 52g, forms: drinking jug; rounded.

Raeren stoneware (RAER), 1480-1610, 129 sherds, 113 ENV, 4.141kg, forms: drinking jug; rounded, biconical, jug; rounded and mug; rounded.

Siegburg stoneware with iron wash (SIEB), 1450-1550, 3 sherds, 3 ENV, 42g, form: drinking jug.

Siegburg stoneware (SIEG), 1300-1630, 3 sherds, 3 ENV, 92g, forms: drinking jug and jug; rounded.

Siegburg stoneware drinking bowl (SIEG DBOWL), 1450-1550, 2 sherds, 2 ENV, 48g.

Siegburg salt-glazed stoneware (SIEGS), 1500-1630, 13 sherds, 13 ENV, 464g, forms: drinking jug, jug; rounded and mug; rounded.

Werra slipware (WERR), 1580-1650, 2 sherds, 1 ENV, 42g, form: dish.

Weser slipware (WESE), 1580-1630, 5 sherds, 4 ENV, 61g, forms: bowl; rounded, bowl or dish

Westerwald stoneware (WEST), 1590-1900, 4 sherds, 4 ENV, 100g, forms: jug; rounded and stein.

Westerwald stoneware chamber pot with flanged rim (WEST CHP2), 1740-1760, 1 sherd, 1 ENV, 17g.

Westerwald stoneware with purple and blue decoration (WEST PURP), 1665 -1750, 1 sherd, 1 ENV, 62g, form: stein.

## Italy

Central Italian tin-glazed ware (CITG), 1450-1550, 1 sherd, 1 ENV, 3g, form: vase.

Montelupo oil jar (MLOJ), 1800-1900, 6 sherds, 3 ENV, 2.368kg.

Montelupo polychrome maiolica (MLTG), 1500-1700, 1 sherd, 1 ENV, 68g, form: tazza.

North Italian bichrome marbled slipware (NIMS BICR), 1600-1750, 2 sherds, 2 ENV, 82g, form: jug.

## Low Countries

Dutch tin-glazed ware (DTGW), 1512-1800, 7 sherds, 6 ENV, 113g, forms: albarello, charger and vase.

Dutch red earthenware (DUTR), 1300-1650, 88 sherds, 74 ENV, 2.579kg, forms: bowl; handled, rounded, bowl or dish, cauldron, cauldron or pipkin, dish; dripping, flared, jar and jug; rounded.

Dutch bichrome red earthenware (DUTR BICR), 1480-1650, 2 sherds, 1 ENV, 15g, form: jar.

Dutch slip-decorated red earthenware (Utrecht-type) (DUTSD), 1400-1500, 5 sherds, 3 ENV, 65g, forms: cauldron and lid; conical.

Dutch slipped red earthenware with sgraffito decoration (DUTSG), 1450-1550, 4 sherds, 4 ENV, 215g, forms: chafing dish, dish; flared.

Dutch slipped red earthenware (DUTSL), 1300-1650, 12 sherds, 8 ENV, 392g, forms: bowl or dish, cauldron, dish; rounded, small and jug.

Low Countries polychrome slipware (LCPS), 1600-1650, 1 sherd, 1 ENV, 142g, form: jug.

South Netherlands maiolica (SNTG), 1480-1575, 3 sherds, 3 ENV, 36g, form: jug.

## Mediterranean

Mediterranean lead-glazed ware (MDLG), 1480-1700, 1 sherd, 1 ENV, 11g, form: unidentified.

## Portugal

Merida-type micaceous ware (SPAM), 1270-1650, 7 sherds, 2 ENV, 132g, form: jug.

## Spain

Isabela polychrome tin-glazed ware (ISAB), 1500-1550, 2 sherds, 2 ENV, 87g, form: dish; flared.

Miscellaneous unsourced Spanish amphorae (SPOA), 1200-1900, 3 sherds, 3 ENV, 64g.

Miscellaneous unsourced Spanish wares (SPOW), 1250-1900, 1 sherd, 1 ENV, 137g, form: jug; large rounded.

Miscellaneous Spanish tin-glazed ware (STGW), 1480-1700, 1 sherd, 1 ENV, 21g, form: unidentified.

Late Valencian lustreware (VALL), 1480-1600, 2 sherds, 2 ENV, 54g, forms: bowl; flared and porringer.

## Unidentified

Continental porcelain (CONP), 1710-1900, 1 sherd, 1 ENV, 19g, form: sauce boat.

Imported tin-glazed ware (TGW IMP). 1480-1900, 1 sherd, 1 ENV, 12g, form: jug.

The post-medieval imported pottery is recorded as 428 sherds/359 ENV/14.285kg. Sources of the pottery are from China, France, Germany, Italy, The Low Countries, Portugal, Spain and general Continental and Mediterranean locations. The forms represented in Chinese porcelain occur typically as tea and table wares, although in CHPO BW there are the rarer forms of a pedestal dish (context [842] and specifically made for the European export market, a cylindrical mug (context [18]). These

wares occur in deposits dated to after c. 1760 and may indicate a lower socio-economic community that could only afford oriental porcelains when they became affordable to everyone in the late 18th century. The range of French imports during the post-medieval period are fairly typical, as jug sherds in Saintonge ware and as globular flasks in Martincamp ware (MART2: context [752]; MART3: context [846]). A French chaffing dish was noted in context [974] as a rim support with the face missing. The German wares are frequent and mostly represented by stonewares which occur mostly as drinking or drink serving forms, although bowls or dishes occur in slipwares from Werra (contexts [421], [426], [448] and [816]) and Weser (context [450]).

The Italian wares fall into two categories, Firstly as red earthenwares, which include a jug or costrel sherd in NIMS (context [138]) and as olive jars, noted in contexts [18] and [280], while the example from [1111] has an oval stamp with the initials 'T M'. Secondly, Italian pottery occurs as tin-glazed wares, the earliest is notably as a vase in CITG and dates to c. 1500 and recorded in context [553]. A second item is found as the wall of a Montelupo *tazza*, decorated in the *foglia verde* style and dated to the 17th century and present in context [553].

The Dutch redwares are fairly numerous in the post-medieval part of the assemblage and fitting for a Southwark location considering the presence of a notable immigrant population from the Low Countries (see above). Forms in the redwares are typically as kitchen and tablewares. Of particular note is the presence of a Low Countries polychrome slipware jar recovered from context [384]. Tin-glazed wares from this source are noted as South Netherlands tin-glazed ware, which includes a jug sherd with a ladder medallion (context [566]) and later chargers, an albarello and vase in DTGW.

A single sherd, from a probable jar with an internal slip is recorded in Mediterranean lead-glazed ware and found in context [359]. Other Southern European wares are recorded and include in Merida-type micaceous ware as the base of a jug with external sooting and an internal deposit (context [594]), while another sherd from deposit [1655] has an applied, vertical thumbled strip. Another sherd of this pottery type was found in context [443]. Of an Italian or Netherlands source is a fragment of a jug or vase decorated with a blue ladder medallion and spike foliage motifs on a lighter blue background (TGW IMP: context [548]). Spanish wares are found in a number of different pottery types and include amphora (contexts [462], [469], and [842]) and a large rounded jug with a wide strap handle in a miscellaneous ware (SPOW: context [548]). The tin-glazed wares include lustre wares in VALL and found as a flared bowl (context [597]) and a porringer with an internal trellis border on the vessel wall (context [537]). Other tin-glazed wares occur as dishes (ISAB: contexts [537] and [1416]) while a sherd of a possible vase in STGW was recovered from context [97]. Finally, a 19th-century sauceboat in Continental porcelain was recovered from context [1510].

### *Miscellaneous*

Miscellaneous unsourced post-medieval pottery (MISC), 1480-1900, 6 sherds, 6 ENV, 61g, forms: unidentified.

Miscellaneous unsourced post-medieval red earthenware pottery (MISC RED), 1480-1900, 4 sherds, 2 ENV, 400g, forms: flower pot and jar.

Miscellaneous unsourced post-medieval slipwares (MISC SLIP), 1480-1900, 4 sherds, 3 ENV, 247g, forms: bowl, dish; flared.

Miscellaneous whitewares (MISC WW), 1480-1900, 4 sherds, 3 ENV, 66g, forms; jug; pear-shaped.

Seventeen sherds/13 ENV/755g of post-medieval pottery could not be assigned to a specific type and are placed into miscellaneous categories. Of note is a jar with an inturned, rolled, flattish oval rim and rod handle terminal and a honey coloured glaze (found in context [273], spot dated 1780-1810). This jar is in a fine redware fabric with frequent fine calcareous/white inclusions and it may be from an Italian or Kent source. A number of slipwares also fall into the miscellaneous category and consist of a flared dish (found in contexts [280] and [1119]) with concentric white slip lines, high-lighted in green glaze and this vessel is probably of a Low Countries or Northern European source. From the same source is an unstratified bowl sherd with rouletted notched line decoration. The miscellaneous whitewares include probable French imports dating to the end of the 15th century or early 16th century and are in the form of jug sherds, and include a pear-shaped example, recovered from context [548], while a micaceous fabric was found in deposit [592].

## Distribution and dating

Table 1 shows the contexts containing pottery, the phase they occur in, the size/number of sherds, ENV and weight, the earliest and latest date of the most recent pottery type (Context ED/LD), the pottery types in the deposit and a considered (spot) date for the group. All the Post-Roman pottery was recovered from Phases 4-7 dated deposits. A short discussion of the phases is included, concentrating mainly on the dating of the deposits according to the pottery.

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
1	B1	6b	2	2	76	1760	1830	1760-1830
3	B1	6b	3	3	56	1820	1900	1820-1900
6	B1	6a	30	17	449	1770	1840	1790-1830
9	B1	6a	2	2	150	1740	1770	1740-1770
14	B1	6a	1	1	3	1570	1846	1612-1800
18	B2	6a	50	37	2668	1830	1900	1830-1840
19	B2	7	4	4	166	1830	1900	1830-1900
22	B2	6	10	10	104	1760	1830	1760-1830
24	B2	6	4	4	507	1825	1900	1825-1840
29	B2	6	10	10	138	1770	1820	1770-1820
30	B2	6	25	23	1120	1830	1900	1830-1900
33	B2	5	3	3	65	1580	1900	1580-1700
35	B2	6	7	3	926	1580	1700	1662-1692
44	B2	6	10	7	434	1820	1900	1830-1900
50	B2	6	7	7	80	1830	1900	1830-1900
56	B2	6	35	17	696	1820	1900	1820-1900

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
57	B2	5	5	5	147	1480	1600	1480-1600
58	B2	6	4	3	119	1760	1830	1760-1830
59	B2	5	13	12	210	1550	1700	1550-1580
65	B2	6	1	1	19	1550	1700	1550-1700
71	B2	5	8	8	167	1480	1550	1480-1550
72	B2	6	25	24	642	1800	1840	1800-1840
74	B2	4b	1	1	22	1480	1600	1480-1600
86	B3	6	28	23	673	1805	1830	1805-1830
92	B3	5	3	3	53	1480	1600	1480-1600
94	B3	5	2	2	140	1480	1600	1480-1600
97	B3	5	1	1	21	1480	1700	1480-1700
99	B3	4b	2	2	99	1480	1650	1480-1650
105	A1	6b	2	2	16	1820	1900	1820-1900
119	A1	6b	1	1	40	1550	1700	1550-1700
130	A1	6b	4	3	42	1770	1840	1770-1830
131	A1	6b	18	17	226	1820	1846	1820-1846
132	A1	6b	2	2	22	1600	1800	18th century
135	A1	6a	4	3	88	1580	1900	18th century
136	A1	6a	7	7	113	1580	1900	Late 17th - 18th century
138	A1	VOID	100	89	2438	1720	1780	1720-1760
139	A1	6b	16	11	585	1770	1840	1815-40
142	A1	6a	23	19	1300	1670	1926	1680-1720
144	A1	6a	1	1	8	1570	1846	M 17th - 18th century
149	A1	VOID	3	3	26	1580	1900	1630-1750
150	A1	7	1	1	2	1630	1846	1630-1846
151	A1	6a	9	8	456	1630	1680	1630-1680
161	A1	6a	3	3	85	1580	1800	1580-1700
163	A1	6a	8	8	275	1630	1680	End 17th - e 18 <sup>th</sup> century
166	A1	6a	3	2	70	1680	1710	1680-1710
168	A1	VOID	7	4	417	1630	1700	1630-1700
170	A1	6a	8	7	300	1630	1846	M - I 17th century
172	A1	6a	2	2	59	1480	1610	1480-1610
174	A1	6a	9	8	151	1670	1923	1670-1700
175	A1	6a	1	1	8	1512	1800	16th - e 17th century
177	A1	6a	3	1	20	1580	1700	1580-1700
185	A1	4b	6	4	310	1480	1600	1480-1550
186	A1	4b	3	3	157	1480	1600	1480-1500
187	A1	6a	7	7	229	1680	1800	1680-1800
189	A1	4b	4	4	75	1480	1550	1480-1550
193	A1	4b	8	4	364	1580	1900	1580-1700
208	C	5	2	2	56	1580	1600	1580-1600
209	C	5	4	4	87	1550	1700	1550-1650
210	C	5	26	26	913	1480	1600	1480-1550
216	C	4b	24	17	655	1480	1600	1480-1550
218	C	4b	4	2	10	1240	1350	1240-1350
226	C	4b	1	1	8	1000	1150	1000-1150
228	C	4b	1	1	2	970	1100	970-1100
237	C	4b	1	1	1	1300	1500	1300-1500

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
239	C	4b	1	1	13	1340	1500	1340-1500
243	C	4b	3	3	48	1270	1500	1270-1500
246	C	4a	1	1	22	1080	1350	1080-1350
248	E2 (N)	6b	15	9	297	1805	1830	1805-1830
251	E2 (N)	6b	24	21	537	1770	1840	1809-1834
253	E2 (N)	6b	3	3	18	1770	1820	1770-1820
255	E2 (N)	6b	10	10	225	1770	1820	E 19th century
256	E2 (N)	6b	16	14	210	1790	1900	Mid 19th century
260	E2 (N)	6b	1	1	6	1570	1846	End 17th -18th
263	E2 (N)	6b	1	1	11	1550	1700	1550-1700
265	E2 (N)	6b	12	12	189	1770	1840	Mid 19th century
267	E2 (N)	6b	6	3	60	1760	1830	1760-1830
268	E2 (N)	6b	2	2	12	1770	1840	1770-1840
270	E2 (N)	6a	1	1	19	1480	1900	1480-1900
273	E2 (N)	6a	9	8	561	1770	1840	1780-1810
275	E2 (N)	6a	3	3	36	1760	1830	1760-1830
280	E2 (N)	6a	9	9	2699	1760	1830	1760-1830
281	E2 (N)	6a	2	2	5	1760	1830	1760-1780
286	E2 (N)	6a	7	7	144	1770	1840	1770-1840
289	E2 (N)	6a	4	4	111	1680	1800	1680-1800
291	E2 (N)	6a	2	2	94	1580	1700	1580-1700
321	D2	4b	4	4	132	1480	1600	1480-1600
324	D2	4b	3	3	52	1480	1600	1480-1600
326	D2	4b	3	3	45	1350	1650	1350-1500
328	D2	4b	9	9	90	1480	1600	1480-1600
339	D2	4b	11	10	170	1480	1600	1480-1600
347	D2	4a	2	2	30	1270	1350	1270-1350
348	D2	4a	10	9	406	1480	1550	1480-1550
350	D2	5b	1	1	30	1480	1600	1480-1600
353	D2	5b	4	4	152	1480	1600	1480-1600
355	D2	4a	1	1	3	1350	1500	1350-1500
359	D2	4a	18	15	317	1480	1550	1480-1550
361	D2	4a	1	1	3	1080	1350	1080-1350
362	D2	4a	6	3	33	1270	1500	1270-1500
363	D2	4a	5	4	47	1400	1500	1400-1500
365	D2	4a	3	3	63	1170	1350	1170-1300
366	D2	5b	12	7	211	1480	1600	1480-1600
378	D1	6b	2	2	45	1770	1840	1790-1840
381	D1	6b	1	1	62	1665	1750	1665-1750
382	D1	6b	20	20	710	1805	1900	Mid 19th century
384	D1	6b	6	6	504	1600	1650	1480-1600
387	D1	6a	2	2	39	1580	1900	1580-1900
388	D1	6b	31	13	1186	1850	1900	1850-1900
406	A3	6b	12	12	163	1760	1780	1760-1780
407	A3	6b	4	3	37	1580	1900	1580-1700
411	A3	6b	1	1	3	1480	1610	1480-1610
413	A3	6b	4	4	104	1720	1780	1720-1780
415	A3	6b	17	16	442	1760	1830	1760-1780



Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
417	A3	6b	3	3	142	1550	1700	1550-1650
420	A3	6b	16	16	203	1770	1820	1770-1820
421	A3	6a	28	22	378	1580	1630	1580-1610
422	A3	6a	25	1	138	1630	1846	1630-1680
423	A3	6a	3	3	17	1550	1700	1080-1200
425	A3	6a	1	1	10	1550	1700	1550-1700
426	A3	6a	11	2	71	1550	1700	1550-1600
429	A3	6a	1	1	11	1550	1700	16th century
433	A3	6a	1	1	11	1580	1900	1580-1900
439	A3	5	1	1	11	1480	1600	1480-1600
443	A3	5	1		10	1580	1650	1580-1650
445	A3	5	1	1	14	1480	1600	1480-1600
447	A3	5	1	1	7	1480	1600	1480-1600
448	A3	5	5	3	127	1580	1630	1580-1630
450	A3	5	3	2	51	1580	1650	1580-1650
455	A3	5	2	2	41	1550	1700	1550-1700
456	A3	5	2	2	45	1580	1700	1580-1700
459	A3	5	45	12	661	1580	1700	1580-1630
462	A3	5	6	6	102	1580	1900	1580-1600
463	A3	5	3	3	60	1550	1700	1550-1700
464	A3	5	3	3	104	1550	1700	1550-1600
469	A3	5	3	3	43	1580	1900	1580-1650
472	A3	5	10	10	160	1580	1700	1580-1600
473	A3	5	13	6	285	1580	1700	1580-1600
475	A3	5	4	3	38	1580	1900	1580-1600
476	A3	5	8	5	126	1580	1900	1580-1700
478	A3	5	11	6	92	1580	1900	1580-1700
479	A3	4c	36	30	611	1480	1550	1480-1550
480	A3	5	22	17	313	1580	1570	1580-1600
482	A3	5	8	4	1010	1580	1900	1580-1630
486	A3	5	2	2	9	1805	1900	1805-1900
487	A3	5	1	1	11	1480	1900	1480-1900
489	A3	5	1	1	8	900	1480	900-1480
492	A3	5	1	1	15	1480	1600	1480-1600
494	A3	5	14	14	364	1480	1600	1480-1550
495	A3	5	6	6	89	1550	1580	1550-1580
499	A3	5	1	1	10	1550	1580	1550-1580
504	A3	5	7	7	273	1550	1580	1550-1580
505	A3	5	12	12	187	1600	1700	1600-1650
506	A3	5	13	10	274	1580	1900	1580-1600
507	A3	5	3	3	23	1480	1600	1480-1600
509	A3	5	3	3	9	1550	1700	1550-1600
513	A2	6b	1	1	8	1820	1900	1820-1900
522	A2	6b	7	7	118	1820	1900	1820-1840
528	A2	6b	2	2	55	1480	1650	16th century
534	A3	4c	37	33	543	1550	1700	1550-1580
535	A2	5b	5	3	124	1550	1700	L 16th century
535	A2	5b	10	9	269	1550	1700	L 16th century

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
537	A2	4b	109	51	4590	1500	1550	1500-1550
538	A2	5b	29	26	1669	1550	1700	1550-1580
539	A3	4c	15	15	424	1480	1610	1480-1550
541	A2	4b	14	11	534	1480	1600	1480-1600
548	A2	4b	133	73	5977	1480	1550	1480-1550
553	A3	4c	40	30	1152	1480	1550	1480-1550
557	A3	4bii	1	1	150	1480	1600	1480-1600
560	A2	4b	3	3	34	1480	1650	1480-1500
562	A2	4b	1	1	124	1480	1600	1480-1600
566	A3	4bii	63	40	3092	1480	1550	1480-1550
579	A3	4c	11	10	172	1500	1580	1500-1550
581	A2	4b	2	2	84	1480	1600	1480-1600
582	A3	4c	3	3	68	1480	1550	1480-1550
585	A3	4bii	4	4	110	1480	1600	1480-1600
587	A3	4bii	17	13	546	1500	1580	1500-1550
589	A3	4c	1	1	14	1480	1600	1480-1600
592	A3	4bii	14	13	796	1500	1630	1500-1550
594	A3	4bi	41	23	1944	1480	1550	1480-1550
595	A3	4bii	60	34	2022	1480	1550	1480-1550
597	A3	4bii	3	3	36	1480	1600	1480-1600
599	A3	4bii	37	27	2018	1480	1550	1480-1550
600	B3	6	13	11	409	1580	1900	1580-1600
602	B3	6	2	2	127	1760	1830	1760-1830
616	B3	4b	1	1	8	1080	1350	1080-1350
651	A3	4bi	42	33	1776	1480	1550	1480-1550
666	A3	4bi	2	2	46	1480	1600	1480-1600
670	A3	4bi	28	20	1724	1480	1600	1480-1550
671	A3	4bi	15	14	879	1480	1600	1480-1550
672	A3	4bi	4	4	221	1480	1600	1480-1550
673	A3	4bi	10	9	463	1480	1550	1480-1550
674	A3	4bi	52	34	2171	1480	1550	1480-1550
675	A3	4bi	7	7	347	1480	1550	1480-1550
676	A3	4bi	66	36	2950	1480	1550	1480-1550
677	A3	4bi	18	14	1361	1480	1550	1480-1550
695	A3	4a	1	1	12	1500	1630	1500-1630
700	E2 (S)	6b	2	2	154	1770	1840	1770-1840
713	E2 (S)	6a	1	1	19	1500	1580	1500-1580
722	E2 (S)	6a	8	1	187	1480	1650	1480-1650
726	E2 (S)	5b	2	2	18	1550	1700	1550-1600
727	E2 (S)	5b	2	1	18	1480	1650	1480-1650
729	E2 (S)	5b	1	1	9	1480	1650	1480-1650
735	E2 (S)	5b	5	4	143	1550	1700	1550-1600
736	E2 (S)	5b	4	4	171	1550	1700	1550-1600
737	E2 (S)	5b	11	5	112	1550	1700	1550-1600
745	E2 (S)	5b	1	1	28	1512	1800	16th century
747	E2 (S)	5b	1	1	19	1550	1580	1550-1580
748	E2 (S)	5b	2	1	74	1550	1580	1550-1580
749	E2 (S)	5a	5	5	149	1550	1580	1550-1580

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
752	E2 (S)	6b	32	23	247	1770	1820	1815-1830
753	E2 (S)	5a	3	2	125	1480	1600	1480-1600
756	E2 (S)	5a	2	2	15	1580	1700	1580-1700
760	E2 (S)	5a	5	3	290	1480	1600	1480-1600
762	E2 (S)	4b	3	1	194	1480	1600	1480-1600
763	E2 (S)	4b	38	18	1513	1480	1550	1480-1550
767	E2 (S)	4b	15	9	299	1480	1600	1480-1550
775	E2 (S)	4b	1	1	13	1480	1550	1480-1650
780	E2 (N)	6b	12	11	144	1820	1840	1820-1840
782	E2 (N)	6b	13	9	410	1770	1830	1770-1830
784	E2 (N)	6b	1	1	5	1750	1830	1760-1830
785	E2 (N)	6b	1	1	6	1550	1900	1550-1900
789	E2 (N)	6b	9	9	571	1780	1810	1780-1810
790	E2 (N)	6b	4	4	22	1807	1900	Mid 19th century
792	E2 (N)	6b	1	1	59	1580	1900	1580-1900
794	E2 (N)	6b	1	1	6	1570	1846	17th-18th century
795	E2 (N)	6b	8	6	259	1770	1840	Mid 19th century
801	F (N)	6b	15	12	1271	1770	1820	1770-1800
802	F (N)	6b	5	5	44	1760	1830	1760-1830
809	F (N)	6b	1	1	10	1580	1900	1580-1900
814	F (N)	5	1	1	37	1480	1650	1480-1650
816	F (N)	6b	61	56	2826	1820	1900	1820-1900
817	F (N)	5	11	1	170	1580	1700	1580-1650
818	F (N)	5	1	1	24	1480	1600	1480-1600
819	F (N)	6b	2	2	118	1480	1600	1480-166-
820	F (N)	5	8	3	399	1580	1900	1580-1650
822	F (N)	5	2	2	11	1580	1900	1580-1700
824	F (N)	5	8	8	169	1580	1600	1480-1600
825	F (N)	4b	9	8	99	1480	1550	1480-1550
826	F (N)	4b	5	3	125	1480	1550	1480-1500
828	F (N)	4b	12	12	161	1770	1840	1770-1840
829	F (N)	4b	1	1	2	1770	1840	1270-1500
833	F (N)	4b	2	2	61	1580	1900	17th - 18th century
835	F (N)	4b	1	1	275	1480	1600	1480-1600
837	F (N)	4b	3	3	116	1400	1500	1400-1500
839	F (S)	6b	1	1	4	1760	1830	1760-1830
840	F (S)	6b	4	4	163	1580	1900	Late 17th - 18th century
842	F (S)	6b	527	252	42594	1850	1900	C. 1850
844	F (S)	6b	1	1	20	1550	1700	1550-1700
846	F (S)	6b	86	76	4514	1820	1900	1820-1840
848	F (S)	6a	2	2	16	1580	1900	18th century
855	F (N)	4b	8	8	133	1740	1800	18th/19th century
858	F (S)	5	1	1	15	1480	1650	1480-1650
860	F (S)	5	4	4	43	1580	1700	1580-1700
862	F (S)	5	7	4	81	1480	1600	1480-1600
865	F (S)	5	2	2	8	1550	1700	1550-1650
866	F (S)	5	15	8	399	1480	1600	1480-1600
867	F (S)	5	4	4	130	1550	1700	1550-1600

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
868	F (S)	6b	77	49	9169	1770	1820	1780-1810
869	F (S)	6b	7	7	22	1775	1840	1775-1840
870	F (S)	5	2	2	110	1400	1500	1400-1500
873	F (S)	4b	2	2	46	1550	1700	1550-1700
874	F (S)	4b	12	4	217	1340	1500	1340-1500
876	F (S)	4b	11	8	437	1400	1500	1400-1500
877	F (S)	4b	8	7	92	1350	1500	1350-1400
889	F (N)	4b	8	7	104	1450	1550	1450-1500
914	E1	6a	8	6	262	1630	1700	1630-1700
915	E1	6a	5	5	215	1630	1680	Late 17th century
916	E1	6a	3	3	71	1630	1680	1630-1680
917	E1	6a	2	2	83	1580	1700	1580-1700
922	E1	6a	1	1	44	1550	1900	1550-1700
938	E1	5b	1	1	6	1550	1700	1550-1700
941	E1	6a	5	5	70	1580	1650	1580-1650
947	E1	6a	12	3	162	1480	1600	1480-1600
955	E1	6a	1	1	19	1480	1600	1480-1600
957	E1	6a	4	2	123	1480	1600	1480-1600
961	E1	6a	8	5	110	1480	1600	1480-1600
973	E1	5b	1	1	22	1480	1600	1480-1600
974	E1	5b	5	5	354	1500	1650	1500-1600
977	E1	6a	41	27	747	1480	1600	1480-1600
979	E1	5b	1	1	2			1400-1800
981	E1	5b	2	2	198	1480	1600	1480-1600
983	E1	6a	1	1	15	1480	1600	1480-1600
986	E1	5b	2	2	20	1600	1800	c. 1600
988	E1	5a	4	4	63	1580	1700	1580-1600
999	E1	5a	3	2	61	1480	1600	1480-1600
1111	E2 (N)	6a	31	11	3081	1790	1820	1790-1820
1113	E2 (N)	6a	5	5	58	1790	1820	Late 18th-early 19th century
1119	E2 (N)	5b	7	6	325	1790	1820	Late 18th-early 19th century
1120	E2 (N)	5b	4	2	2278	1790	1820	Late 17th-mid 18th century
1121	E2 (N)	5b	5	5	61	1770	1840	1770-1830
1128	E2 (N)	4b	7	5	121	1770	1820	1770-1820
1132	E2 (N)	4b	13	9	854	1805	1900	1805-1820
1208	E3	6bii	5	5	488	1770	1820	1830-1850
1210	E3	6bii	16	11	799	1830	1900	1830-1900
1214	E3	6bi	12	9	327	1820	1900	1820-1900
1217	E3	6bi	3	3	463	1700	1900	19th century
1227	E3	6bi	26	23	3661	1790	1820	Early 19th century
1233	E3	4b	3	3	32	1480	1650	1480-1650
1302	D1	6a	23	21	1277	1630	1700	1630-1700
1303	D1	6a	165	92	6848	1760	1830	1760-1780
1319	D1	5b	3	3	72	1480	1600	1480-1600
1321	D1	4b	5	5	454	1480	1650	1480-1600
1341	D1	4b	3	3	71	1480	1600	1480-1600
1345	D1	4b	3	3	49	1480	1600	1480-1600
1348	D1	4b	3	3	227	1500	1580	1500-1580

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
1360	D1	4b	1	1	18	1450	1550	1450-1550
1382	D1	5b	9	8	697	1630	1680	1630-1680
1401	E1	5a	1	1	9	1480	1600	1480-1600
1403	E1	5b	5	4	255	1480	1600	Late 16th century
1405	E1	5b	4	4	26	1480	1600	1480-1600
1406	E1	5b	9	9	259	1480	1550	1480-1550
1409	E1	5b	1	1	5	1480	1600	1480-1600
1416	E1	5a	2	2	31	1500	1550	1500-1550
1434	E1	5b	31	20	1121	1550	1580	1550-1580
1435	E1	4b	10	9	194	1480	1600	1480-1600
1438	E1	5b	1	1	38	1480	1650	1480-1650
1439	E1	5b	13	12	403	1480	1600	1480-1550
1440	E1	5b	33	19	1036	1480	1600	1480-1550
1441	E1	5a	16	15	780	1480	1600	1480-1550
1444	E1	5a	2	2	24	1480	1600	1480-1600
1457	E1	4b	30	27	881	1480	1550	1480-1550
1495	E1	4b	7	7	348	1480	1600	1480-1600
1496	E1	4b	1	1	47	1480	1600	1480-1600
1502	n/a	6bi	46	31	1051	1830	1900	1830-1900
1510	n/a	6bii	33	23	1596	1830	1900	1830-1900
1511	n/a		5	4	244	1580	1700	1580-1700
1606	G	6b	11	9	824	1720	1780	1720-1780
1607	G	6b	2	2	225	1750	1770	1750-1770
1609	G	6b	18	14	1765	1760	1830	1760-1800
1613	G	6b	1	1	87	1680	1710	Late 18th century
1615	G	6b	19	16	527	1680	1710	Late 18th century
1616	G	6b	5	3	133	1680	1900	18th century
1635	G	5b	1	1	19	1580	1900	1580-1900
1646	G	5b	3	3	22	1580	1900	1580-1650
1650	G	5b	2	2	27	1580	1900	1580-1900
1651	G	5b	12	11	365	1580	1900	1580-1600
1652	G	5b	20	12	1047	1550	1700	1550-1580
1653	G	4b	3	3	221	1480	1600	1480-1600
1655	G	4b	39	21	702	1480	1600	1480-1550
1656	G	4b	29	28	746	1480	1600	1480-1500
1657	G	4b	4	4	146	1480	1650	1480-1500
1669	G	4b	10	10	153	1500	1630	1500-1550
1673	G	4b	1	1	19	1350	1500	1350-1500
1680	G	4b	3	3	95	1340	1500	1340-1500
1681	G	4b	12	12	202	1480	1600	1480-1500
1684	G	4b	4	4	267	1480	1600	1480-1500
1691	G	4b	1	1	23	1300	1650	1300-1650
1694	G	4b	8	7	140	1500	1630	1500-1600
1696	G	4b	1	1	10	1350	1500	1350-1500
1697	G	4b	2	2	39	1270	1500	1270-1500
1698	G	4b	8	8	101	1350	1500	1350-1500
1699	G	4b	2	2	17	1300	1500	1300-1500
1724	H3	6b	1	1	88	1794	1900	Mid-late 19th century

Context	Trench	Phase	SC	ENV	Weight	Context ED	Context LD	Context considered date
1725	H3	6b	1	1	33	1670	1690	1670-1690
1732	H3	5b	5	5	246	1670	1690	1670-1690
1750	H3	4a	3	3	303	1080	1200	1175-1225
1900	H2	7	5	5	229	1830	1900	1830-1900
1912	H2	4b	7	7	106	1830	1900	1240-1350
1913	H2	4b	9	5	139	1240	1400	1240-1350
1923	H2	4a	1	1	15	1140	1220	1080-1200
1924	H2	4a						40-400
1931		unused	12	11	417	1670	1690	1670-1690
2000	H1	6b	1	1	598	1670	1923	19th century
2011	H1	4b	1	1	12	1240	1350	1240-1350
2200	G	4b	2	2	40	1400	1500	1400-1500
2203	G	4b	42	22	831	1480	1600	1480-1500
2204	G	4b	80	25	1294	1480	1600	1480-1500
2205	G	4a	59	36	788	1400	1500	1400-1450
2212	G	4a	11	7	118	1270	1500	1270-1500
2215	G	4a	2	2	130	1300	1500	1300-1500
2216	G	4a	31	27	789	1340	1450	1340-1450
2217	G	4a	20	19	265	1340	1500	1340-1400

Table 1: BVM12: Distribution of pottery types showing individual contexts containing pottery, what phase the context occurs in, the number of sherds (SC), ENV's and weight, the date range of the latest pottery type (Context ED/LD) and a suggested deposition date.

## Phase 4a

From this phase was recovered a total of 175 sherds/135 ENV/3.344kg. The main origins of the pottery are recorded as medieval Surrey whitewares (101 sherds,/67 ENV/1.355kg), particularly as CBW and less so as CHEA, London area glazed wares (19 sherds/19 ENV/866g), as LOND and LLON and imported pottery (19 sherds/19 ENV/485g), mostly found as Dutch redware. Pottery was recovered from eighteen contexts, which included alluvium layers [246], [361], [365], [695], [1750] and [1923], which contained pottery types falling within the date range of 1080-1350 (see Table 1). The alluvial layer [2205] produced late medieval pottery types, such as CBW, CHEA and DUTR, although the presence of Late London slipware and late medieval Hertfordshire glazed ware (LMHG) jug sherds indicated deposition in the first half of the 15th century. The organic layers, such as [2212] and [2215] also produced late medieval pottery types, while [2216] could be dated to 1340-1450 by the presence of a flat-topped rim CBW jar or cooking pot and LMHG jug sherds.

Features in this phase also produced pottery dating to the late medieval period. Pit [356] contained in its fill [355] a single sherd of Cheam ware, dating the feature to 1350-1500. Pit [364], produced in its earlier fill [363] sherds of late medieval pottery consisting of CBW, SIEG TRIC and a sherd of transitional ware (MISC), indicating deposition probably in the 15th century. The latest fill [362]

produced four sherds of 1270-1500 dated CBW, indicating late medieval material, with a residual sherd of LCOAR and a small sherd of BORDY, the latter probably intrusive. A ditch [349] produced in its earlier fill [348] mostly PMRE as bowls and dishes and DUTR as two dripping dishes, which indicate by their forms a deposition date of c. 1480-1550. The latest fill [347] produced single sherds of CBW and DUTR, indicating a late medieval deposition date. The linear feature [360] produced in its fill [359] mostly sherds of PMRE as jar or jug sherds. There is also present a sherd of EBORD, indicating deposition between 1480-1550, while single sherds of imported DUTR, MDLG and RAER occurred, besides earlier 15th-century wares.

#### **Phase 4b**

A total of 843 sherds/555 ENV/26.090kg of pottery was recorded from this phase. The main origins of the pottery are as post-medieval London area coarse redwares (418 sherds/253 ENV/17.205kg), particularly as PMRE, medieval Surrey whitewares (196 sherds/112 ENV/3.294kg), mostly found as CBW and imported wares (130 sherds/111 ENV/3.451kg), which are most frequently present as DUTR and Raeren stoneware.

Pottery was recovered from a wide range of deposits, such as alluvium (contexts [99], [243], [1233], [1345], [1348], [1360], [1496], [2203] and [2204], various types of clay deposits ([855], [1435], [1457], [1691], [1697], [1912], [1913] and [2011]), organic layers (contexts [1653] and [1655]), besides a foreshore deposit (context [1495]). There are also a number of dump or levelling layers ([74], [185], [186], [216], [321], [537], [825], [828], [837], [873], [877], [889], [1321], [1656], [1680], [1681], [1684], [1694], [1696] and [1698]). These deposits fairly consistently produced pottery types dated to the end of the 15th century, between c. 1480-1600 and more so c. 1480-1550, the latter particularly characterised by the presence of Raeren stoneware drinking jugs and early border ware, while early post-medieval redwares (found particularly as PMRE and less so as the slip wares PMSRG/Y and PMBR).

A number of features also produced pottery in this phase. The earliest, fill [226] of pit [227] and fill [616] of pit [617] produced respectively single sherds of EMSS, dated 1000-1150 and LOND, while sherds of KING and LOND recovered from fill [214] of the pit or gully [219] indicated deposition dated 1240-1350. Pit [875] produced in its two fills [874] and [876] late medieval pottery types and CBW forms, dated 1340-1500, although the lowest fill, [876] also produced a sherd of LLON, indicating deposition in the 15th century.

Ditch or pit [559] contained in its fill a large quantity of pottery consisting of mostly local redwares (PMRE and PMSRY), besides Cistercian and Wealden wares. Imported pottery types are notable as Dutch redware, in the form of cauldrons and a pedestal beaker, German stoneware drinking forms occur (found in RAER and SIEG), a Spanish large rounded jug (SPOW) and French whiteware jugs (SAIN, MISC WW), besides a sherd of tin-glazed ware from Italy or the Netherlands. The pottery types indicate deposition dated 1480-1550. Ditch [768] also produced pottery of the same date in its fills: [763] and [767], although there was a very conservative range of pottery types consisting mostly

of PMRE and a small quantity of imports: DUTR and RAER. Fill [328] of ditch [329], fill [339] of channel [340] and fill [541] of ditch [559] could only be broadly dated to 1480-1600 as they contained mostly PMRE sherds or its slipware variant PMSRY. The latest group of pottery found in this phase was recovered from fill [1132] of channel [1130] which contained industrial finewares as Developed Creamware, Pearl ware and refined whiteware, indicating a c. 1805-30 deposition date; this fill is regarded as part of a later intrusive feature.

#### **Phase 4bi**

The phase produced a total of 285 sherds/196 ENV/13.882kg. The main origins of the pottery are London coarse redwares, found as 248 sherds/161 ENV/12.777kg, imported wares occurring as 25 sherds/24 ENV/875g and smaller quantities of Surrey-Hampshire border wares and non-local wares. Pottery was found in eleven contexts and include a layer of alluvium (context [666]) with pottery types dated 1480-1600, dump layers (contexts [670], [671], [672] and [673]), all containing pottery dated 1480-1550 as did an occupation layer [594] and the fills of pit [621] (contexts [651], [674], [575], [676] and [677]).

The occupation layer [594] produced mostly sherds of PMRE as cauldrons, a dish, a jug and pitcher, there are also occurrences of PMBR in the form of cauldrons, while PMSL and PMSRY occurred as dishes. An EBORD drinking jug is noted and a sherd of Wealden buff ware, while imports consist of a SPAM jug sherd and a VALL small flared bowl. The fills of pit [621] produced a total of 185 sherds/124 ENV/8.605kg and was generally in a fragmentary state. The local coarse wares are most frequent and consist of mainly PMRE, with smaller quantities of PMBR and PMSRG/Y, some with sgraffito decoration and this ware occurs in the form of kitchen wares (cauldrons and a tripod pipkin), table wares as bowls and dishes and a chafing dish, storage items as jars, jugs and pitchers, besides a watering pot. Raeren stoneware occurs in the forms of drinking jugs (as does the Siegburg stoneware), including a biconical example and jugs. There is a small quantity of Dutch redware, which includes the form of a jug and a sherd of South Netherlands tin-glazed ware. A small quantity of EBORD is noted and includes a drinking jug, while a sherd of Cistercian ware is also present.

#### **Phase 4bii**

The phase produced a total of 199 sherds/135 ENV/8.770kg and as with Phases 4bi the main pottery types consist of local coarse wares found as 165 sherds/106 ENV/7.625kg, imported pottery noted as 25 sherds/20 ENV/1.026kg followed by smaller quantities of border ware, non-local wares and medieval Surrey whitewares. The pottery occurs in eight deposits: dump layers [557] and [566] and it is also present in a number of features, fill [585] of channel [586], fill [587] of pit [588], fill [592] of pit [593], fill [595] of pit [596], fill [597] of pit [598] and fill [599] of pit [650]. Generally, all of the the pottery groups fall within the date range of 1480-1600, although there are earlier dated groups within this range (see Table 1). The majority of the pottery in this phase is fragmentary. Items of note are in PMRE as a distillation flask used to make nitric acid and a conical lid, besides a PMSRY dish with sgraffito decoration and all were recovered from dump [566].



#### **Phase 4c**

From this phase were recovered 143 sherds/122 ENV/2.984kg of pottery. Local coarse red earthenwares continued to be more frequent (88 sherds/70 ENV/1.833kg), followed by imported wares (37 sherds/34 ENV/882g), while Surrey-Hampshire border wares, non-local wares, tin-glazed ware and medieval London wares and Surrey whitewares, each account for seven sherds or less. The pottery was found in seven contexts: dump layers [479] and [534], fill [539] of pit [540] and fill [553] of pit [554], while grave cuts [580], [584] and [591] produced pottery in their respective fills [589], [582] and [589]. The pottery groups have a date range of 1480-1600, although fill [579] of grave cut [580] is dated 1500-1550 and dump layer [534] has the latest date of 1550-80, indicated by the presence of a sherd of a Frechen stoneware jug and BORDG/Y. The pottery is in a fragmentary state although some notable pottery types or forms are present, such as a CITG vase (context [553]), a DTGW albarello (context [539]) and an EBORDY bowl (context [479]).

#### **Phase 5**

A total of 349 sherds/258 ENV/8.027kg of pottery was assigned to this phase. Local coarse red earthenwares remained the dominant origin of the pottery (189 sherds/150 ENV/5.344kg), followed by post-medieval Surrey-Hampshire border wares (42 sherds/33 ENV/582g), while Essex fine red earthenwares first occur in the sequence and are found as 38 sherds/8 ENV/492 sherds. The other origins of the pottery occur as less than six sherds each as non-local types, besides residual medieval sherds and intrusive industrial fine wares.

Pottery was recovered from 55 contexts and noted as quite small groups. Ceramics are found in a wide range of deposits and features. These consist of dump layers [33], [57], [59], [71], [92], [208], [455], [462], [504], [505], [506], [818], [824], [867] and [870], besides occupation layers [447], [476], [499], [858] and [862], as well as surfaces [459], [469], [478], [480], [486] [487] and [494].

While features include gullies [490], [496], [510], [698] and their respective fills [489], [495], [509] and [463], besides linear feature [815] and its fill [814]. Postholes [207], [444], [446], [448], [450], [457], [465], [483] and [451] and their respective fills [209], [443], [445], [456], [464] and [482].

Pits [95], [98], [213], [474], [477], [508], [821], [823] and [861] and their respective fills [94], [97], [210], [473], [475], [507], [820], [822] and [860] also contained pottery. The industrial waste deposits [492], [817], [865] and [866] produced no pottery forms that can be associated with an industrial process.

The date ranges of the pottery groups in this phase encompass the period 1400-1900, although the majority are dated c. 1580-1650/1700.

New pottery types occur in this phase, noticeably as PMR and PMFR, while the post 1550 dated Surrey-Hampshire border wares and Frechen stoneware occur in greater numbers than the previous phase. Items of note are in PMR and include a dish with a thumbled rim (context [473]) and a carinated colander (context [480]).

## **Phase 5a**

A small quantity of pottery was assigned to this phase as 43 sherds/38 ENV/1.547kg. The main origin of the pottery occurs as coarse local redwares (32 sherds/28 ENV/1.190kg), imported pottery is found as eight sherds and Essex fine redware, London delftware and medieval Surrey whiteware are all as one sherd each. Pottery is present in eleven contexts and as small sized groups (sixteen sherds or less) and it was recovered from dump layers [749] and [760], occupation surface [988]. Additionally ceramics were found in channel [1433] and its fills [1441] and [1444], pit [1400] and its fills [999] and [1401], fill [753] of hollow [754] and backfill [756] of construction cut [757] and the backfill around timber [1415] in cut [1417].

The forms present in this phase are mostly as bowls or dishes, cauldrons and jugs. Of note is a bowl in Spanish Isabela polychrome tin-glazed ware, found in context [1416] and the base of a TGW albarello with blue band decoration recovered from context [756].

## **Phase 5b**

Pottery in this phase consisted of 270 sherds/210 ENV/11.951kg. Coarse London area redwares continued to be the main origin for the pottery, consisting of 183 sherds/142 ENV/9.853kg, followed by imported wares (32 sherds/26 ENV/990g), then Surrey-Hampshire border wares (26 sherds/19 ENV/490g), while all the other origins of post-medieval pottery types occur as four sherds or less. Pottery was recovered from 39 contexts as small and two medium sized groups and their deposition dates ranged between 1400 and 1830, with a notable number dating more to the 16th century and fewer to the 17th century or later: indicating a degree of residuality in this part of the assemblage. Ceramics occurred in alluvium layers [986] and [1382], dump levelling layers [538], [726], [736], [1119], [1120], [1319], [1405], [1651] and [1652], occupation layers [729], [735], [737] and [748]. Features producing pottery were channels [536] (fill [535]), [1433] (fills [1409], [1434], [1439] and [1440]), besides pits [351] (fills [350] and [353]), [975] (fill [974]), [980] (fill [979]), [1404] (fill [1403]), [1738] (fill [1732]), besides the linear feature [1125] (fill [1121]). A number of other deposits, such as mortar surfaces [745], [747] and [1646], besides a beading layer [12650] also yielded pottery.

Pottery items of note are a late 16th-century PMSRG cylindrical mug (context [1403]) and from deposit [1109] a PMR jar with a bichrome glaze and a miscellaneous slipware dish. English and Dutch tin-glazed wares are more frequent in this phase and both wares occur as chargers, although a vase is present in DTGW (context [745]).

## **Phase 6**

The deposits in this phase produced a total of 181 sherds/145 ENV/5.994kg of pottery. During this phase there is a change in the ceramic profile of the site with industrial fineware more frequent (86 sherds/68 ENV/867g), followed by local redwares (35 sherds/30 ENV/1.904kg), then non-local wares

(20 sherds/12 ENV/2.023kg). Border wares (13 sherds) and imported wares (nine sherds) are less important in this phase compared to the previous ones, while London stonewares and delftware are present as nine sherds or less. Pottery is recorded in eleven contexts in this phase as small groups, except for one medium sized group. Ceramics are found in dump layers [24], [29], [30], [56] and [72] and in features, this material is noted in the culvert run [87], fill [86] and pits [51] (fill [50]), [63] (fill [44]), [601] (fill [600]), [603] (fill [602]), besides backfill of construction cuts [23], fill [22] and [48], fill [65]. The range of spot dates fall between 1550 and 1900, although the majority of the deposits are of a late 18th-19th-century date. In this phase the pottery is in a mostly fragmentary state although more vessels are represented with complete profiles.

### **Phase 6a**

In this phase coarse, local redwares were more frequent (211 sherds/122 ENV/9.805kg), followed by Border wares (103 sherds/74 ENV/3.493kg) and delftware become more prominent (76 sherds/52 ENV/2.445kg), which follows the general ceramic profile for London during the mid 17th-18th century. However, industrial fine wares are also important in this phase (72 sherds/37 ENV/825g) while imports, Essex finewares, English stonewares and non-local wares are in smaller, although not insignificant quantities. The phase produced 606 sherds/397 ENV/24.183kg of pottery and it is recorded in 53 contexts as mostly small sized groups, although four medium sized ones occur. Pottery is found in dump or levelling layers [18], [142], [144], [161], [163], [170], [172], [273], [281], [387], [914], [922], [955], [1113], [1302] and [1303], besides occupation and / or working surfaces [280], [422], [423], [425], [426], [429], [433] and [848]. Pottery also occurred in construction cuts [8] (fill [14]), [271] (fill [270]), [277], (fill [275]), [284] (fill [286]), [712] (fill [713]), [721] (fill [722]) and [942], (fill [941]) and a layer of construction debris [947]. Additionally it is present in robber cut [11], (fills [6] and [9]) and demolition deposits [915] and [916]. Pottery was also to be found in pits [152], (fill [151]), [176]/[167], (fills [174] and [175]), [178] (fill [177]), [290] (fill [289]), [292] (fill [291]), [978] (fill [977]) and [984], (fill [983]), besides the soakaway [1112] (fill [1111]). Other features containing ceramics are gully [428], (fill [421]) and a linear cut [188], (fill [187]).

Items of interest are a miscellaneous slipware dish recovered from garden soil [280] and dated by association with the other pottery to c. 1760-1830, an Italian oil jar with a TM stamp from the soak away [1112] and dated c. 1790-1820, a miscellaneous redware jar (possibly another oil jar of a similar date was recovered from layer [273]) and a late 18th-century RBORSL small dish was found in dump deposit [1303].

### **Phase 6b**

This phase produced a total of 1195 sherds/806 ENV/73.328kg of pottery. Industrial finewares are the main origin of the pottery and recorded as 589 sherds/321 ENV/20.307kg. Second in importance are the local redwares (185 sherds/163 ENV/16.611kg), followed by Border wares (136 sherds/93 ENV/17.372kg), then English stonewares (82 sherds/65 ENV/11.370kg), while imported wares (41 ENV/2.139kg) and non-local wares (36 ENV/2.496kg) are found in similar quantities (48 sherds each).

In this phase pottery was recovered from 65 contexts as mostly small, four medium and one large (fill [842] of soakaway cesspit [843]) groups of pottery. The spot dates for the contexts yielding pottery in this phase range between 1480 and 1900, although the majority date to the 18th and particularly the 19th centuries.

Ceramics were recovered from a range of deposits. From dump and made ground layers pottery occurs in contexts [1], [130], [131], [132], [263], [267], [378], [381], [415], [513], [780], [789], [794], [801], [1606], [1609], [1613], [1615] and [2000]. Pottery also occurs in the fills of construction cuts: [250] (fill [248]), [254] (fill [253]), [702] (fill [700]) [796] (fill [795]), [840] (fill [841]), [845] (fill [844]), as well as the construction cuts for the culverts [137] (fill [105]) and [383] (fill [382]). Ceramics also occur in the fills of pits [252] (fills [251] and [253]), [257] (fill [256]), [262] (fill [260]), [269] (fill [268]), [783], (fill [782]), [791] (fill [790]) and [793] (fill [792]) and masonry cess pits [843] (fill [842] and [869]).

Items of particular interest are the Low Countries polychrome slipware rounded jar, recovered from construction cut [384] and the plain white tin-glazed ware triangular salt found in the floor layer [1616]. The largest number of alcoholic consumption vessel were noted in fill [842] of the soakaway [843] and this may be a good indication for the presence of a drinking establishment, or eating house by the occurrence of a plate denoting where it was used.

#### **Phase 6bi**

A total of 87 sherds/66 ENV/5.502kg of pottery is associated with this period. Industrial finewares are more frequent as 48 sherds/34 ENV/1.173kg, followed by English stonewares (16 sherds/15 ENV/2.211kg) and then local coarse redwares (11 sherds/9 ENV/1.674kg) and smaller quantities of non-local, border wares and English delftwares. Only small groups of pottery occur in this sub-phase and they were recovered from fill [1214] of construction cut [1215], fill [1227] of drain [1219] and fill [1502] of the soakaway [1501]. The pottery in these contexts was deposited during the 19th century. The group of pottery recovered from fill [1227] of drain [1219] was notable for the small number of stoneware bottles and jars.

#### **Phase 6bii**

A small group of pottery was found in this phase as 54 sherds/39 ENV/2.883kg and consisted of mostly industrial finewares found as 38 sherds/25 ENV/2.883kg, while the other sources of pottery: English stonewares, non-local, miscellaneous, coarse redwares and imported sherds accounted for five sherds or less. The pottery was recovered from three contexts: fill [1208] of construction cut [1209], fill [1210] at the base of culvert [1207] and fill [1510] of the soakaway [1505]. All the groups of pottery have a spot date of 1830-1900, are very domestic in appearance and fairly unremarkable.

#### **Phase 7**

A very small group of pottery was recovered from this phase as ten sherds/10 ENV/397g. The origins of the pottery are fairly diverse and occur as one or two sherds in each category and include industrial

finewares, English stoneware and residual wares. The majority of the groups of pottery are dated to 1830-1900 and occur as a made ground layer [229], fill [19] of pit [20] and fill [150] of pit [111]. The material from this phase is fragmentary and mundane.

### **Significance Of The Collection**

The pottery has significance at a local level. The post-Roman ceramic profile of the site is in keeping with the London area and Southwark, particularly as the study area is close to the Thames and a more varied array of imported pottery therefore occurs. The medieval pottery spans the period 1000-1500, although late medieval wares are in a much greater quantity compared to that of the pre-1350 period. The medieval pottery was largely derived from alluvial layers and dumps deposits and therefore may not have originated from an onsite source. There are a small number of features where the pottery probably alludes to onsite domestic activity.

The post-medieval component of the pottery assemblage has a number of significant elements to it. There is a very good sequence of 16th-century pottery, which includes more unusual imported wares such as Spanish Isabella polychrome ware and Valencian late lustre ware, besides other tin-glazed wares from Italy and the Low Countries. Much of this pottery was derived from alluvial and dump layers, although there are a number of features on the site where the ceramics can indicate what activities were occurring on the study area. Early post-medieval industrial forms occur as a small number of local redware receiving flasks found in contexts [548] and [566] and most appear to have been used to make nitric acid, although one has a white deposit indicating something else was distilled in it. The occurrence of this form is rare in Southwark and its find spots are usually north of the river where their occurrences are concentrated in the Gresham Street and Cripplegate areas (Jarrett 2001, 70). A large fragment of a crucible was also recovered from dump layer [760].

The 17th- and 18th-century groups of pottery are on the whole not very meaningful, although a small number of vessels are of intrinsic interest. The industrial forms dating to this period mostly appear to be anomalies, such as the two sugar refining vessels, although a Peninsula House crucible found in fill [782] of pit [783] may relate to local small scale industrial activity.

A large 19th-century group of pottery was collected from fill [842] of the soakaway/cesspit [843] and alcoholic consumption forms have the highest occurrence in this feature (13 MNV) compared to any other on the study area. This may indicate that the group of pottery was associated with a drinking establishment, such as an alehouse or tavern. Additionally the legend on the rim of a plate may indicate the presence of an eating-house. A 19th-century retail premise may be indicated by the occurrence of three sherds of Italian oil jars, two are found in Trench E2 (N), including a stamped example and these may very well refer to an oil or colour shop.

## Potential

The pottery has the potential to date the features in which it was found and to provide a sequence for them. A number of pottery vessels merit their illustration. The BVM12 pottery assemblage can be used to help to investigate those research questions posed in 'A research framework for London Archaeology 2002' (Nixon *et al.* 2002).

The medieval pottery has some potential to inform upon activities on the site and a small number of vessels warrant illustrating. The early post-medieval sequence of pottery has potential for determining the range of pottery types and their forms and for categorising the different types of activity on the site.

The industrial forms present in the assemblage have the potential to demonstrate what metallurgical industries are occurring in Southwark, a topic which has been poorly reported upon. XRF analysis of the crucible fragments from BVM12, and the other Thameslink assessment areas, BVC10 (TAA9 Western Approach: Jarrett 2013a) and the Borough Viaduct projects (particularly Stoney Street ,BVT09: TAA6: Jarrett 2013b) will aid an understanding of industry in Southwark.

The analysis of the pottery and other finds from soakaway [843] will allow for the determination of whether this is the material culture associated with a drinking establishment or eating house. Other groups of finds associated with inns and taverns were excavated on the Thameslink Borough Viaduct assessment areas while plates from an eating house are present on the BVG11 (TAA4) excavation (Jarrett 2013c). The comparison of these assemblages with that of the BVM12 soakaway [843] group may allow for it to be determined if the latter has less of a socio-economic status compared to that of the Borough High Street examples.

Italian oil jars occur on both the BVM12 and Thameslink Borough Viaduct project (BVG10: Jarrett 2013c). Documentary evidence has the potential to corroborate the presence of the Italian oil jars with the known location of oil or colour shops.

## Research Aims

A number of research aims can be suggested as avenues of research for the pottery assemblage from BVM12.

Can the analysis of the post-medieval crucibles and distillation flask indicate what industries were occurring on the BVM12 site or in the vicinity?

How do the medieval and the post-medieval pottery components of the assemblage compare to the documentary evidence for the land use of the site?

Can the group of finds recovered from soakaway [843] be related to a documented drinking establishment on the site?

Do the group of finds from soakaway [843] corroborate with the social standing of an inn, public house, tavern, alehouse or eating house?

How do the group of finds from soakaway [843] corroborate with the finds groups associate with the drinking establishments excavated on the Thameslink Borough Viaduct project?

### **Recommendations For Further Work**

Elements of the assemblage from this excavation should be published in Monograph 2: Medieval and Post-medieval Southwark. Up to 26 vessels require illustration and the group of pottery recovered from soak away [843] requires photographing. It is recommended that three fragments of the crucibles and one sherd of the distillation flask be analysed by x-ray fluorescence in order to understand what industrial processes they were involved in.

### **Bibliography**

Butler, J., 2001. 'The City defences at Aldersgate'. *Transactions of the London and Middlesex Archaeological Society* 52, 41-111.

Egan, G., 1992. 'Marks on butterpots', in D. Gaimster and M. Redknap (eds.), *Everyday and Exotic pottery from Europe*. Oxbow Books, 97-100.

Jarrett, C., 2001. 'The post-Roman pottery', in J. Butler, 'The City defences at Aldersgate'. *Transactions of the London and Middlesex Archaeological Society* 52, 65-70.

Jarrett, C. 2013a. Post-Roman pottery, in J. Taylor & C. Champness, *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished document.

Jarrett, C., 2013b. 'Post-Roman Pottery', in J. Taylor, *Thameslink Archaeological Assessment 6: Archaeological Excavations at 6-7 Stoney Street, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.

Jarrett, C., 2013c. 'Post-Roman Pottery', in J. Langthorne and J. Taylor, *Thameslink Archaeological Assessment 4: Archaeological Excavations at 2-4 Bedale Street, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.

Hurst, J. G., Neal, D. S. and van Beuningen, H. J. E., 1986. *Pottery produced and traded in North-west Europe, 1350-1650*. Rotterdam Papers IV.

Nenk, B. and Hughes, M., 1999, 'Post-medieval redware pottery of London and Essex', in G. Egan and R. L. Michael, *Old and New Worlds*. Oxbow Books, 235-245.

Orton, C., 1988. 'Post-Roman pottery from Mark Browns Wharf', in P. Hinton (ed.), *Excavations in Southwark, 1973-76, Lambeth 1973-79*. London and Middlesex Archaeology Society and Surrey Archaeology Society Joint Publication 3, 307-348.

Pearce, J., 1992. *Border Wares, Post-Medieval Pottery in London, 1500-1700*. Vol. 1. London HMSO.

Pearce, J., 1999. 'The pottery industry of the Surrey-Hampshire Borders in the 16th and 17th centuries', in G. Egan and R. L. Michael, *Old and New Worlds*. Oxbow Books, 246-263.

Pearce, J., 2007. *Pots and potters in Tudor Hampshire*. Guildford Museum and Museum of London Archaeology Service.

Pearce, J. and Vince, A., 1988. *A dated type-series of London medieval pottery Part 4: Surrey Whitewares*. London and Middlesex Archaeological Society Special Paper 10.

Pearce, J., Vince, A. G. and Jenner, A., 1985. *A dated type-series of London medieval pottery Part Two: London-type ware*. London and Middlesex Archaeological Society, Special Paper 6.



## **APPENDIX 5: LITHIC ASSESSMENT**

**Mike Donnelly**

### **Introduction**

A small assemblage of just eight struck, one natural and eight pieces of burnt unworked flint was recovered from eight contexts at Thameslink site BVM12. Two small clusters of genuine material were recovered from contexts [417] and [981] while unstratified contexts [+] from Trench E3 and [749] yielded one flint each. Six pieces of burnt unworked flint were recovered from context [1441] but most likely represent the shatter of a single larger piece.

### **Assemblage composition**

The assemblage is very small and comprises just seven flakes and a single crested blade. The flints cover all stages in core reduction from decortical pieces through various trimming flakes onto inner removals. More specialised core preparation is indicated by the partially crested blade.

### **Discussion**

Although two contexts contained three struck flints each, these small assemblages all appear to be mixed in character. They contain some well prepared flakes and more ad-hoc pieces, thicker in character with hard-hammer bulbs and cortical or plain platforms. Such flakes typify later prehistoric assemblages, especially those dating to the mid-late Bronze Age while the thinner, prepared flakes and the crested blade are likely to be of Mesolithic or Neolithic date. Finally, one large irregular flake from context [+] is likely to relate to Roman or later activity where flint nodules were knapped and shaped as construction material. The assemblage indicates very low levels of surviving prehistoric activity here, possibly spanning much of prehistory.

### **Further work**

There is no requirement for further work with this assemblage.

## APPENDIX 6: CLAY TOBACCO PIPE ASSESSMENT

Chris Jarrett

### Introduction

A small sized assemblage of clay tobacco pipes was recovered from the site (seven boxes). Most fragments are in a good condition, indicating that they had been deposited soon after breakage; although elements of some groups of clay tobacco pipes contained small quantities of residual material. Clay tobacco pipes occur in 123 contexts as small (under 30 fragments), seven medium (31-100 fragments) and three large (over 100 fragment) sized groups.

All the clay tobacco pipes (2161 fragments, of which 120 are unstratified) were recorded in an ACCESS database and classified by Atkinson and Oswald's (1969) typology (AO); 18th-century examples are by Oswald's (1975) typology and prefixed OS. All decorated and maker marked pipes were given a unique registered find number. The pipes are further coded by decoration and quantified by fragment count. The degree of milling on 17th-century examples has been noted and recorded in quarters (see Table 1), besides their quality of finish (see Table 2). The tobacco pipes are discussed by their types and distribution.

### The Clay Tobacco Pipe Types

The clay tobacco pipe assemblage from the site consists of 449 bowls, 1398 stems and 114 nibs (mouth parts). The clay tobacco pipe bowls range in date between 1640 and 1840. All of the bowls show evidence for being smoked unless otherwise specified.

Bowl type	Earliest date	Latest date	Extent of bowl rim milling						Total
			Not calculated (damaged)	None	Quarter	Half	Three quarters	Full	
AO9	1640	1660						1	1
AO13	1660	1680					1		1
AO14	1660	1680	1						1
AO15	1660	1680	11	2	3	5	18	6	45
AO18	1660	1680	1	1	1		2		5
AO19	1680	1710	4	2	3	1	12	1	23
AO20	1680	1710	10	3	7	3	3		26
AO21	1680	1710	5	11					16
AO22	1680	1710	17	7	5	2	3	1	35

Table 1: BVM12: Extent of milling found on 17th-century bowls

Bowl type	ED	LD	Not calculated	Poor	Fair	Good	Total
AO9	1640	1660				1	1
AO13	1660	1680			1		1

Bowl type	ED	LD	Not calculated	Poor	Fair	Good	Total
AO14	1660	1680		1			1
AO15	1660	1680	7		31	7	45
AO18	1660	1680			2	3	5
AO19	1680	1710	1		19	3	23
AO20	1680	1710	5		16	5	26
AO21	1680	1710	2		11	3	16
AO22	1680	1710	6		29		35

Table 2: BVM12: Quality of burnishing found on 17th-century bowls

#### 1640-1660

AO9: one spurred bowl with full milling and a good finish. Context [816] and residual.

#### 1660-1680

AO13: one heeled, rounded bowl with three-quarters milling and a fair finish. Context [139] and residual.

AO14: one minimally spurred, rounded bowl, probably an AO15, which has had its spur over trimmed. The bowl is poorly finished and the rim is damaged, although it shows evidence for milling. Context [1512].

AO15: 45 spurred, rounded bowls with the majority having three-quarters milling of the rim and being of a fair finish (see Table 1). Contexts: unstratified (four examples), [131], [139], [142], [150], [151], [166], [184], [193], [255], [381], [382], [387], [415], [439], [703], [795], [816], [846] and [1303]. The largest concentration of this bowl type is recorded in context [255] as eight examples and [1303] as ten examples, otherwise the bowls occur as a maximum of three examples in the other contexts. An example from context [1303] has a length of ferrous wire rusted into the bowl and consequent has been given a registered find number: sf 147. The occurrence of the wire within the bowl is almost certainly resultant from depositional circumstances.

AO18: five heeled, straight-sided bowls with variable milling of the rim and finish (see Table 1). Contexts: unstratified (one example), [175] (residual), [427], [915] and [1303].

The higher frequency of the AO15 bowls in the assemblage compared to the other 1660-1680 dated bowls, fits the pattern for this bowl type being more commonly used in Southwark during this time period (Jarrett 2013a).

#### 1680-1710

AO19: 23 tall spurred and rounded bowls, the majority of which have three quarter milling of the rim (see Table 1) and are of a fair finish (see Table 2). Four of the bowls are shorter variants and indicate a transitional type between the AO15 and AO19 shapes. Contexts: unstratified (four examples), [139], [142], [170], [184], [846], [914], [916], [923] and [1303]. The bowls are more frequent in contexts [914]

and [1303] as four examples each and context [916] as five examples, otherwise they occur as single examples in the other contexts they are found.

AO20: 26 tall, heeled rounded bowls with mostly a quarter milling of the rim and a fair finish (see Tables 1 and 2). Contexts: unstratified (two examples), [56], [138], [139], [142], [145], [174], [255], [542], [1303], [1609], [1615] and [2131]. The bowls occur as one or two examples in most of the contexts they are found in except that context [56] produced four examples and context [138] had eight of these bowls. A short variant is noted from context [2131] while another variant type occurred in context [138] with a waisted profile and the heel is located more so on the stem rather than directly below the bowl. It may represent an item of non-local production.

AO21: sixteen heeled, angled bowls with a straight back and rounded front. A number of the bowls have a slightly splayed heel and this is consistent within the variation of the bowl type. Eleven of the bowls have no milling of the rim and the rest of the examples are too damaged to be sure of the extent or presence of milling. The bowls are mostly of a fair finish (see Table 2). Contexts: [18], [130], [138], [142], [193], [382], [406], [846], [1303] and [1615]. Single bowls were found in each of the contexts the type was recovered from except for context [138], which has seven of these bowl types recorded.

AO22: 35 heeled, straight-sided, angled bowls and mostly with no or a quarter milling and of a fair finish (see Tables 1 and 2). There are two unstratified bowls that are shorter variants and may be transitional types between the AO18 and AO22 forms. Another variant also occurs in context [382] and is more slender than the other example found in the same deposit. Contexts: unstratified (seven examples), [130], [138], [139], [142], [145], [151], [251], [382], [406], [420], [703], [846], [914], [916], [1303], [1609], [1615] and [2131]. The majority of the contexts that produced AO22 bowls only had one or two examples of this type, although context [1303] produced four examples and deposit [142] yielded three bowls.

The range of the 1680-1710 dated bowl types in the assemblage is very good. The AO22 bowl is the most frequent type recorded, as it is across most of London during that period and this probably represents a movement by master pipe makers to produce a more uniform product across the region. The spurred AO19 bowl is still fairly numerous in the assemblage and demonstrates that spurred bowls were still popular with pipe smokers in this part of Southwark. During the 1680-1710 period the practice of milling the bowl rims dwindled and it is more common to find bowls with no milling or a quarter milling. The latter may manifest as a cursory knife like cut on the back of the bowl. This process is notable amongst the BVT09 bowls of this date and it is found on examples of all of the different bowl types, except for the AO21 shape, which all appear to be absent of any milling.

#### *1700-1740*

OS10: 64 heeled, upright bowls with a rounded front and straight back and thick stems. Maker marked bowls first occur in the assemblage on this bowl type. Unmarked, plain examples occur in

contexts: unstratified (four examples), [56], [131], [139], [142], [157], [175], [177], [187], [210], [816], [1609] and [1615]. In these contexts the OS10 bowl occurred as one or two examples, however context [1615] produced five examples and context [175] produced seven examples. The maker marked examples are as follows:

· ·: two, probably three bowls with raised dots on each side of the stem. Contexts: [161], [175]: sf 286.

? ?: one bowl heel where the initials are blurred or the bowl was made in a worn mould. Context [138]; sf 354.

I ? : one damaged, fragmentary bowl with the initials abraded. Context [1615]: sf 364.

S B: one bowl. Unstratified: sf 156. Possibly made by Sam Brown, 1735 or the later pipe maker Sarah Bett, 1756, George St, The Mint, Southwark (Oswald 1975, 132).

M G: one bowl. Context [2012]: sf 366. Possibly made by Moses Gee, recorded 1681-96, Vintry. St Martins (Oswald 1975, 137).

I ?H: two bowls with the second initial poorly moulded. Contexts: [175]; sf 288 and [187]; sf 290.

H M: one bowl which is more angled than the norm and may be transitional between the AO21 and OS10 bowl types. Context [248]; sf 291 and [253]: sf 207. Possibly made by Henry Moore 1696-99 (Oswald 1975, 141).

I M: one damaged bowl. Context [415], sf 293. Numerous London pipe makers could have made this bowl and none are so far documented that operated in Southwark (see Oswald 1975, 141).

T R: one large bowl with an internal cross mark on the base of the bowl Context [816]: sf 303. Possibly made by Thomas Ram, 1718, Southwark (Oswald 1975, 144).

?W R: one bowl and the first initial is unclear. Context [187]; sf 289. Possible W R initialled pipe makers for this bowl are William Robinson, 1708 and William Ryder, 1717 (Oswald 1975, 144).

I R or B: two bowls where the family initial is not clearly moulded. Contexts [175]: sf 287, [1615], sf 263. Pipe makers with either the initials I B or R B who could have made these bowls are known to have been working in Southwark (Oswald 1975, 131, 144; Walker 1981, 177).

C S: one bowl. Context [175], sf 373. A number of London clay tobacco pipes makers could have made this bowl, although none are as yet documented as working in Southwark (see Oswald 1975, 145).

I S: two bowls (the S has the appearance of a '5'). Unstratified, sf 181, context [1615], sf 365. The initials I S are commonly shared amongst London pipe makers at the end of the 17th and early 18th century, although none are so far documented as working in Southwark (see Oswald 1975, 145).

I W: one bowl. Unstratified, sf 157. A number of London pipe makers share these initials (see Oswald 1975, 148), although a local pipe maker is documented: John Whitehead, 1721, St Olaves, Southwark (Walker 1981, 179).

S W: one bowl. Context [175], sf 285. No pipe makers are currently documented in London with these initials for the period of production of this bowl type.

T W: two bowls. Contexts [138], sf 353, [378], sf 211. These initials are commonly shared by late 17th or early 18th-century pipe makers although none are so far documented as working in Southwark (see Oswald 1975, 149).

Additionally one OS10 bowl has moulded crowns in relief on each side of the heel (Context [166]) and another bowl with a damaged rim and wide heel has three rouletted lines milled around the circumference of the stem (unstratified).

#### *1700-1780*

AO25: a fragmentary bowl surviving as mostly a stem has been placed into this category. Context: [422].

#### *1730-1760*

OS11: one heeled, upright very wide bowl with a rounded front and straight back. This bowl type is very rarely found and is more likely to be a product of the Westminster industry where its find spots are more concentrated. The example here has a damaged narrow bowl and it is maker marked:

I C or G, the family initial is damaged. Context [415], sf 214. Possibly makers are John Corrier, 1760, Southwark or James Greyson (Greerson), 1732 or John German (Jarman), 1749, Westminster (Oswald 1975, 133, 137).

#### *1730-1780*

OS12: fourteen heeled, upright bowls with a rounded front and straight back and thin stems. Unmarked, plain examples occur in contexts: unstratified (one example), [138], [251], [378], [795], [801] and [802] and are present as one or two examples. The five maker marked examples are:

?N A: one example as a wide bowl (but not an OS11 example) and made in a pale yellow fabric possibly indicating a non-local product. Context [382], sf 212. No London pipe makers with the initials N A can at present be assigned to the period of this bowl's production.

P A: a single tall damaged type, possibly an AO27T type. Context [378], sf 210. Probably Phillip Andrews, 1755, St Olaves, Southwark (Walker 1981, 177).

T W: Four examples. Context [138], sf 203, sf 204 and sf 352. There are a number of possible pipe makers with these initials who could have made this bowl, however Thomas Woollard, 1757, Southwark is a most likely local candidate (Oswald 1975, 147).

#### *1730-1800*

AO26: two mid-late 18th-century dated spurred bowls are in a fragmentary state and are assigned to this type as they cannot be confidently placed into the OS22 or OS23 shapes. Both bowls have moulded armorial designs and the spurs are not initialled. The first bowl is unstratified and has its rim and spur missing and it is decorated with a good quality moulded Hanoverian Coat of Arms (sf 174). The second bowl (sf 378) survives as a spur and the back of the bowl and it is decorated with the Prince of Wales's feathers. It was recovered from context [378] (sf 292).

#### *1760-1800*

OS23: two spurred bowls with a straight, less projecting front. Both of the bowls are plain. The first bowl is unmarked and was recovered from context [1609] and it is a narrow variant with a stubby spur. The second bowl is initialled on the spur I ?S and it is unstratified (sf 178). Numerous clay tobacco pipe makers are recorded in London who could have made this bowl, although none are so far documented as working in Southwark (Oswald 1975, 145).

AO27T: 24 squared heeled bowls, which are taller versions of the AO27 type and appear to be in transition between the OS12 and AO27 bowl types. All of the bowls are undecorated and the majority are initialled on the heel, except for six unmarked examples recovered from context [868]. The initialled examples are:

W B: one example, context [842], sf 234, possibly made by William Brown (1), 1752, St Giles in the Field (Oswald 1975, 132).

C C: one example, context [1502], sf 261. There are no pipe makers currently documented in London during the period this pipe was made.

E C: one example, context [842], sf 236. Possibly made by Elizabeth Collett, 1762, Goal Yd, Drury Lane (Oswald 1975, 133)

B G: one bowl, context [868], sf 25. The pipe maker is not presently known.

S G: one bowl, context [868], sf 319. The initial G is not clear and there are no concurrent London pipe makers recorded as yet who could have made the bowl.

T G: one bowl, context [868], sf 265. No London pipe makers are recorded at present that could have made this bowl.

I L: one plain bowl. Context [842], sf 239. A possible pipe maker is John Leach, 1805-39 Horsley Down (Oswald 1975, 140)

I M: thirteen bowls, although one bowl from context [868] has the first initial blurred, context [842], sf 237 and sf 238, context [868], eleven bowls: sf 262, sf 264, sf 266, sf 316, sf 317, sf 318, sf 326, sf 327, SF369, sf 370 and sf 371. These are more than likely to be the product of James Minto, 1809-1834, Tooley Street (Jarrett and Hammond 2013, 20), considering that this pipe maker's kiln/workshop was excavated on the BVM12 excavation (see below). If the pipes were made by James Minto then the dating of this bowl form needs to be reconsidered and its date range extended.

#### *1770-1845*

AO27: 88 heeled, fairly short bowls with thin walls. A number of waster pipes (eleven examples) are recorded in this category and were largely derived from contexts [130], [703] and [785]. Four of the bowls appear to be plain and are unmarked, although three of these examples are fragmentary.

Two bowls have their spurs missing, one has fluting of the same size (context [842], sf 305) and a second has ribs of different sizes and oak leaf and grass borders, besides being a waster with encrusting at the base of the bowl (context [130], sf 381). Another bowl has a rose and thistle design, the heel and the bowl being covered in muffle and fired clay (context [785], sf 375).

The maker marked examples are:

\* \*: six bowls with a star, or where stated, a possible flower on each side of the heel. One bowl is otherwise plain (context [842], sf 308), a second bowl has only a leaf and grass border on the front of the bowl (Context [1502], sf 260), The fourth bowl is decorated with even sized fluting (context [842], sf 228), while the fifth bowl has a poorly impressed incuse circular stamp on the bowl consisting of a serrated border containing an illegible name above crossed pipes (Context [842], sf 226). Two other bowls survive mainly as a heel with a possible star or flower within a circle and evidence for an oak and grass leaf border on the front of the bowl (context [130], sf 386, context [842], sf 53).

? ?: six bowls decorated with a couchant griffin on the left side of the bowl and the Prince of Wales's feathers on the right side of the bowl. The heels, when they survive consist of a symbol on each side that resembles a Chinoiserie flaming pearl symbol. Context [703], sf 216 and sf 229 and context [785], sf 219, sf 220, sf 221, sf 222 and sf 223. This design was made on AO27 bowls by the Burstow family in the Blackheath and Greenwich area, although their designs are smaller than the BVM12 examples. Additionally, another bowl surviving with a heel and a 'flaming pearl' symbol additionally has leaf and dot decoration on the stem (context [703], sf 296).

C ?: one damaged bowl with oak leaf and grass borders. Unstratified, sf 172. See C W below for possible makers.

I ?: two bowls, with the last initials illegible. Unstratified, sf 160 and sf 195.



? B: one bowl, with the first initial removed post-firing. Context [868], sf 315.

I B: one, damaged plain bowl. Context [842], sf 248. There are numerous possible pipe makers for this bowl, the most local documented one being John Brixey, 1828-40, Horsleydown Rd (Oswald 1975, 131).

J C: one bowl surviving as a heel with stars and in relief on the stem are leaf and chevron motifs and the name 'CRIT[CHFIELD]'. Context [259], sf 208. This bowl is the product of James Critchfield, 1828-94, Bermondsey (Oswald 1975, 134)

T F: one, plain bowl with a narrow heel and small initials, besides having poorly trimmed seams. Context [1502], sf 359. Possibly made by Thomas Ford (1), 1836-53, Cannon Street (Oswald 1975, 136)

W H: one bowl surviving has a heel. Unstratified, sf 176. Possibly made by William Hurst, 1828-46, Clerkenwell, or William Heardson 1838, Tooley Street (Oswald 1975, 139).

T H: one bowl with a leaf and grass border on the front of the bowl. The heel was handled poorly before firing and the family name is distorted and uncertain. Context [1502], sf 360. At least three pipe makers with the initial T H are so far documented who could have made this bowl, although their London location is uncertain (Oswald 1975, 139).

J I: one bowl surviving has a heel. Unstratified, sf 151. The use of the letter J instead of I came into fashion amongst pipe makers in the mid 19th century, therefore a possible pipe maker for this bowl is John Inderwick, 1839, Leicester Square (Oswald 1975, 139).

I ?I: one bowl with the family initial uncertain. The bowl is decorated with oak leaf borders, fluting of different sizes and at the base of the bowl is a leafy motif on each side of the stem. Context [842], sf 256.

I I: a single plain bowl. Context [842], sf 246. There are several London pipe makers with these initials who could have made this bowl, however a local pipe maker is John Jewster (see below; Oswald 1975, 139).

I J: one bowl with relief decoration consisting fluting of the same size on the bowl and on the stem there are two linear arrow like leaf borders on both the top and bottom of the stem and the name 'JEWSTER' and 'KENT ST'. Context [842], sf 250. There were two, possibly three related pipe makers called John Jewster, working and living on Kent Street during the period 1778-c. 1862 (Tatman 1994, 124-5).

S L: two bowls, both of which were recovered from context [842]. One bowl is decorated with fluting of the same size (sf 253) and the other has oak leaf and grass borders and fluting of two different sizes

(sf 227). The bowls were probably made by Samuel Lewis, 1774-1808 and recorded as having premises at Oxford Street, Lambeth and Horsley Down (Oswald 1975, 141; Tatman 1994, 127).

I M: 24 bowls which occur as a number of different decorative styles. There are seven plain bowls: unstratified (sf 153 and sf 154), contexts [842] (sf 233 and sf 247), [1111] (sf 320), [1119] (sf 321) and [1132] (sf 367). Four bowls have a oak leaf border: unstratified (sf 166, sf 167, sf 169 and sf 187). Six bowls have oak leaf and grass borders: contexts [130] (sf 202, sf 332, sf 349, sf 387, sf 388) and [842] (sf 254). Ten bowls are decorated with fluting of the same size: unstratified (sf 168, sf 170, sf 171, sf 173 and sf 184), contexts [130] (sf 345, sf 346 and sf 390) and [842] (sf 251 and sf 304). The pipe maker concerned with the manufacture of these pipes was James Minto, 1809-34, who is documented as working on Tooley Street and whose pipe kiln was partially excavated in Trench E2 on the BVM12 site. Clay tobacco pipes associated with production waste from the kiln were recovered from contexts [130], [703] and [785], although only one bowl appears to be a waster, having a crack on the stem and a muffle deposit (sf 332).

?W ?M: a single, damaged bowl with uncertain initials and a moulded rose and thistle design. Context [785], sf 225. The pipe maker of this bowl is presently not documented.

W R: two bowls both of which are plain and one survives mostly has a heel (context [782], sf 218) and the other is a tall variant, perhaps an AO27 (context [842], SF235). The pipe maker is uncertain, although pipe makers are William Russell, 1774-1784, Wapping and William Ruscoe, 1805-11, Bow (Oswald 1975, 144).

? S: one bowl with the first initial illegible. Context [782], sf 217.

I S: one bowl. Unstratified, sf 27. Possibly John Smith, 1809-11, Peckham (Oswald 1975, 145).

M T: one bowl with its initials not very clear. Context [842], sf 259. No pipe makers are presently recorded for the maker of this bowl and it is possible that the mould maker intended the M to be a W.

? W: four bowls where the first initial is illegible. Two bowl survive only as heels (unstratified, sf 152 and context [785], sf 298), a third bowl has oak leaf and grass borders (context [130], sf 348) and a fourth bowl has a oak and grass leaf border on the front of the bowl, which is also covered in muffle (context [785], sf 372).

?B W: one bowl decorated with even sized fluting and surviving as mostly a heel. The B appears to be reversed. Context [842], sf 306. The pipe maker is so far not documented.

B W: one bowl decorated with fluting of an even size surviving as mostly the heel. Context [251], sf 206. There are no pipe makers currently listed with these initials working in London.

C W: five mostly fragmentary bowls surviving as heels (unstratified, sf 150, [139], [842], sf 257), while another heel shows evidence for a leaf border (context [131], [138], sf 355, while another with an oak

leaf and grass border (context [842], sf 252) and the most complete bowl only has a oak leaf and grass border on the front of the bowl (context [842], sf 252). There are two possible pipe makers so far documented who could have made this bowl. The first is Charles Walford, 1828 and the second is Charlotte Waddington, 1836, Walworth (Oswald 1975, 148).

I W: two bowls, one is a plain short bowl (context [842], sf 249) and the other has leaf and grass leaf borders (Context [1502], sf 358). There are a number of possible London pipe makers who could have made this bowl, however the most local pipe maker to the site was John Williams (3), 1822-33, Kent Street, Borough (Oswald 1975, 148; Tatman 1994, 144).

P W: one plain bowl, unstratified, sf 155. The pipe was possibly made by Paul Webb, 1805-11, Westminster (Oswald 1975, 148).

T W: two bowls decorated with ribs of different sizes and ivy leaf style branches around the rim. Both bowls were recovered from context [703], sf 230 (covered in muffle) and sf 231.

#### *1820-1860*

AO28: 74 spurred bowls. Four bowls are plain and have their spurs missing and all have evidence for being wasters with encrusting deposits: context [130], sf 333, [131], and [781]. A number of bowls are decorated and are either unmarked or have their spurs missing. Two bowls of a Masonic type were recovered from context [130], sf 337 and sf 338. Two bowls occur with oak leaf borders (unstratified, sf 165, sf 391), while eleven bowls fragments have oak and leaf borders (unstratified, sf 194, sf 194), [130], sf 330, sf 334, sf 335, sf 339, sf 340, sf 374, sf 382, sf 383, sf 384, sf 385 and sf 392 and mostly show signs of being wasters. The maker marked examples are:

Wreaths on each side of the spur: three bowls. One example survives only as the spur (unstratified, sf 179), another with an oak leaf border on the front of the bowl (context [1502], sf 357) and the third with oak leaf borders (unstratified, sf 179).

\* \*: four bowls with stars or flowers on the spur and plain examples are recorded in context [703], sf 295, [785], sf 299 (a waster), [842], sf 309 (flower on the spur) and [1502], sf 415, while an example with a bunch of grapes design with leaf and grass borders were recovered from context [415], sf 213.

? ?: three bowls occur where the initials are illegible and occur as a plain example (context [842], sf 310, and two have oak leaf and grass borders (unstratified, sf 180 and context [130], sf 329 and it is a waster).

I ?: one bowl surviving as a spur marked with a first initial I and decorated with fluting. This bowl appears to be a waster and has encrusting and a probable blow out. Unstratified, sf 196.

H B: one plain, un-smoked bowl, unstratified, sf 158. There are three London pipe makers with these initials working during the date range of this bowl type, the closest to the site being Henry J

Bradshaw, 1861-c. 1891, working on Kent Street, Borough, although another pipe maker with this name was working in Earl's Court, 1861-66 (Tatman 1994, 109; Oswald 1975, 131).

J C: three bowls, one of which survives as a spur (context [388], sf 294, while two bowls both with raised circles on the spur have incuse stamps on the back of the bowls. The first example has a poorly impressed circular stamp has the name '[C]RITCH/FIELD' and scrolls (context [1510], sf 362. The second bowl has a shield shaped stamp with the name 'J. [C]RITCH/FIELD' above a star (context [388], sf 215). All of the lettering is in serif type. The bowls were made by James Critchfield, 1828-94, Bermondsey (Oswald 1975, 134).

F: one plain bowl with a poorly impressed circular stamp on the back of the bowl with a serrated border and the name and location of 'FORD/STEPNEY'. Context [1502], sf 356. A number of pipe makers with the surname Ford were working in Stepney during the early 19th century (Oswald 1975, 136).

H: one bowl with the first initial deliberately removed and decorated with leaf borders. Context [1510], sf 363.

C I: one bowl with oak leaf and grass borders. Context [1208], sf 368. No pipe makers are recorded with these initials, although it is possible that the order of the initials on the heel have been reversed and the bowl was made by James Critchfield (see above).

J J: one bowl with stars on each side of the spur and with an incuse circular stamp on the back of the bowl with 'JEWSTER/[LON]DON' arranged around a four petal flower. Unstratified, sf 183. The bowl was made by John Jewster 2/3, c. 1805-62, Kent Street, Borough (Oswald 1975, 139; Tatman 1994, 124-5).

T L: one fragmentary bowl with evidence of even sized fluting. Context [842], sf 258. Possibly made by Thomas Lewis, 1823-32 Horsley Down, 1850-54, Bermondsey or Thomas Leach, Horsley Down 1828, later working in Whitechapel Rd 1858-67 (Oswald 1975, 141) or Thomas, John and Robert Longworth, Southwark, 19th century.

I M: seventeen bowls, although thirteen bowls are only clearly initialled and the others have one of the letters missing or unclear, although given the rarity of pipe makers with the initials I M and the frequency of this pipe maker present on the site, then it is fairly certain that the uncertain bowls belong in this group. A number of the bowls show evidence for being wasters. Two bowls survive only as spurs (unstratified, sf 186, [130], sf 380). Five bowls are plain and were all recovered from context [130] and some show evidence of firing faults: sf 324, sf 331, sf 342 (discoloured), sf 344 (encrusted) and sf 350. Three bowls have a Masonic design with oak leaf and grass borders (unstratified: sf 185 and sf 192, [130], sf 336 (encrusted). One bowl has oak leaf borders (unstratified, sf 164), while seven bowls have oak leaf and grass borders: unstratified, sf 191 and sf 193 (encrusted), contexts [130], sf 325, sf 328 (cracked and encrusted), sf 341 (encrusted), sf 343, (encrusted and a muffle deposit), sf

351, sf 378 (clay deposit), sf 379 and sf 389. These bowls were made by James Minto, 1809-34, and context [130] was located in Trench E2 and associated with the remains of the clay tobacco pipe kiln.

I O: one bowl with oak leaf and grass borders. Context [842], sf 307. The bowl could have been made by the local pipe makers: John Ogden, ?1867 or John Ore, 1847-99, Union St Borough (Tatman 1994, 130; Oswald 1975, 142).

J S: one bowl with a oak leaf and grass border on the front of the bowl and poorly moulded initials on the spur. A circular incuse stamp is recorded on the back of the bowl with the name 'SWIN/YARD'. The bowl has a muffle deposit. Context [703], sf 232. The bowl was probably made by either James Swinyard 1 or 2, ?1803-58, who were working in Lambeth and Newington (Southwark) (Tatman 1994, 138-9).

I W: five bowls and all are plain and four are stamped with a circular stamp with a notched border and contain the name J.WILD' over a 'pendant'. All of the bowls were recovered from context [842] sf 242, sf 243, sf 244 and sf 245 (all stamped). This pipe maker is so far not documented, although the frequency of the stamped examples indicates a local pipe maker.

*Unidentified bowl 19th-century bowl form and stem fragments with registered finds numbers.*

There are some nine bowls that are in a fragmentary state and cannot be assigned confidently to a bowl form, although they are initialled or decorated and have been given a registered finds number. One heel is initialled W ?R (context [842], sf 313. Two bowl fragments have a bunch of grapes design (context [785], sf 244), while another bowl has Masonic symbols (unstratified, sf 192). Other bowl fragments have leaf borders surviving: unstratified (sf 188, sf 189, sf 190 and sf 197), while another bowl mostly survives as a stem decorated with sprigs of leaves (context [842], sf 311).

A bowl fragment has a bunch of grapes design (context [785], sf 224). A 19th-century heel or spur has star marks (context [1502], sf 361).

Eight stems have relief decoration and those with foliage or geometrical designs were derived from contexts [131] (sf 201), [703] (sf 297), [785] (sf 300, sf 301, both vitrified with patches of clay), [816], sf 302 and [842] (sf 312). Three of the decorated stems also have parts of the names and or addresses of pipe makers. An unstratified example (sf 182) has in relief 'WEBB: ....' AND '...OOLY ST: BOW....'. The pipe maker being uncertain. Two different stems may be the product of James Critchfield (see above) as one example has written on it '...FACTORY' and '...[SNOW FIE]LDS BER[MONDSEY]....' (context [22], sf 175) and '... SNOWSFIELDS' and 'BERMON[DSEY]' (context [842], sf 314).

## **Clay tobacco pipe production**

Besides the evidence of AO27 and AO28 clay tobacco pipes, mostly made by James Minto, which display evidence for being wasters (see above), other finds made of pipe clay are associated with clay tobacco pipe production and include fragments from the muffle kiln, the temporary kiln roof and kiln furniture.

### *Muffle kiln fragments*

A total of seven fragments (9.575kg) of kiln muffle are recorded and all were recovered from context [785], except for one fragment each from context [784] (5.800kg) and [786] (924g). The largest fragment of kiln wall was found in context [784] and was formed of horizontally laid pipe stems in pipe clay. The fragment has a tapering profile 60-65mm thick. The exterior has two sub-rectangular in plan bar type buttresses measuring between 50-65mm in thickness. The exterior has a purple brown slag like glaze created by the kiln, while the interior has a white pipe clay wash. Another fragment from [785] has an internal cornice type peripheral ledge, which was used to stack the bowls of the clay tobacco pipes.

### *Temporary kiln roof*

This material was recovered as a total of twelve fragments (1.115kg) and was recovered from contexts [130] (nine fragments/316g) and [785] (three fragments/799g). The material consists of a layer of slag material with the top surface made of horizontally laid pipe stems, although fragments of kiln muffle and part of a bowl fragment occurred in the material from context [130].

### *Kiln furniture*

The kiln furniture consists of three types: rolls (40 fragments/81g), (bowl rim) trimmings (four fragments/19g) and thin sheets (one fragment/17g), besides a small number of fragments of fired clay (two fragments/13g) which could not be assigned to a type.

#### *Rolls*

The rolls consist of roughly formed thin strips of clay with oval (7 x 10mm in thickness) or rounded (7-11mm in diameter) in cross sections. Finger tip impressions occurred on the side or top of the rolls, but not in combination. The rolls were used to separate the pipes in the kiln. All of the rolls were recovered from context [130]. The rolls can be divided into three types (types 1-2 and 5 as defined by Peacey 1986, 64):

Type 1, straight or near straight: three fragments (9g)

Type 2: curved rolls, nine fragments (50g)

Type 5: with the ends spread or flattened, two fragments (7g)

Five fragments (15g) could not be assigned to a type resultant from their small size.

#### *Bowl rim trimmings*

These items result from the trimming of excess clay from the metal mould rim and were probably used as spacers between the pipes in the kiln. They were all recovered from context [130].

#### *Thin sheet*

A single oval fragment of a thin sheet (sf 241) has surviving dimensions of 55mm by 50mm and is 10mm thick. It has flat surfaces, except the top one is more undulating and has a central nipple. It was recovered from context [785].

### **Distribution**

The distribution of the clay tobacco pipes is shown in Table 3, which demonstrates the trench location, phase, number of fragments, assemblage size, date range of the latest bowl type (context ED and context LD) and a considered deposition date for each context the material occurred in. The clay tobacco pipes were recovered from Phases 4b-7. A brief summary of the clay tobacco pipes by phase is provided.

Context	Trench	Phase	No. of frags.	Assemblage size	Context ED	Context LD	Context considered date
1	B1	6b	5	S	1580	1910	1580-1910
3	B1	6b	1	S	1580	1910	1580-1910
6	B1	6a	4	S	1580	1910	1580-1910
9	B1	6a	1	S	1580	1910	1580-1910
18	B2	6a	13	S	1680	1710	1680-1710
19	B2	7	1	S	1580	1910	1580-1910
22	B2	6	17	S	1580	1910	Early 19th century
29	B2	6	2	S	1580	1910	1580-1910
30	B2	6	3	S	1580	1910	1580-1910
35	B2	6	1	S	1580	1910	1580-1910
50	B2	6	2	S	1580	1910	1580-1910
53	B2	6	1	S	1580	1910	1580-1910
56	B2	6	16	S	1700	1740	1700-1740
72	B2	6	14	S	1580	1910	1580-1910
86	B3	6	8	S	1580	1910	1580-1910
119	A1	6b	13	S	1580	1910	1580-1910
130	A1	6b	754	L	1820	1860	1820-1845
131	A1	6b	46	M	1820	1860	1820-1860
132	A1	6b	2	S	1580	1910	1580-1910
135	A1	6a	5	S	1580	1910	1580-1910
136	A1	6a	3	S	1580	1910	1580-1910
138	A1	VOID	260	L	1770	1745	Early 19th century
139	A1	6b	32	M	1780	1845	1780-1845
142	A1	6a	69	M	1700	1740	1700-1740

Context	Trench	Phase	No. of frags.	Assemblage size	Context ED	Context LD	Context considered date
145	A1	6a	5	S	1680	1710	1680-1710
149	A1	VOID	2	S	1580	1910	1580-1910
150	A1	7	1	S	1660	1680	1660-1680
151	A1	6a	3	S	1680	1710	1680-1710
157	A1	6a	2	S	1700	1740	1700-1740
161	A1	6a	5	S	1700	1740	1700-1740
163	A1	6a	1	S	1580	1910	1580-1910
166	A1	6a	6	S	1700	1740	1700-1740
170	A1	6a	4	S	1680	1710	1680-1710
174	A1	6a	19	S	1700	1740	1700-1740
175	A1	6a	31	M	1700	1740	1700-1740
177	A1	6a	1	S	1700	1740	1700-1740
184	A1	VOID	7	S	1680	1710	1680-1710
187	A1	6a	4	S	1700	1740	1700-1740
193	A1	4b	3	S	1680	1710	1680-1710
210	C	5	1	S	1640	1660	1640-1660
248	E2 (N)	6b	20	S	1700	1740	Late 18th-19th century
251	E2 (N)	6b	7	S	1770	1845	1800-1845
253	E2 (N)	6b	2	S	1700	1740	1700-1740
255	E2 (N)	6b	9	S	1680	1710	1680-1710
259	E2 (N)	6b	1	S	1770	1845	1800-1845
260	E2 (N)	6b	1	S	1580	1910	1580-1910
261	E2 (N)	6b	1	S	1770	1845	1800-1845
263	E2 (N)	6b	1	S	1580	1910	1580-1910
265	E2 (N)	6b	1	S	1580	1910	1580-1910
268	E2 (N)	6b	1	S	1580	1910	1580-1910
270	E2 (N)	6a	1	S	1580	1910	1580-1910
273	E2 (N)	6a	2	S	1580	1910	Late 18th/19th century
278	E2 (N)	6a	3	S	1580	1910	1580-1910
281	E2 (N)	6a	1	S	1580	1910	1580-1910
286	E2 (N)	6a	4	S	1580	1910	1580-1910
289	E2 (N)	6a	2	S	1580	1910	1580-1910
291	E2 (N)	6a	1	S	1580	1910	1580-1910
378	D1	6b	13	S	1730	1780	1750-1780
381	D1	6b	1	S	1660	1680	1660-1680
382	D1	6b	6	S	1730	1780	1730-1780
387	D1	6a	3	S	1660	1680	1660-1680
388	D1	6b	26	S	1820	1860	1820-1860
406	A3	6b	4	S	1680	1710	1680-1710
411	A3	6b	1	S	1580	1910	1580-1910
413	A3	6b	2	S	1580	1910	1580-1910
415	A3	6b	6	S	1820	1860	1820-1860
420	A3	6b	7	S	1680	1710	1680-1710
421	A3	6a	1	S	1580	1910	1580-1910
422	A3	6a	2	S	1580	1910	18th century
427	A3	6a	2	S	1660	1680	1660-1680



Context	Trench	Phase	No. of frags.	Assemblage size	Context ED	Context LD	Context considered date
439	A3	5	1	S	1660	1680	1660-1680
513	A2	6b	1	S	1580	1910	1580-1910
522	A2	6b	1	S	1580	1910	1580-1910
542	A4, ST2	6a	3	S	1680	1710	1680-1710
703	E2 (S)	6b	29	S	1820	1860	1820-1845
707	E2 (S)	6b	1	S	1580	1910	1580-1910
713	E2 (S)	6a	1	S	1580	1910	1580-1910
725	E2 (S)	5b	2	S	1580	1910	1580-1910
741	E2 (S)	5b	1	S	1580	1910	1580-1910
752	E2 (S)	6b	2	S	1580	1910	1580-1910
780	E2 (N)	6b	6	S	1580	1910	1580-1910
781	E2 (N)	6b	1	S	1820	1860	1820-1860
782	E2 (N)	6b	4	S	1770	1845	1770-1845
785	E2 (N)	6b	102	S	1770	1845	1800-1845
790	E2 (N)	6b	1	S	1580	1910	Mid 18th - 19th c century
794	E2 (N)	6b	3	S	1580	1910	1580-1910
795	E2 (N)	6b	9	S	1730	1780	19th century
801	F (N)	6b	2	S	1730	1780	1730-1780
802	F (N)	6b	2	S	1580	1910	Late 17th-early 18th century
808	F (N)	6a	3	S	1580	1910	1580-1910
809	F (N)	6b	2	S	1580	1910	1580-1910
816	F (N)	6b	14	S	1700	1740	Early 19th century
822	F (N)	5	1	S	1580	1910	1580-1910
842	F (S)	6b	81	M	1820	1860	1820-1845
846	F (S)	6b	6	S	1680	1710	Early 19th century
848	F (S)	6a	1	S	1580	1910	1580-1910
868	F (S)	6b	39	M	1770	1845	1770-1800
869	F (S)	6b	5	S	1580	1910	1580-1910
914	E1	6a	17	S	1680	1710	1680-1710
915	E1	6a	13	S	1660	1680	1660-1680
916	E1	6a	26	S	1680	1710	1680-1710
923	E1	6a	1	S	1680	1710	1680-1710
974	E1	5b	1	S	1580	1910	1580-1910
1111	E2 (N)	6a	9	S	1770	1845	1770-1845
1119	E2 (N)	5b	2	S	1770	1845	1770-1845
1120	E2 (N)	5b	3	S	1580	1910	1580-1910
1121	E2 (N)	5b	3	S	1580	1910	1580-1910
1128	E2 (N)	4b	4	S	1580	1910	1580-1910
1132	E2 (N)	4b	5	S	1770	1845	1770-1845
1208	E3	6bii	1	S	1770	1845	1800-1845
1227	E3	6bi	5	S	1580	1910	1580-1910
1303	D1	6a	69	M	1680	1710	1680-1710
1502	n/a	6bi	9	S	1820	1860	1820-1845
1510	n/a	6bii	3	S	1820	1860	1820-1860
1512	n/a	6bi	1	S	1660	1680	1660-1680
1606	G	6b	1	S	1730	1800	Mid-late 18th century

Context	Trench	Phase	No. of frags.	Assemblage size	Context ED	Context LD	Context considered date
1609	G	6b	14	S	1730	1800	1730-1800
1615	G	6b	12	S	1700	1740	1700-1740
1616	G	6b	1	S	1580	1910	1580-1910
1725	H3	6b	1	S	1580	1910	1580-1910
1900	H2	7	1	S	1580	1910	1580-1910
2012	H1	6b	2	S	1700	1740	1700-1710

Table 3: BVM12: distribution of the clay tobacco pipes showing for each context clay tobacco pipes occurred in the Trench location, phase, number of fragments, size of the assemblage, the date range of the latest bowl type (Context ED and Context LD) and a spot date (context considered date)

#### **Phase 4b**

A total of twelve fragments of clay tobacco pipes are recorded in this phase consisting of three bowls, eight stems and a nib. The material is intrusive in this phase.

#### **Phase 5**

Only three fragments of clay tobacco pipes were noted in this phase and consist of two bowls (as AO15 and OS10 types) and a stem. The material should be intrusive for the dating of this phase.

#### **Phase 5b**

A single bowl and eleven stems were recovered from this phase.

#### **Phase 6**

From this phase was recovered 64 fragments of clay tobacco pipes, consisting of one OS10 bowl, 56 stems and a nib. The bowl and probably most of the material appears to be intrusive.

#### **Phase 6a**

A total of 341 fragments of clay tobacco pipes were present in this phase and consisted of 215 bowls with a date range of 1660-1845, 809 stems and 98 nibs. The majority of the 17th- and 18th-century dated material was recovered from layers. A notable group of 1700-40 dated pipes were recovered from fills [174] and [175] of pit [167]/[176] and yielded mostly OS10 bowls. Other small groups of clay tobacco pipes were recorded in this phase as OS10 bowls found in fill [187] of the linear pit [188] and 1770-1845 dated AO27 bowls in fill [1111] of the soakaway [1112].

#### **Phase 6b**

From this phase was recovered 1324 fragments of clay tobacco consisting of 229 bowls (with a date range of 1660-1860), besides 98 nibs and 813 stems. Clay tobacco pipe production material also

occurred in this phase. Layers and dumped deposits produced a notable quantity of clay tobacco pipes. A notable group of c. 1770-1800 dated clay tobacco pipes were found in fill [867] of the soakaway/cesspit [872]. Layers [785] and [130] produced groups of clay tobacco pipe wasters, kiln muffle and kiln furniture dated 1800-45 and 1820-45 respectively. A notable quantity of 1820-45 dated clay tobacco pipes were found in fill [842] of the soakaway/cesspit [843].

## **Phase 7**

A single stem and a residual AO15 bowl were recovered from this Phase.

## **Significance of the assemblage**

The clay tobacco pipes have significance at a local level. The bowl types present on the site fit within the typology for London and it is presumed that amongst the wide variety of maker marked and decorated bowls, local clay tobacco pipe makers are represented in the assemblage, and besides James Minto, other local makers include James Critchfield, William Williams (1-3) and John Jewster. The building of the London Bridge railway station may represent an important *terminus ante quem* for some of the 19th-century bowl type decorations.

The pipe wasters, fragments of kiln structure and kiln furniture are associated with a clay tobacco pipe kiln located in Trench E2. This kiln is one of only six so far recorded in the Greater London area, the others being Aldgate, Brentwood and from Southwark, kilns are known at Arcadia buildings, Union Street, Tabard Square and the recently excavated 1660-80 dated example found in a cellar at the Wheatsheaf, Stoney Street (TAA6, BVE11) (Peacey 1996; Killock 2009, Jarrett and Hammond 2013). The fact that so few clay tobacco pipes have been found in the region is surprising as London was the first location in England for this industry and a major production centre for pipes (Jarrett and Hammond 2013). The clay tobacco pipe kiln from BVM12, from the evidence of the associated marked clay tobacco pipe bowls, was worked by the master pipe maker James Minto, working c. 1809-34. Analysis of the bowls will allow for an understanding of the range of his products he made and his manufacturing techniques. The firing faults recorded on the bowls will help to understand the problems in the firing of the kiln.

## **Potential of the collection**

The main potential for the tobacco pipes is as an aide to dating the contexts in which they were found and to provide a sequence for them. A number of the pipe bowls merit illustration. Other local pipe assemblages have been recovered from Borough High Street (e.g. BHB00: Jarrett 2002) and Southwark Bridge Road (SBK00: Jarrett 2006) and especially other excavations associated with the Thameslink excavations (Jarrett 2014). These assemblages add to the knowledge of the local clay tobacco pipe industry and their marketing to the end users on the site and in the vicinity.

The BVM12 clay tobacco pipe assemblage can be used to help investigate those research questions posed in 'A research framework for London Archaeology 2002' (Nixon *et al.* 2002).

Comparison of the clay tobacco pipe assemblage from both TAA9 (BVC12) and BVM12 shows that James Minto's products are present there and absent on the Borough High Street Thameslink excavations (BVG10 and BVT09/BVE11), where the pipes of James Critchfield are very prevalent. The study of clay tobacco pipes through their manufacturers, particularly James Minto for this study area, is a direct response to TS4 FRAMEWORK OBJECTIVES • Using the archaeological record wherever possible to trace individual lives (Nixon *et al.* 2002, 85).

The documentary evidence of the inhabitants on the excavation area, their professions and socio-economic status may complement the interpretation of the clay tobacco pipe assemblage. The large groups of clay tobacco pipes recovered from pits [167]/[176] and soakaway/cesspits [843] and [872] may have been recovered from drinking establishments, such as ale houses, taverns and eating houses and complement those comparable assemblages recovered from the Thameslink Borough High Street excavations (Jarrett 2014). This research would meet the L7 FRAMEWORK objective: Establishing how archaeology can contribute to the history of leisure in London, and identifying assemblage characteristics (Nixon *et al.* 2002).

The physical remains of the clay tobacco pipe kiln and its associated finds, such as the clay tobacco pipe wasters and their firing faults, mostly recovered from contexts [130] and [785] have important potential for understanding the technology of this industry in London.

### **Research aims**

A number of research aims can be suggested as avenues of research for the clay tobacco pipe assemblage from BVM12.

How do the clay tobacco pipes relate to the documentary evidence for the land use of properties on the site?

How does the clay tobacco pipe assemblage from BVM12 compare to other local sites and what does that inform temporally on the local clay tobacco pipe industry?

How can the clay tobacco pipe production waste inform upon the manufacturing technology of this industry?

### **Recommendations for further work**

A publication report should be written for the clay tobacco pipes from the site, relating them where possible to activities on the site and if there are correlations to documented activities. Comparison of this assemblage should be made with material from other sites, particularly those associated with the

Thameslink Viaduct project, to determine how well the local clay tobacco pipe industry is represented. Approximately twenty bowls and ten items of kiln furniture and kiln muffle require illustrating or photographing to supplement the text. Documentary research is required into the clay tobacco pipe makers to achieve a better understanding of the working period of the master pipe makers, especially James Minto. It is recommended that Peter Hammond undertakes the documentary research.

### **Hair curler assessment**

A single pipe clay hair curler (sf 103) was recovered from the excavation and found in context [6]. The hair curler is intact and can be classified according to Le Cheminant (1978) as a variant of his type 6, dated c. 1700. The item is handmade and dumbbell shaped, except that the ends are concave. The hair curler measures 56mm in length with the diameter at the middle of the item measuring 10mm and the ends both have a wider diameter of 12mm.

### **Significance, potential and recommendations for further work**

The hair curler has some significance at a local level, especially as it appears to be a variant of a specific type. Hair curlers are an infrequent find on archaeological excavations in London and follows the distribution of this finds type for being mostly concentrated close to the Thames. Hair curlers are believed to be an indication of the material culture of middle and high socio-economic groups: the occurrence of the hair curler on the study area therefore somewhat contradicts the understanding that it was a vicinity of lower socio-economic housing and work places. However, the hair curler may have belonged to a tradesman or someone with aspirations to a higher socio-economic group. Unfortunately the hair curler appears to predate the pottery (spot dated c. 1790-1830) it occurs with, while the associated clay tobacco pipes and glass are poorly dated. Therefore the hair curler cannot be used reliably to infer upon the social status of the group of finds it was found with.

The potential of the hair curler is to date the context it was recovered from and as a variant it adds to the corpus of hair curler types or sub-types and so merits illustration.

It is recommended that the hair curler is reported upon in Monograph 2 and an illustration of the item is used to supplement the text.

### **Bibliography**

Atkinson D. and Oswald. A., 1969. 'London clay tobacco pipes'. *Journal of British Archaeology Association*, 3rd series, Vol. 32, 171-227.

Jarrett, C., 2002. 'Clay tobacco pipe', in C. Pickard, *An assessment report of an archaeological excavation at the new Wolfson Wing, King's College London, London Borough of Southwark SE1*. Pre-Construct Archaeology unpublished report.

Jarrett, C., 2006. 'Clay tobacco pipe assessment', in B. Sudds and R. Mattinson, *An assessment of archaeological investigations at 56 Southwark Bridge Road, London Borough of Southwark SE1*. Pre-Construct Archaeology unpublished report.

Jarrett, C., 2014. 'An assessment of the clay tobacco pipes and production waste from the Thameslink excavations (updated project design)', in J. Taylor, *Thameslink Archaeological Assessment: Updated Project Design - Archaeological Assessments 1-7*. Oxford Archaeology – Pre-Construct Archaeology unpublished report.

Jarrett, C. and Hammond P., 2013. 'Two clay tobacco pipe kilns recently discovered on the Thameslink Project, London'. *The Society of Clay Pipe Research Newsletter* 84, 14-21.

Killock, D., 2009. *An Assessment of an Archaeological Excavation at Tabard Square, 34-70 Long Lane & 31-47 Tabard Street, London SE1, London Borough of Southwark*. Pre-Construct Archaeology Ltd unpublished report.

Le Cheminant, R., 1978. 'The development of the pipeclay hair curler - a preliminary study', *London Archaeol* 3, 187-91.

Nixon, T., McAdam, E., Tomber, R. and Swain, H. (eds.), 2002. *A research framework for London Archaeology 2002*. Museum of London.

Oswald, A., 1975. *Clay pipes for the Archaeologist*, British Archaeological Reports, British series, No.14.

Peacey, A., 1996. *The development of the clay tobacco pipe kiln in the British Isles. The archaeology of the clay tobacco pipe*, Peter Davey (ed.), XIV. BAR British Series 246.

Tatman, C. A., 1994. *The Archaeology of the clay tobacco pipe. The clay tobacco pipe industry in the Parish of Newington, Southwark, London*. British Archaeological Report, British Series XIII.

Walker, S., 1981. 'The clay pipe industry of the Parish of St. Olave's Southwark' in P. Davey (ed.), *The Archaeology of the Clay Tobacco Pipe V. Pipes and Kilns in the London Region*. British Archaeological Report, British Series 97, 173-82..

## APPENDIX 7: GLASS ASSESSMENT

Chris Jarrett

### Introduction

A small sized assemblage of glass was recovered from the site (eight boxes). The glass dates to the post-medieval period. Most of the fragments show no or little evidence for abrasion and were probably deposited fairly rapidly after breakage, although there is evidence for redeposition. Several of the glass fragments do have natural weathering deposits resulting from burial conditions. The state of fragmentation for the assemblage ranges from single shards to vessels with complete profiles and four intact items, the majority of the glass could be assigned to a form. The glass was quantified by the number of fragments and the estimated number of vessels and was recovered from 80 contexts and individual deposits produced small (fewer than 30 shards) groups.

All of the glass (390 fragments, 187 ENV, of which 21 fragments and 20 ENV are unstratified) was recorded in an ACCESS database, by type colour and form. The assemblage is discussed by the vessel shapes, *etc.* and its distribution. The assemblage consists of mostly late 18th-19th-century dated material although there is a small quantity of 16th- and early 17th-century material and includes *facon de Venice* fragments decorated with laid trails of white glass and most notable is a small sherd of vetro a reticella - a very rare find in England.

### The Forms

All of the forms are dated to the post-medieval period and are mainly discussed according to their functions in the form of a catalogue, except for the major categories where the data has been synthesised. A breakdown of the basic shapes is as follows:

Beaker, cylindrical: 1 fragment, 1 ENV

Bottle: 2 fragments, 2 ENV

Bottle, case: 2 fragments, 2 ENV

Bottle, cylindrical: 7 fragments, 4 ENV

Bottle, Ginger beer: 1 fragment, 1 ENV

Bottle, Hamilton/torpedo/egg-shape: 1 fragment, 1 ENV

Bottle, octagonal section: 1 fragment, 1 ENV

Bottle, octagonal section, flat: 15 fragments, 9 ENV

Bottle, oval section: 3 fragments, 2 ENV

Bottle/phial: 1 fragment, 1 ENV

Bottle sauce: 1 fragment, 1 ENV

Bottle, shouldered/pear-shape: 1 fragment, 1 ENV

Bottle, square section: 1 fragment, ENV

Bottle, wine Dutch: 1 fragment, 1 ENV

Bottle, wine Dutch boot: 2 fragments, 1 ENV

Bottle, wine English: 102 fragments, 27 ENV

Bottle, wine English cylindrical: 15 fragments, 4 ENV

Bottle, wine English cylindrical (early: waisted lower wall): 43 fragments, 37 ENV

Bottle, wine English cylindrical (late: straight sided wall): 35 fragments, 16 ENV

Bottle, wine English globe and shaft: 1 fragment, 1 ENV

Bottle, wine English mallet: 1 fragment, 1 ENV

Bottle, wine French: 2 fragments, 1 ENV

Bottle/phial: 1 fragment, 1 ENV

Bottle or jar: 1 fragment, 1 ENV

Bowl, medium rounded: 2 fragments, 1 ENV

Drinking vessel: 2 fragments, 2 ENV

Goblet/wine glass: 8 fragments, 8 ENV

Glass production waste: 1 fragment, 1 ENV

Glass rod: 2 fragments, 2 ENV

Indeterminate form: 1 fragment, 1 ENV

Ink, square section: 1 fragment, 1 ENV

Phial, cylindrical: 6 fragments, 5 ENV

Phial, globular: 1 fragment, 1 ENV

Rummer: 1 fragment, 1 ENV

Tumbler, cylindrical: 1 fragment, 1 ENV

Vessel glass: 37 fragment, 15 ENV

Window pane: 86 fragments, 32 ENV



## **Alcohol Consumption Forms**

### *Beaker, cylindrical*

Natural, clear glass, one fragment, 1 ENV. Simple fire finished rim, optically blown mesh design, heavily weathered (Willmott 2002, fig. 149.1.5. c. 1590-1660). Context [534], Phase 4c.

### *Goblets/wine glasses*

Lead, clear glass, one fragment, 1 ENV. Rounded flaring bowl base attached to a wider, hollow, inverted conic baluster shape stem. Free-blown. ?Late 17th century. Context [142], Phase 6a.

Soda, clear glass, one fragment, 1 ENV. Flared bowl with a solid rounded knop above a stem and smaller knop/merese attached to the start of the foot ring (Bickerton, 2000, 4 right). Free-blown. Slightly weathered. c. 1700. Context [157], Phase 6a.

Lead, clear glass, one fragment, 1 ENV. Rounded flaring (deep U-shaped) bowl with vertical ribbing/fluting, attached to a wider, hollow. Inverted conical/baluster stem attached to the fluted base. Similar to the example recovered from context [142]. ?Late 17th century. Free-blown Context [177], Phase 6a.

Soda, clear glass, one fragment, 1 ENV. Tall fluted shaped bowl with the fluting curving from the solid cylindrical stem and becoming vertical on the bowl. Heavily weathered. Mould made. 19th century. Context [842], Phase 6b.

Natural, clear glass, one fragment, 1 ENV. Pedestal base with a solid flaring stem and the start of the bowl. Heavily weathered. Free-blown. 19th century. Context [868], Phase 6b.

Natural, clear glass, one fragment, 1 ENV. Footring base with a merese at the base of the stem. Very weathered. Free-blown. Post-medieval. Context [157], Phase 6bi.

Soda, clear glass, one fragment, 1 ENV. Flared bowl decorated with fine graduated 'discs' and fourteen facets around the base. Solid stem with a disc like knop on the stem and a merese on the top of the footring. Moulded. c. 1830-1900. Context [1502], Phase 6bi.

Soda, clear glass, one fragment, 1 ENV. Complete profile: flared funnel shaped plain bowl attached to a solid stem with a rounded knop and a merese attached to the footring with its edge folded under. Slightly weathered. Late 18th - 19th century . Context [1510], Phase 6bii.

### *Rummer*

Soda, clear glass, iridescent, one fragment, 1 ENV. Pedestal base with a rounded step/wide merese attached to a short, thick stem with a merese at the top and joined to a flaring profiled bowl. Free-blown. 19th century.

### *Tumbler, cylindrical*

Lead glass, clear, one fragment, 1 ENV. Base, fairly thick, plain walled. Wear marks noted on the underside of the base. Free-blown. Late 18th - early 19th century. Context [782], Phase 6b.

### *Miscellaneous drinking vessel fragments*

Lead, clear glass, one fragment, 1 ENV. Simple, fire finished rim and a flared wall. Free-blown. Late 18th - 19th century. Context [30], Phase 6.

Natural glass, clear. One fragment, 1 ENV. Simple, fire finished rim and a flared wall. Slightly weathered, Free-blown. Post-medieval. Context [794], Phase 6b.

Lead glass, clear with white *vetro a reticello* trailing. Thin wall fragment decorated in the rare *vetro a reticella* style. The exterior has wide trailed and marvered white wavy bands, while the interior has thin 'broken cable' style lines. Optically blown. 16th century, Venetian. Context [59] Phase 5.

## **Alcohol storage**

### *Case bottles*

Natural olive green glass, one fragment, 1 ENV. Base, square section with a convex underside and an embossed cross and pontil scar. Flared walls which are recessed. Possibly the base of a *kuttrolf*. Optically blown. Slightly weathered. Post-medieval. Context [842], Phase 6b.

Natural, dark olive green glass, one fragment, 1 ENV. Base, square section with a convex underside. Optically blown. Weathered. Late 16th - 19th century. Context [1227], Phase 6bi.

### **Octagonal-section, flat bottle**

Natural, olive green glass. One fragment, 1 ENV. Intact, applied bevelled rim with a straight-sided collar, deep cylindrical neck and rounded shoulder. The walls have arcaded panels and the base is convex with a diagonal mould seam. The rim finish is of a type usually associated with alcohol storage. Two part mould made. Slightly weathered. 1830 onwards. Context [44], Phase 6.

## **Wine bottle forms**

### *Dutch*

Natural, olive green glass. One fragment, 1 ENV. Wide everted rim with a triangular cordon, very short neck, rounded shoulder (English wine bottle rim finish of c. 1680-1910). Holland, c. 1690, (Dumbrell 1983, 130, fig. h, 143, fig. n). Free-blown. Slightly weathered. Unstratified.

### *Dutch boot-type*

Natural, olive green glass, two fragments, 1 ENV. Base, flattened walls indicated by a diagonal bar impression. Free-blown. Slightly weathered. Post-medieval. Context [1609], Phase 6b.

#### *"English" wine bottles, undifferentiated forms*

There are 93 fragments, 24 ENV of natural glass fragments that were derived from wine bottles and could not be assigned to a specific shape. The colours range between pale olive and dark olive green. Four fragments are unstratified, otherwise fragments of this form occur in Phase 4b: context [1132], Phase 5b: context [309], Phase 6: context [56], Phase 6a: contexts [56], [136], [273], [280], [1111] and [1303], Phase 6b: contexts [132], [248], [256], [265], [267], [707], [782], [789], [790], [801], [804], [816], [842], [868] and [1615] and Phase 6bi: context [1502].

#### *"English" cylindrical wine bottle*

This form made in natural glass and in olive green colours have been sub-divided where possible into two types, firstly the earlier free-blown shape with a waisted wall profile above a slightly splayed base, which dates from the mid 18th-early 19th century. Secondly as the later straight-sided wall type, which are usually mould made and date from the mid 19th century onwards. There were several fragments of this form where it was not certain of its specific type and these were found as one unstratified fragment, and the rest occurred in Phase 6: context [50], Phase 6b: contexts [256], [752], [789] and Phase 6bi: context [1217].

#### *Early cylindrical wine bottles*

This form was very numerous on the site and identified by their distinctive base and rims with string finishes dated to the late 18th and early 19th century (Dumbrell 1983, 38-39). Five fragments are unstratified. The rest occur as three or less sherds in the following deposits unless otherwise stated: Phase 5b: context [1121], Phase 6a: contexts [1111] and [1303], Phase 6b: [256], [782] (ten fragments), [789], [790], [842] (ten fragments), and [868], Phase 6bi: context [1214] and Phase 6bii, Context [1227] (five fragments).

#### *Late cylindrical wine bottles*

The later cylindrical wine bottles, which are less frequent than the earlier type) were identified by their mould made appearance and rim finishes (Dumbrell 1983, 38-9). They occur as five unstratified fragments, and as one or two sherds in other deposits unless otherwise stated: Phase 6: context [50], Phase 6a: context [18], Phase 6b: contexts [256] (five fragments), [382], [513] (sixteen fragments) and [780], and Phase 6bii: context [1210].

#### *"English" shaft and globe wine bottle*

Natural, pale olive glass, one fragment, 1 ENV. Rim, slightly everted with a rounded cordon and tall narrow conical neck. Free-blown. Weathered. c. 1660 rim string finish (Dumbrell 1983, 38). Context [138], voided.

### **Mallet-type wine bottle**

This form is probably represented amongst the non-diagnostic wine bottle fragments. Only one vessel could be confidently assigned to the mallet shape:

Natural olive green glass, one fragment, 1 ENV. Base fragment, rounded with a kicked underside and inturned wall. Free-blown. Weathered. Early-mid 18th century. Context [130], Phase 6b.

### **French wine bottles**

Natural dark olive green glass, one fragment, 1 ENV. Rim sherd, everted and bevelled with a thin, narrow straight-sided cordon and an overlapping segment. The neck is long and cylindrical with a bulge below the rim. Free-blown. c. 1800-10 (Dumbrell 1983, 39). Context [842], Phase 6b.

Natural dark olive green glass, one fragment, 1 ENV. Upright squared rim with a narrow cordon string-rim finish. The neck is twisted with tool marks. A mortar-like deposit adheres to the vessel. Free-blown. 19th century. Context [56], Phase 6.

### **Drink storage**

#### *Hamilton/torpedo/egg-shape bottle*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Base, pointed and rounded. Moulded. c. 1830 onwards. Context [1502], Phase 6bi.

### **Food storage**

#### *Sauce bottle*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Intact bottle with an applied 'club sauce' type rim and an internal lid-seating for a cork. The neck is conical and the shoulder is embossed 'WORCESTERSHIRE SAUCE', while on the body is embossed vertically 'LEA & PERRINS'. Concave base embossed 'C B CO A'. Two part mould made. Slightly weathered. c. 1830 onwards. Context [382], Phase 6b.

### **Ink storage**

#### *Square ink bottle,*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Intact, cracked off rim, short cylindrical neck, flat shouldered with two ridges either side of the neck. The front panel is plain and

the other sides are ribbed (with four additional ribs on the corners) and the underside of the base has a circular recess. Optically blown. 19th century. Context [362], Phase 6b.

## **Liquid Storage**

### **General bottle fragments**

Natural clear glass, one fragment, 1 ENV. Neck and shoulder. Free-blown. Weathered. Post-medieval. Context [138], void.

Natural, pale olive green glass, one fragment, 1 ENV. Neck/shoulder, possibly of an oval type and a mould seam mark. 1830 onwards. Context [1502], Phase 6bi.

### **Bottle or jar**

#### *Bottle, cylindrical*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Rounded kicked base with pontil scar. Free-blown. Weathered. Post-medieval. Unstratified.

Natural, aquamarine coloured glass, two fragments, 2 ENV. Bases, convex underside and embossed '117'. Weathered. Moulded. 19th century. Context [513], Phase 6b.

Natural, clear glass, two fragments, 1 ENV. Wall fragments. Weathered. 19th century. Context [513], Phase 6b.

#### *Ginger beer-type bottle*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Intact, blob rim with internal screw fitting. Short neck, embossed on the side 'H. D. RAWLINGS Ltd/NASSAU STREET/PURE TABLE WATERS/AS SUPPLIED/TO THE QUEEN' embossed on the convex base underside 'RILEY'S PATENT/HDR'. Moulded. 1872 onwards. Context [1208], Phase 6bi.

#### *Octagonal section, flat bottles*

Natural dark olive green glass, one fragment, 1 ENV. Shoulder (rounded) to slightly recessed base. No evidence for a mould mark. Internal pale brown-yellow deposit. Optically blown. Late 18th-early 19th century. Unstratified.

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Base, convex underside and diagonal mould seam mark; one wall face is concave. Moulded. 1830 onwards. Context [18], Phase 6a.

Natural dark olive green glass, three fragments, 3 ENV. The bases are flat with no evidence for mould seams and the front and side panels are convex, while the corner panels are flat. Evidence of arcaded tops for the wide front panels. Optically blown. Context [842], Phase 6b.

#### *Pear-shaped/shouldered bottle*

High-lime low alkali, clear glass, one fragment, 1 ENV. Complete profile. Very thin walled vessel with a fire cracked rim and a rounded cordon immediately below it. The shoulder is rounded, the wall is flaring and the vessel has the appearance of being an inverted pear-shape. The base is conical with a pontil scar. Free-blown. 19th century. Context [842], Phase 6b.

#### *Square bottle*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Base fragment with a convex underside and pontil scar. Straight-sided walls. Optically blown. 19th century. Context [1113], Phase 6a.

#### *Bottle or phial*

Natural clear glass, one fragment, 1 ENV. Rim with an asymmetrical preparation-type finish (the cork being still in place), short neck and angled/rounded shoulder carination and rounded body. Internal deposit. Free-blown. Weathered. 19th century. Context [868], Phase 6b.

#### *Bottle or jar*

Clear, iridescent soda glass, one fragment, 1 ENV. Conical base with a pontil scar. Free-blown. Slightly weathered. Unstratified.

### **Pharmaceutical**

#### *Bottle or phial*

High-lime low alkali, aquamarine coloured glass, one fragment, 1 ENV. Base: slightly splayed fragment with a convex kick on the underside. Weathered. Free-blown. Mid 18<sup>th</sup> - early 19th century. Context [1303], Phase 6a.

#### *Cylindrical bottle*

Natural, pale blue glass, two fragments, 1 ENV. Wall fragments. 19th century. Context [513], Phase 6b.

#### *Flat, octagonal section bottles*

Natural, pale blue glass, six fragments, 2 ENV. Wall fragments. Moulded. 19th century. Context [513], Phase 6b.

Natural, pale blue glass, one fragment, 1 ENV. Base, recessed on the underside and embossed '8', 51mm X 30mm. Moulded. 1830 onwards. Context [513], Phase 6b.

High-lime low alkali, pale green coloured glass, two fragments, 1 ENV. Applied rounded rim with a collar below it and above a short conical neck and rounded shoulder. All of the panels are embossed with the front panel displaying 'TRUE/DAFFY'S/ELIXIR' and the back panel has 'DICEY/& C[O.]/NO. 10 BOW/CHURCH/YARD/LONDON'. The side panels have '... /the medicine i[s]/counterfeit' and 'unless the name [is]/of DICEY & CO/....'. The base has a diagonal mould seam. Two part mould made. 1830 onwards. Context [1510], Phase 6bii.

#### *Octagonal section bottle*

Soda, aquamarine coloured glass, one fragment, 1 ENV. Wall fragment, square in plan with evidence of panels on the corner. Moulded. 1830 onwards. Context [513], Phase 6b.

#### *Oval section bottle*

Natural, pale blue glass, two fragments, 2 ENV. Rim sherd with a prescription-type finish above a short neck and rounded shoulder. One base underside has diagonal mould seam marks. Moulded. Slightly weathered. 1830 onwards. Context [513], Phase 6b.

#### *Phials, cylindrical*

Clear soda glass, three fragments, 2 ENV. Base and wall fragment. Free-blown. 19th century. Context [56], Phase 6.

Clear soda glass, one fragment, 1 ENV. Base: rounded. Free-blown. 19th century. Context [1502], Phase 6bi.

Clear soda glass, one fragment, 1 ENV. Rim sherd with a symmetrical preparation-type finish, which is narrow and down turned, above a short neck and rounded shoulder. Uncertain manufacturing technique. 19th century. Context [1502], Phase 6bi.

Soda, vivid blue coloured glass, one fragment, 1 ENV. Intact, fire finished/cracked rim and a short neck attached to a rounded shoulder, narrow cylindrical wall and a rounded base with a pontil scar. Slightly weathered. 19th century. Context [1502] Phase 6bi.

#### *Phial, globular.*

Soda, pale blue iridescent glass. Rim sherd with a flaring finish and a narrow constricted neck attached to a slack rounded shoulder. Free-blown. Late 17th century. Context [138], void.

### **Miscellaneous**

#### *Bowl, medium rounded.*

Natural pale green glass, two fragments, 1 ENV. Simple rolled rim. Free blown. Weathered. Post-medieval. Context [475], Phase 5.

### *Vessel glass*

Amongst the vessel glass (i.e. fragments that cannot be assigned to a specific shape) there are two rim fragments worthy of comment:

Natural clear glass with a pale blue tint, one fragment, 1 ENV. Rim sherd, rolled narrow collar with a bevelled top. Free-blown. Weathered. Post-medieval. Context [865], Phase 5.

Natural clear glass, one fragment, 1 ENV. Simple rim possibly from a goblet. Free-blown. Weathered. Post-medieval. Context [865], Phase 5.

### *Glass production waste*

A rounded fragment of opaque, bubbly, pale green-blue glass containing layers of transparent aqua glass and a white surface was recovered from context [119], Phase 6b. The fragment has a lump of clinker at its core.

### *Unidentified*

The item has the appearance of being a syringe plunger. It is made of clear soda glass and consists of a solid rod (6mm in diameter) with a flat knop at one end (11mm in diameter) and 9mm below this is a rounded disc (11mm in diameter). Context [163], Phase 6a.

### *Glass rods*

Two fine glass rods are recorded in the assemblage and their actual function is unknown.

Soda dark blue glass with a white core, one fragment, 1 ENV. A glass rod 40mm in length and 3-4mm in diameter. One end survives and is slightly thicker and rounder than the rest of the rod. Post-medieval. Context [142], Phase 6a. Possibly used in the application of makeup.

Clear soda glass with white glass ?inlay. One fragment. A thin rod with spiralling fine ridges inlaid with white glass. 23mm in length and 3mm in diameter. Post-medieval. Context [846], Phase 6b.

### *Window glass*

The window glass occurs in natural (clear and pale green colours), high-lime low alkali (clear, pale green and pale blue tints) and soda glass (mostly clear and occasionally iridescent) and made in a variety of ways which include the crown, cylinder, cast and plate techniques. The window glass is frequently very fragmentary, although large fragments from one window pane was recorded in context [842], Phase 6b. A diamond shaped quarry measuring 91mm x 89mm and c. 1.5mm thick was recovered from context [1303], Phase 6a. Window glass occurs in most of the contexts which produced glass and its occurrence is shown in Table 1.

## **Distribution**



The glass was recovered from Phases 4b-6bii. Its distribution is shown in Table 1. A summary of the glass in each phase is presented.

Context	Trench	Phase	No. of fragments	ENV	Suggested deposition date	Window glass present
6	B1	6a	2	2	Late post-medieval	Yes
18	B2	6a	3	3	1830 onwards	Yes
22	B2	6	1	1	Post-medieval	Yes
30	B2	6	2	2	Late 18th - 19th century	Yes
44	B2	6	1	1	1830-1850	
50	B2	6	1	1	1850	
56	B2	6	16	5	19th century	Yes
58	B2	6	1	1	Late post-medieval	Yes
59	B2	5	1	1	16th century	
105	A1	6b	1	1	Medieval/post-medieval	
119	A1	6b	2	2	19th century	Yes
130	A1	6b	1	1	Post-medieval	
132	A1	6b	2	1	Post-medieval	
136	A1	6a	1	1	c. 1680	
138	A1	VOID	6	6	Late 17th century	Yes
142	A1	6a	3	3	Late 17th century	Yes
157	A1	6a	1	1	c. 1700	
163	A1	6a	2	2	Post-medieval	
177	A1	6a	1	1	Late 17th century	
248	E2 (N)	6b	1	1	18th century	
256	E2 (N)	6b	18	3	19th century	
265	E2 (N)	6b	3	3	Late 17th - 18th century	Yes
267	E2 (N)	6b	4	2	1780-90	
268	E2 (N)	6b	1	1	Post-medieval	Yes
273	E2 (N)	6a	1		Post-medieval	
280	E2 (N)	6a	2	2	18th - 19th century	
309	D2	5b	1	1	Mid 17th - mid 18th century	
382	D1	6b	4	4	Mid 19th century	
388	D1	6b	16		Post-medieval	Yes
411	A3	6b	1	1	Post-medieval	Yes
415	A3	6b	1	1	L post-medieval	
422	A3	6a	3		Post-medieval	
448	A3	5	1	1	Post-medieval	Yes
462	A3	5	1	1	Post-medieval	Yes
463	A3	5	1	1	Post-medieval	Yes
473	A3	5	1	1	Post-medieval	Yes
475	A3	5	10	1	Post-medieval	
479	A3	4c	3	2	Post-medieval	
486	A3	5	1	1	Post-medieval	Yes
509	A3	5	1	1	Post-medieval	
513	A2	6b	33	11	1830+	
534	A3	4c	2	2	c. 1590-1660	Yes
548	A2	4b	1	1	Post-medieval	Yes
557	A3	4bii	2	2	Post-medieval	Yes

Context	Trench	Phase	No. of fragments	ENV	Suggested deposition date	Window glass present
670	A3	4bi	1	1	Post-medieval	Yes
707	E2 (S)	6b	1	1	1780-90	
752	E2 (S)	6b	4	3	Mid 18th - 19th century	Yes
775	E2 (S)	4b	1	1	Post-medieval	Yes
780	E2 (N)	6b	4	1	19th century	
782	E2 (N)	6b	61	10	Early 19th century	
789	E2 (N)	6b	7	2	Late 18th -early 19th century	
790	E2 (N)	6b	4	1	Late 18th -early 19th century	
794	E2 (N)	6b	1	1	Post-medieval	
801	F (N)	6b	4	1	Mid 17th - mid 18th century	
804	F (N)	6b	1	1	Mid 17th - mid 18th century	
816	F (N)	6b	4	4	Mid 17th - mid 18th century	
842	F (S)	6b	43	15	Early 19th century	Yes
846	F (S)	6b	2	2	Post-medieval	
865	F (S)	5	2		Post-medieval	
868	F (S)	6b	8	7	Early 19th century	
869	F (S)	6b	2		Post-medieval	Yes
924	E1	6a	1	1	Post-medieval	Yes
1111	E2 (N)	6a	4	1	Late 18th -early 19th century	
1113	E2 (N)	6a	4	2	19th century	Yes
1119	E2 (N)	5b	1	1	Post-medieval	Yes
1120	E2 (N)	5b	1	1	Post-medieval	Yes
1121	E2 (N)	5b	1	1	Late 18th -early 19th century	
1128	E2 (N)	4b	1		19th century	Yes
1132	E2 (N)	4b	2	1	19th century	Yes
1208	E3	6bii	1	1	1872 onwards	
1210	E3	6bii	1	1	19th century	
1214	E3	6bi	1	1	Mid 18th-early 19th century	
1217	E3	6bi	1	1	Mid 18th-early 19th century	
1227	E3	6bi	7	7	1st quarter of 18th century	
1303	D1	6a	17	4	Mid 18th-early 19th century	Yes
1502	n/a	6bi	7	7	1830 onwards	
1510	n/a	6bii	3	2	1830 onwards	
1609	G	6b	2	1	Post-medieval	
1615	G	6b	1	1	Late 17th - mid 18th century	
1725	H3	6b	2	2	Post-medieval	Yes

Table 1: BVM12: Distribution of the glass showing for each context it occurs in the trench and phase and quantification by number of fragments and ENV and a considered deposition date, besides the presence of window glass.

#### Phase 4b

On the whole, it was only single fragments of window glass that were recovered from four contexts in this phase that produced glass. This material was recovered from fill [548] of ditch/pit [559], fill [775] of ditch [768], and fills [1128] and [1132] of channel [1130]. Fill [1132] also produced a fragment of wine bottle.

#### **Phase 4bi**

A single fragment of crown made window glass was recovered from this phase and found in dump layer [670].

#### **Phase 4bii**

Two fragments of window glass were recovered from dump layer [557] in this phase.

#### **Phase 4c**

Five fragments of window glass were found in this phase. These occurred as a single fragment in dump layer [534] and three fragments from dump layer [479]. Additionally and of note from [534] was the rim of a cylindrical beaker decorated with an optically blown mesh design and dated c. 1575-1650

#### **Phase 5**

A total of nineteen fragments of glass were recovered from nine contexts. Single fragments of window glass were found in layer [462] and fills [448] and [463] of the gully [698]. The fragment of 16th-century *vetro a reticella* vessel glass came from dump layer [59], while other sherds of vessel glass were noted in fills [473] of pit [474] and fill [475] (which included a medium rounded bowl rim) of pit [477], fill [509] of gulley [510] and the layer of industrial waste [865] produced small rim fragments of a collared type and a possible goblet.

#### **Phase 5b**

Four fragments of glass occurred as single items in four contexts. The bases of wine bottles were noted in dump layer [309] and fill [1121] of the linear cut [1125]. Fragments of window glass occurred in dump layers [1119] and [1120].

#### **Phase 6**

A total of 22 fragments of glass were recovered from six contexts. The largest quantity of glass in this phase was recovered from the cessy dump layer [56] as sixteen fragments and this included fragments of wine bottles, including a French example, as well as a cylindrical phial base, vessel glass and five fragments of a window pane. Nineteenth-century forms occurred as an intact moulded octagonal section bottle found in fill [44] of pit [63] and a cylindrical wine bottle was noted in fill [50] of pit [51]. Single fragments of window pane were recovered from backfill [22] of construction cut [23] and backfill [58] of structure [68].

#### **Phase 6a**

Glass was recovered from fourteen contexts as a total of 45 fragments. The largest quantity of glass (seventeen fragments) was noted in dumped deposit [1303] and consisted of a bottle or phial, English wine bottles, including an early cylindrical type and vessel and window fragments. Goblets/wine glasses of a late 17th century date and a c. 1700 date were noted in fill [177] of pit [178] and pit [157]

respectively. The made ground layer [18] produced 19th-century forms as moulded English cylindrical wine bottles and an octagonal section flat bottle. Other contexts produced glass of little interest in this phase.

### **Phase 6b**

This phase produced the largest quantity of glass as 239 fragments found in 31 contexts. Most deposits produced wine bottle fragments with the early cylindrical type only present in fill [782] of pit [783], which additionally produced a tumbler, fill [868] of soakaway/cesspit [872]. These wine bottles were particularly frequent occurrences in fill [842], infilling soakaway/cesspit [843]. From the latter feature was also recovered a case bottle, a French wine bottle, a goblet/wine glass and bottles: two flat octagonal section examples and a pear-shaped one. The glass, pottery and clay tobacco pipes recovered from feature [843] may indicate that the rubbish disposed in it was derived from a tavern or ale house. The makeup layer [513] was notable for containing moulded bottles (cylindrical, flat octagonal section, and oval types) and cylindrical wine bottles. These forms indicate deposition dated after c. 1830.

### **Phase 6bi**

Sixteen fragments of glass were recovered from four deposits in this phase. Early cylindrical wine bottles occurred as a sole example in fill [1214], which backfilled construction cut [1215], while five examples of this form were noted in fill [1227], which backfilled drain [1219], with additionally present a case bottle and part of a goblet or wine glass. Fill [1502] produced moulded forms dating from c. 1830 as a Hamilton bottle, cylindrical phials and a wine glass.

### **Phase 6bii**

From this Phase were recovered five fragments of glass found in three contexts. The soakaway [1505] produced in its fill [1510] two items, first as a late 18th-early 19th-century dated wine glass and secondly as a moulded flat octagonal section bottle made for Daffy's cough mixture and dated to after 1830. A 19th-century cylindrical wine bottle was the only glass item noted in context [1210] associated with culvert [1207]. The latest dated form on the site consisted of a ginger beer-type bottle with an internal screw fitting, which dates to after c. 1872 and this was solely found in fill [1208] of the construction cut [1209].

### **Significance of the assemblage**

The glass has significance at a local level. Of interest are the occurrences of 16th- and early 17th-century fragments, some of which are in the Facon de Venice style and include the rare find of *vetro a reticello*. The occurrence of this high status glass on the site is intriguing as the current understanding of the study area was that it was of a low socio-economic status during the post-medieval period. It is possible that the 'high-status' material may have been derived from an offsite source. The later, 19th-century glass is of interest as it may indicate the presence of ale houses, taverns or eating houses,

particularly that associated with fill [842] associated with the masonry feature [843]. Comparable assemblages of glass have been recovered from other excavations on the Thameslink project, such as those associated with the Borough High Street Viaduct (Scott 2014) and the Western Approach excavation (BVC12: Jarrett 2013).

### **Potential of the assemblage**

The potential of the glass is to date the features it occurs in. A small number of vessels require illustration or photographing. The main potential of the glass is to demonstrate different functional activities on the site, particularly when it is studied holistically with other finds such as the pottery and the glass. The glassware usually shows different functional categories, such as alcohol storage compared to that of pottery. Therefore, the glass from such features as [843] need to be quantified in the same manner as the pottery and interpreted as a whole.

### **Recommendations for further work**

It is recommended that a publication report is produced on the glass and seven vessels require illustrating and one vessel needs photographing. The glass assemblage will be analysed in conjunction with the pottery, glass, clay tobacco pipes from such features as [783] and [843] in order to determine if the finds groups can be assigned to a household or profession.

### **Bibliography**

Bickerton, L. M., 2000. *English drinking glasses 1675-1825*. Shire publications, no. 116.

Dumbrell, R., 1983. *Understanding antique wine bottles*. Antique Collectors Club/Christie's Wine publications.

Jarrett, C., 2013. Glass Assessment, in J. Taylor & C. Champness, *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.

Scott, I. R., 2014 Glass; Scheme-wide Assessment, in J. Taylor, *Thameslink Archaeological Assessment: Updated Project Design - Archaeological Assessments 1-7*. Oxford Archaeology, Pre-Construct Archaeology Ltd unpublished report.

Wilmott, H. 2002. *Early post-medieval glass in England, c.1500-1670*. CBA research report 132.

## **APPENDIX 8: SMALL FINDS ASSESSMENT**

**Märit Gaimster**

In total, around 400 individual metal and small finds were retrieved, including nearly 150 iron nails. With the exception of a handful of Roman finds, the majority came from medieval and post-medieval contexts.

### **Phase 3: Roman**

Seven finds from Phase 3 contexts include an iron pitchfork, hafted by means of a socket (sf 45), a wooden disc (sf 48) and part of a possible iron bucket handle (sf 44). A fragment of lava quern (sf 161), residual in a Phase 5b context, is also likely Roman.

### **Phase 4a: 11th-13th centuries**

Ten finds were retrieved from this phase, including iron nails, the fragment of an iron horseshoe (sf 95) and copper-alloy wire (sf 141). While they are not diagnostic or closely dateable finds, at least three identifiable objects are likely later and therefore intrusive in Phase 3. A fine copper-alloy lace-chape (sf 100) is more characteristic of late medieval finds; in London the type is common from c. 1350 and later, coinciding with the fashion for tighter and more fitted clothing that would require lacing (Egan and Pritchard 1991, 281-90). A D-shaped chest handle with integral plates for fixing (sf 97) also looks out of place in this period, with a parallel from Chelmsford in Essex dating from the late 16th century (Cunningham and Drury 1985, fig. 33.62). A thin axe-shaped iron blade, originally with a probable handle at the centre of the straight back (sf 38), is likely a herb chopper. It was associated with pottery from 1480-1550, but highly decorative examples of this form are known from the early 18th century (Feild 1984, fig. 19). A possible iron strap handle (sf 96), finally, was also associated with late 15th- to early 16th-century pottery.

### **Phase 4b: 13th-late 15th centuries**

Nearly 70 finds were recovered from Phase 4b, around half of which consisted of iron nails. Several categories of finds are represented, including architectural and household fittings, dress accessories and material relating to production. An iron hinge strap (sf 149) and pintle (sf 67), for doors or shutters, would originate from buildings on site, as may other iron fittings including a possible wire hasp (sf 277). A lead strip with traces of milling (sf 18) may be an unfinished or unused window came. A small iron box padlock with hinged shackle (sf 279) represents a type of lock introduced in the late medieval period; unlike the earlier barrel padlocks, it was operated with a revolving key (Goodall 2011, 234, 1126-128; cf. Margeson 1993, fig. 115 no. 1240). A large iron rotary key (sf 93) is for a fixed lock on a door; this type of key, Goodall Type G, is the most common during the late medieval period (cf. Goodall 2011, 241-42). An angled iron strap with pierced finial (sf 68) is likely a chest or

casket fitting (cf. Margeson 1993, fig. 41 no. 462). There is also a large iron disc with a decorative edge in the form of six petals (SF396); this is likely a mount, perhaps also originating from a chest.

Dress accessories and personal objects include a further copper-alloy lace-chape (sf 81) and a small globular bone bead (sf 113); besides rosaries, beads of a variety of material were used in wirework jewellery and as dress trimmings in the late medieval and early modern periods (Margeson 1993, 5). A fine copper-alloy wire eye, for a hook-and-eye fastener, looks a bit early for this date, and may be intrusive (cf. Margeson 1993, fig. 10 no. 93); similar wire fasteners were however retrieved from 15th to 16th century contexts in recent excavations at Turku Cathedral in Finland (Majantie 2007, 46). Relatively unusual is a wooden double-sided comb, retrieved in two pieces (sf 22 and 28); while wood became a preferred material for combs in the later Middle Ages, with antler less accessible, it has a far lower level of survival in the soil (Egan and Pritchard 1991, 366; cf. MacGregor 1985, 32-34). A copper-alloy signet ring with the possible lettering 's b e' (sf 94) may indicate the presence of trade and merchandise, as may the bone stylus (sf 91), used for writing on wax tablets (Egan 1998, 272). There is also a heavily worn silver coin (sf 17).

Evidence for small-scale production include a pinner's bone (sf 111), used as an aid when filing copper-alloy pins to a point; several pieces of copper-alloy wire may also relate to this activity (sf 62, 63 and 129). Bone working is represented in a segment of carved waste (sf 13) and several crudely carved pins (sf 60 and 98). Two of the pins are carved from pig fibulae (sf 29 and 99); this type of pin, normally with broad perforated heads, are particularly characteristic of the Anglo-Saxon period and so may be residual here (MacGregor 1985, 120-21). However, a similar pin was retrieved from The Western Approach Viaduct (TAA9), further to the south, also from a late medieval context (Gaimster 2013, 159). A sewing needle of rolled copper-alloy sheet (sf 66) may have traces of a needle case at the point. An iron knife (sf 20) has a bone-scale handle with iron rivets set along a central groove; there is also the fragment of a further knife blade (sf 274). A final group of finds from Phase 4b is represented by an incomplete iron horseshoe (sf 282), part of an iron rowel spur (sf 90) and a barbed iron arrowhead (sf 69), possibly for hunting (cf. Jessop 1997, fig. 17).

#### **Phase 4c: early to mid-16th century**

Phase 4c yielded 18 finds, half of which were iron nails. Besides an incomplete tang-hafted knife with a fine tapering blade (sf 14), identifiable finds were dominated by production-related items in the form of a pinner's bone (sf 110) and bone-working waste (sf 112 and 162).

#### **Phase 5: Early post-medieval**

A group of 40 finds, the majority of which consists of iron nails, were broadly assigned to Phase 5. The assemblage includes dress accessories in the form of two copper-alloy pins (sf 4 and 5), a copper-alloy lace-chape (sf 9) and a small ring of twisted copper-alloy wire interpreted as a possible purse ring (sf 6; cf. Egan 2005, fig. 62). Again, production-related material is also present in the form

of two pinner's bones (sf 107 and 108) and an unfinished bone handle; a copper-alloy thimble (sf 10) and a possible iron tenter hook (sf 280), for stretching cloth after the procedure of fulling.

#### **Phase 5a: mid- to late 16th century**

Four finds were ascribed to Phase 5a. They include two lengths of copper-alloy wire (sf 78) and a dip pen of goose radius (sf 79).

#### **Phase 5b: late 16th/17th centuries**

Nearly forty finds came from Phase 5b contexts. The assemblage was dominated by iron nails, including six clench bolts with diamond-shaped roves (sf 376). Together with an iron auger bit (sf 37), for drilling holes in wood, they are indications of wood working on site; both were important tools in the fabrication of objects and structures, including ships (Zori 2007, 32; Goodall 2011, 23–24). Production-related is also wire of iron (sf 59) and copper alloy (sf 77), as well as antler-working waste (sf 377). However, the assemblage also includes iron fittings such as a chain link (sf 284) and a tethering ring (sf 30), as well as personal and household objects. A finely lathe-turned and decorated bone disc is probably a gaming piece (sf 75) while a thin tapering bone strip may be a fan blade (sf 74), quite a luxurious object at this time. A pewter spoon (sf 76) has a diamond-section stem and a roughly ball-shaped applied knop. Inside the bowl, most of which has been cut off, is a maker's mark in the form of a crowned pewterer's hammer. This mark is known on other spoons and is believed to date from the mid- to late 16th century (pers. comm. J. Swindell).

#### **Phase 6: post-medieval**

Ten objects, five of which nails, were broadly assigned to Phase 6; they include a copper-alloy curtain ring (sf 1) and three incomplete copper-alloy pins (sf 119).

#### **Phase 6a: 17th/18th centuries**

Phase 6a produced just over 100 individual objects. The finds are largely dominated by a cache of over 70 copper-alloy pins (sf 138), which may be a further reflection of pin manufacture on or near site. A further copper-alloy pin (sf 120) and a length of copper-alloy wire (sf 85) were also retrieved. Other finds related to tools and production are the pair of iron scissors (sf 83) and a stone hone for sharpening blades (sf 2). An iron staple (sf 273) and a possible iron hasp (sf 145) relate to buildings, while dress accessories are reflected in a copper-alloy lace-chape (sf 82) and a lead-alloy button with floral decoration (sf 137); a ceramic haircurler is reported elsewhere (see Jarrett, Appendix). Toys are represented by two stone alleys, one with traces of red paint (sf 116). Of particular interest is a small pewter so-called trefid spoon (sf 80). Named after the shape of the handle, which resembles a cloven hoof, these spoons are sometimes also known as 'pied-de-biche'. The design came into fashion after the Restoration, with a main period of use between 1660 and 1710. Surely a reaction against the simple puritan styles of cutlery, trefid spoons were lavishly decorated with foliage and lacework patterns on the stem and the back of the bowl. The spoon discovered on this site also has a rare bust



of William III (1694-1702) embossed on the finial; it was probably made to commemorate his accession to the throne.

### **Phase 6b: 18th/19th centuries**

Eighty-nine finds came from Phase 6b, including 24 iron nails. At least seven copper-alloy nails were also recorded (sf 130). Identifiable finds included some structural items in the form of lead window came (sf 142–43) and a handful of household objects including an iron candle snuffer (sf 89), a finely carved spoon (sf 92) and handle with carved floral decoration (sf 106), both of bone, along with a pewter teaspoon (sf 88). There are numerous dress accessories in the form of buttons, of bone (sf 51), copper alloy (sf 55, 61, 126 and 133) and pewter (sf 34), the wire eye for a hook-and-eye fastener (sf 123), copper-alloy lace-chapes (sf 43 and 125) and glass beads (sf 104 and 115). There were also several copper-alloy pins (sf 42, 70, 124 and 134), and a complete bone toothbrush (sf 50). Leisure and playthings are reflected in a bone cribbage board, decorated with ring-and-dot along the centre (sf 49), and two stone alleys (sf 105 and 114).

Unlike the earlier phases, there is little evidence for production, although a spool-shaped iron pin with a collared tang for a handle (sf 270) likely represents a tool of unknown function. The presence of businesses is however reflected in three pewter tankards; two are inscribed 'MARY JACKSON/KINGS HEAD/TOOLEY STRT' (sf 56–57), and the third 'J. MAINS/ST JOHNS COFFEE HOUSE/BERMONDSEY STRT' (sf 58). There is also a near-complete copper-alloy barrel tap (sf 135) of a type dating from the 18th–19th centuries (cf. Mould 2006, fig. 11.17 NF 26); a separate copper-alloy barrel tap key with bifurcated handle is likely earlier, with dated examples from the 17th century (Moorhouse 1972, 17 with further refs; cf. Margeson 1993, fig. 102 no. 932). Also likely relating to businesses and trade is a substantial copper-alloy safe plaque inscribed 'MILNERS' PATENT, FIRE-RESISTING, IMPROVED FOR THE GOVERNMENT, REGISTRY COURTS 1859', around the coat of arms of England (sf 117); a further copper-alloy plaque or mount, folded into a parcel, has circular stamp with lettering in the round (sf 52).

### **Recommendations**

The metal and small finds form an integral component of the finds and should, where relevant, be included in any further publication of the site. Particularly significant finds include the Roman iron pitchfork (sf 45), the late medieval signet ring (sf 94) and iron arrowhead (sf 69), and the two early modern pewter spoons (sf 76 and 80); as assemblages, however, the finds represent important elements both of households and, for the medieval phases in particular, small scale industries in the area. These aspects should be explored further and publication, as recommended in the TAA9 report, should include also finds from The Western Approach Viaduct (BVC12; Gaimster 2013). A number of finds will require further study and in some cases x-ray to aid identification; these finds have been noted in the finds tables below. Following publication, iron nails and indeterminate fragments may be discarded.

## Bibliography

Egan, G., 1998. *The Medieval Household c.1150 – c.1450*. Medieval finds from excavations in London: 6. HMSO London.

Egan, G., 2005. *Material culture in London in an age of transition. Tudor and Stuart period finds c 1450-c 1700 from excavations at riverside sites in Southwark*. Museum of London Archaeology Service Monograph 19.

Egan, G. and Pritchard, F., 1991. *Dress Accessories c.1150 – c.1450*. Medieval finds from excavations in London: 3. HMSO London.

Gaimster, M., 2013. 'Post-Roman small finds assessment', in J. Taylor and C. Champness, *Thameslink Archaeological Assessment 9: Western Approach Viaduct, London Borough of Southwark: Post-Excavation Assessment*, Oxford Archaeology – Pre-Construct Archaeology Ltd unpublished report, 159-66.

Goodall, I. H., 2011. *Ironwork in Medieval Britain: an Archaeological Study*, Society for Medieval Archaeology Monograph 31

Majantie, K., 2007. 'Archaeological finds tell about life, crafts and trade in medieval Turku', in K. Majantie and K. Motuste, HIT – History in Turku, Turku Provincial Museum/Turun maakuntamuseo, 46-49.

Margeson, S., 1993. *The Medieval and Post-Medieval Finds from Norwich Survey Excavations*. East Anglian Archaeology 58.

Moorhouse, S., 1972. 'Finds from Basing House, Hampshire (c. 1540-1645): Part Two', *Post-Medieval Archaeology* 5/1971, 35-76.

Mould, Q., 2006. 'The metal finds', in A. Saunders, *Excavations at Launceston Castle, Cornwall*. The Society for Medieval Archaeology Monograph 24, Leeds, 301-39.

Zori, D., 2007. 'Nails, rivets, and clench bolts: a case for typological clarity', *Archaeologia Islandica* 6, 32-47.

## Finds catalogue

### Phase 3: Roman

context	sf	description	pot date	recommendation
904	44	iron ?bucket handle; flat-section strap finished with simple bent-over loop; halfway along, surface twisted at 90 degrees; W 5mm; L 90mm	Roman	further ident
904	45	iron pitchfork; socketed with one tine broken off; L 170mm	Roman	x-ray
905	47	iron nail; L 90mm	Roman	
906	48	wooden disc; incomplete; diam. 110mm	Roman	further ident
		iron nails; three; L 40-90mm	Roman	

#### Phase 4a: 11th-13th centuries

context	sf	description	pot date	recommendation
359	36	thin iron axe-shaped blade with curved edge; slightly expanded flat back for ?handle; L 125mm; W 160mm+	1480-1550	x-ray
363		iron nails; two incomplete; one very fine	1400-1500	
365		iron nail; L 55mm	1170-1300	
2205	100	copper-alloy lace-chape; Oakley Type 1 with two vertically placed copper-alloy rivets <i>in situ</i> ; L 25mm	1400-1450	
2205	95	iron horseshoe; tapering heel fragment only; W 20mm	1400-1450	x-ray
2205		iron nail; L 405mm	1400-1450	
2215	97	iron chest handle; round-section grip with ends hammered to oval mounts with two nails for fixing; W 140mm	1300-1500	x-ray
2215	141	copper-alloy wire; L 55mm; gauge 1.5mm	1300-1500	
2217	96	iron ?handle; flat-section strap with surface twisted at 90 degrees halfway along; tapering outwards at both sides, to broken-off ends; W 5-7mm; L 140mm	1480-1550	x-ray

#### Phase 4b: 13th–late 15th centuries

context	sf	description	pot date	recommendation
74		iron nail; incomplete	1480-1600	
216	17	silver coin; heavily worn; diam. 17mm	1480-1550	clean
216	149	iron tapering hinge strap; incomplete; W 25mm; L 220mm+	1480-1550	x-ray
216		iron nail; L 75mm	1480-1550	
218		iron nail; L 55mm	1240-1350	
218	121	copper-alloy wire eye for hook; circular eye with two loops for attachment; L 9mm; W 9mm	1240-1350	further ident
220		iron nail; incomplete	n/a	
239		iron nail; L 85mm	1340-1500	
241	122	copper-alloy mount of thin sheet; two original sides extant, with narrow rectangular hole for fixing in corner; W 33mm+; L 70mm+	n/a	x-ray
243		iron nail; L 105mm	1270-1500	
335	29	bone pin/needle; incomplete; ?pig-fibula pin; L 65mm	n/a	further ident
339	274	iron ?knife; blade fragment only; W 10mm; L 95mm	1480-1600	x-ray
541	111	pinner's bone of cattle metatarsus; squared working end mostly broken off; L 120mm	1480-1600	
548	277	iron wire ?hasp; L 95mm+	1480-1550	x-ray
557 (4bii)	395	Iron fitting; bar with semi-circular appendix; L 70mm; appendix diam. 30mm	1480-1600	x-ray
560		iron nail; incomplete	1480-1500	
566 (4bii)	18	lead strip with traces of milling; W 3mm; L 165mm; ?unfinished/unused window came	1480-1550	further ident
	396	iron sheet mount; decorative with six-petal edge; diam. 105mm	1480-1550	x-ray
587 (4bii)	278	iron ?mount; slightly L-shaped strap; W 28mm; L 120mm	1500-1550	x-ray
595	113	globular bone bead; diam. 4mm; ht. 4mm	1480-1550	

(4bii)				
	129	copper-alloy ?pins/wire; four pieces	1480-1550	x-ray
		iron nails; thirteen incomplete	1480-1550	
		iron nail; L 95mm	1480-1550	
599 (4bii)	267	iron ?sheet/vessel; two pieces; 85 x 100mm	1480-1550	x-ray
	279	iron box padlock, complete with hinged shackle; 35 x 50mm; 23mm thick	1480-1550	x-ray
606	13	bone-working waste; narrow rectangular segment; highly polished from touch on all sides; W 7mm; L 50mm	n/a	
666 (4bii)		iron nail; L 75mm	1480-1600	
670 (4bii)	20	iron knife, incomplete; bone scale handle with iron rivets set along central groove; handle L 80mm	1480-1550	x-ray
674 (4bi)	22	wooden double-sided comb; very coarse teeth on one side, and very fine to the other; incomplete; W 70mm; L 65mm+	1480-1550	
	27	crudely carved tapering wooden pin; ?treenail; L 160mm	1480-1550	further ident
	28	wooden double-sided comb; fragment only with very coarse teeth on one side, and very fine to the other; W 70mm; ?part of sf 22	1480-1550	
764		iron ?objects; two substantial corroded pieces; 35 x 100mm and 50 x 60mm	n/a	x-ray
775	60	bone pin; crudely carved with ?straight end; L 90mm	1480-1650	
825		iron strap; W 30mm; L 100mm	1480-1550	x-ray
826	269	iron fitting; U-shaped but heavily corroded; 110 x 120mm	1480-1500	x-ray
828		iron nail; incomplete	1770-1840	
833		iron ?object; heavily corroded; 25 x 80mm	17th-18th centuries	x-ray
837	41	iron ?mount; fragment of sheet with angled corner; W 30mm; L 90mm	1400-1500	x-ray
855		iron nails; two incomplete	18th/19th centuries	
873	282	iron horseshoe; one branch only; W 27mm; L 110mm	1550-1700	x-ray
874	62	copper-alloy wire; L 130mm; gauge 1.95mm	1340-1500	x-ray
874	283	iron strip; tapering sheet with curled end; W 13mm; L 73mm	1340-1500	x-ray
874		iron nail; L 60mm	1340-1500	
876	63	copper-alloy wire; L 50mm; gauge 0.89mm	1400-1500	
876	64	iron strap; fragment only; W 27mm	1400-1500	x-ray
877	66	copper-alloy needle of rolled sheet; complete with oval, countersunk eye and triangular-section filed point; L 82mm; gauge 2mm; remnants of ?needle case at point	1350-1400	x-ray
877	67	iron pintle; tapering shank broken off; pivot ht. 42mm	1350-1400	
877	68	iron ?stapled hasp; angled strap with circular pierced finial; W 20mm; L 100mm	1350-1400	x-ray
877	69	iron barbed arrowhead; complete with part of socket; L 80mm+	1350-1400	x-ray and further ident
877		iron nail; L 75mm	1350-1400	
1457	81	copper-alloy lace-chape; Oakley Type 1 with two vertically placed rivet holes at top; L 32mm	1480-1550	

1457		iron nails; two; L 55-80mm	1480-1550	
1657		iron ?object; substantial corroded lump diam. 35mm; L 75mm	1480-1500	x-ray
1669	90	iron rowel spur; heel fragment only; slender horizontal D-section sides joined in crest; rowel box broken off; neck L 40mm+	1500-1550	x-ray
1680		iron nail; incomplete	1340-1500	
1694	99	bone pin/needle; incomplete; ?pig-fibula pin; L 78mm	1500-1600	further ident
1697	91	bone stylus; lathe-turned with globular finial above three collars; L 90mm	1270-1500	
1699	98	bone pin; crudely carved with straight end; L 83mm+	1300-1500	further ident
2204	93	iron rotary key; Goodall Type G2; complete with kidney-shaped bow and solid stem, stepped over bit; L 137mm	1480-1500	x-ray
2204	94	copper-alloy signet ring; D-section body widening to integral oval bezel, set horizontally; lettering ?'s b e'; diam. 24mm	1480-1500	clean and further ident

#### Phase 4c: early to mid-16th century

context	sf	Description	pot date	recommendation
479	14	iron tang-hafted knife, incomplete; fine tapering blade; blade L 90mm	1480-1550	x-ray
479	275	iron 20 x 20mm square-section ?object; heavily corroded; L 65mm+	1480-1550	x-ray
534	15	copper-alloy ?mount of thin sheet; 15 x 33mm	1550-1580	x-ray
534		iron nails; two; L 70-80mm	1550-1580	
539	110	pinner's bone of cattle metacarpus; L 90mm	1480-1550	
539	162	bone waste; sawn-off cattle metacarpus	1480-1550	
539	276	iron ?strap; four pieces; W 15mm; L 130mm+	1480-1550	x-ray
		iron ?object; heavily corroded lump; 30 x50mm	1480-1550	x-ray
539		iron nail; L 85mm	1480-1550	
553	112	splinter offcut of cattle longbone; L 122mm; W 5mm	1480-1550	
553		iron nail; incomplete	1480-1550	
578		iron ?hinge; curved eye fragment only; W 25mm	n/a	x-ray
579		iron nails; five incomplete	1500-1550	
582	19	iron ?binding; curved fragment only; W 27mm	1480-1550	x-ray

#### Phase 5: Early post-medieval

context	sf	description	pot date	recommendation
59	4	sturdy copper-alloy pin; shank only; L 53mm; gauge 1.7mm	1550-1580	
59	5	copper-alloy pin; Caple Type C; L 35mm; gauge 1.08mm	1550-1580	
59	6	twisted copper-alloy wire ring; diam. 10mm	1550-1580	
59		iron nails; three, L 55-95mm	1550-1580	
71	7	iron ?tool; round-section and pointed working end; flattened top finished in ?loop; L 160mm; ?stiletto	1480-1550	x-ray
447		iron ?object; heavily corroded; 45 x 65mm	1480-1600	x-ray
450	394	iron ?strap mount; slightly curved; W 20mm; L 75mm	1580-1650	x-ray
461		iron ?fittings; two corroded pieces; 50 and	n/a	x-ray

		70mm		
463	9	copper-alloy lace-chape; Oakley Type 2, gripped with a fold along each seam; incomplete	1550-1700	
464		iron nails; two incomplete	1550-1700	
473		iron nail; incomplete	1580-1600	
475		iron nails; two incomplete	1580-1900	
480	10	copper-alloy thimble; complete but flattened and corroded; ?stamped border; ht. 20mm	1580-1600	x-ray
480		iron nail; incomplete	1580-1600	
482		iron nail; incomplete	1580-1630	
486	11	iron wire; L80mm; gauge 1.9mm	1805-1900	
486		iron nail; L 100mm	1805-1900	
494	12	copper-alloy strap; fragment only; W 10mm	1480-1550	x-ray
504	107	pinner's bone of cattle metatarsus; splinter fragment only; L 85mm	1550-1580	
504	108	pinner's bone of cattle metacarpus; complete; short and sturdy with pin grooves evenly spaced around opening; L 85mm	1550-1580	
505	109	unfinished bone handle; crudely carved in the round, with central hole drilled from one side almost through; L 70mm with slightly oval section	1600-1650	
850		iron nail; incomplete	n/a	
858		iron nail; incomplete	1480-1650	
862		iron nail; incomplete	1480-1600	
863		iron nail; incomplete	n/a	
865	280	iron ?tenter hook; L 25mm; ht. 12mm	1550-1650	x-ray
865	281	iron ?strap hinge; two corroded pieces; W 25mm	1550-1650	x-ray
865		iron nails; a dozen incomplete	1550-1650	

#### Phase 5a: mid- to late 16th century

context	sf	description	pot date	recommendation
749		iron ?objects; two corroded pieces	1550-1580	x-ray
756		iron nails; two incomplete	1580-1700	
1441	78	copper-alloy wire; two lengths, 270 and 340mm; gauge 0.52-0.54mm	1480-1550	
1441	79	dip pen of goose radius, carved to a point; L 137mm	1480-1550	

#### Phase 5b: late 16th/17th centuries

context	sf	description	pot date	recommendation
299		iron nail; L 85mm	n/a	
350	161	lava quern fragment; narrow segment with both surfaces intact; 55mm thick	1480-1600	further ident
355	30	iron flat-section tethering ring; complete with staple for fixing; diam. 50mm	1350-1500	
366	37	iron auger drill; complete with triangular tang for handle; L 95mm	1480-1600	
366	59	iron wire; two cut lengths; 69 and 76mm; gauge 1.4mm	1480-1600	
366		iron nails; five incomplete	1480-1600	
368		iron nails; six; L 55-65mm	n/a	

368	376	iron clench bolts; six with diamond-shaped roves and hammered heads; L 60-70mm	n/a	further ident
747		iron nails; two incomplete	1550-1580	
950		iron nails; three incomplete	n/a	
951	284	iron oval chainlink; W 30mm; L 80mm	n/a	x-ray
951		iron nail; L 165mm	n/a	
973		iron nails; three incomplete	1480-1600	
979		iron nail; L 60mm	1400-1800	
1119		iron nail; incomplete	late 18th-early 19th centuries	
1120	74	thin tapering bone strip; W 7mm; L 115mm+; ?fan blade	late 17th to mid-18th centuries	
1406	75	finely lathe-turned bone disc with central perforation; one side slightly dished, with concentric petal-like decoration; the other side heavily worn; segmented band along the edge; diam. 26mm; ht. 6mm; ?gaming piece	1480-1550	further ident
1439	377	antler waste; tine cut at base and side	1480-1550	further ident
1440	76	pewter spoon with diamond-shaped stem and roughly ball-shaped applied knob; maker's mark of crowned pewterer's hammer inside bowl, most of which is cut off; handle L 90mm	1480-1550	
1440	77	copper-alloy wire; L 410mm; gauge 1.60-1.85mm	1480-1550	
		spool-shaped wooden object; pointed end broken off; L 150mm+	1480-1550	further ident

#### Phase 6: post-medieval

context	Sf	description	pot date	recommendation
22	1	copper-alloy flat-section curtain ring; diam. 30mm	1760-1830	
32		iron ?nail	n/a	x-ray
56	119	copper-alloy pins; three incomplete	1820-1900	
56		copper-alloy ?hairpin; fine u-shaped wire; W 4mm	1820-1900	
90		iron nail; incomplete	n/a	
205		iron nails; three incomplete	n/a	

#### Phase 6a: 17th/18th centuries

context	Sf	description	pot date	recommendation
6		iron nail; incomplete	1790-1830	
6	103	ceramic haircurler; see Jarrett, Appendix 6	1790-1830	
18	2	stone hone; W 28mm; L 115mm; 10mm thick	1830-1840	
18		iron nail; incomplete	1830-1840	
175	272	iron ?horseshoe; two corroded pieces; W 20mm	16th to early 17th century	x-ray
177	120	copper-alloy pin; Caple Type B; L 25mm; gauge 0.8mm	1580-1700	
273		iron strap; W 35mm; L 70mm	1780-1810	x-ray

280	391	iron ?lock plate; one angled side; 70 x 75mm	1760-1830	x-ray
289	273	iron staple; rectangular incomplete; W 65mm	1680-1800	x-ray
422		iron nail; incomplete	1630-1680	
423	392	iron ?straps; two incomplete; W12mm; L 60mm	1080-1200	x-ray
426	8	copper-alloy ?object; corroded lump; diam. 20mm	1550-1600	x-ray
	393	iron ?strap; four pieces; W 25mm; L 100mm+	1550-1600	x-ray
		iron nail; incomplete	1550-1600	
808	268	iron ?fitting; heavily corroded; W 25mm; L 130mm	n/a	x-ray
924	145	iron ?hasp with ?twisted body; L 165mm	n/a	x-ray
925	65	iron 15 x 15mm square-section bar; L 185mm	n/a	
925	65	iron ?bar; W 20mm; L 110mm	n/a	
1302	80	pewter 'chocolate' spoon with lacework decoration and trefid handle; bust of William III (1694-1702) embossed on the front handle finial; L 98mm	1630-1700	
1303	82	copper-alloy lace-chape; Oakley Type 1 with <i>in-situ</i> copper-alloy rivet; L 23mm	1760-1780	
1303	83	iron scissors; one blade only with circular, centrally set finger loop of flat-section band; L 175mm	1760-1780	x-ray
1303	85	copper-alloy wire; L 235mm; gauge 0.65mm	1760-1780	
1303	116	stone alleys; two; one with traces of reddish brown paint; diam. 13 and 15mm	1760-1780	
1303	147	square-section iron bar/handle; slightly curved with one end embedded in late 17th-century claypipe head; 185mm+	1760-1780	
1303	138	copper-alloy pins; seventy-two Caple Type C; L 20-35mm; gauge 0.65-0.95mm	1760-1780	
1303	139	lead sheet waste; two pieces	1760-1780	
	398	iron ?fittings; fine flat straps; four pieces; W 3mm	1760-1780	x-ray
	399	copper-alloy pins; numerous Caple Type C in lumps of concretion	1760-1780	x-ray
1303		iron nails; eight incomplete	1760-1780	
1303		iron nail; L 75mm	1760-1780	
1303	137	cast composite ?lead/tin alloy button with embedded iron wire shank and floral decoration; diam. 14mm	1760-1780	further ident

#### Phase 6b: 18th/19th centuries

context	sf	description	pot date	recommendation
0	117	embossed copper-alloy plaque; 'MILNERS' PATENT, FIRE-RESISTING, IMPROVED FOR THE GOVERNMENT, REGISTRY COURTS 1859' around the coat of arms of England; diam. 210mm	n/a	
255		iron nail; incomplete	early 19th century	
265	142	lead strip with traces of milling; W 4mm; ?unfinished/unused window came	mid-19th century	
382		iron strap; W 32mm; L 100mm	mid-19th century	x-ray
388		iron wire ?ring; diam. 95mm; gauge 2.5mm	1850-1900	x-ray
388	123	copper-alloy wire eye for hook; ends looped for attachment; L 7mm; W 6mm	1850-1900	



388	105	?stone alley; traces of red paint; diam. 16mm	1850-1900	further ident
388	104	barrel-shaped glass bead; pink/pale purple; diam. 5mm; ht. 4mm	1850-1900	
388	126	copper-alloy button; composite with loose ?iron eye; South Type 26 ; diam. 12mm	1850-1900	
388	124	copper-alloy pins; one Caple Type C, three with flat heads; L 23-30mm; gauge 08-09mm	1850-1900	
388		iron nail; incomplete	1850-1900	
388	125	copper-alloy lace-chape; overlapping seam and open end; L 22mm	1850-1900	
406	128	copper-alloy strip; L 35mm; W 3mm	1760-1780	x-ray
406	106	bone handle of ?sheep tibia; tapering with slightly oval section; highly polished from use, with carved floral decoration on two sides; L 53mm	1760-1780	further ident
406		iron nail; incomplete	1760-1780	
415		iron ?bar; heavily corroded; W 15mm; L 145mm	1760-1780	x-ray
782	143	lead window came; W 9mm; L 120mm	1770-1830	
782		iron nail; incomplete	1770-1830	
789	144	lead waste; cut tapering strip of substantial sheet, bifurcated at the broad end; W 25mm; L 235mm	1780-1810	
795		iron nail; incomplete	mid-19th century	
816	34	?pewter button; biconvex with part of loop/shank; diam. 12mm	1820-1900	x-ray/clean
816	35	copper-alloy ?strap; fragment only; W 9mm	1820-1900	x-ray
816	42	copper-alloy pin; Caple Type C; L 23mm; gauge 0.75mm	1820-1900	
816	43	copper-alloy lace-chape; Oakley Type 2, gripped with a fold along each seam; L 24mm	1820-1900	
816	70	copper-alloy pins; two Caple Type B; one L 22mm and gauge 0.8mm; one possibly?unfinished, L 35mm; gauge 0.43mm	1820-1900	
816		iron ?nail; heavily corroded	1820-1900	x-ray
840	38	copper-alloy ?coin; thin, heavily worn and corroded disc; diam. 18mm	late 17th-18th centuries	x-ray/clean
840		iron nail; incomplete	late 17th-18th centuries	
842	39	copper-alloy ?objects; square-section strip, L 80mm, and corroded 25 x 35mm lump	c.1850	x-ray
842	40	lead window came; W 9mm; L 55mm	c.1850	
842	49	bone cribbage board; complete with single rows of 30 holes at each side and vertical divisions into sets of five and finishing hole at each end; centre decorated with a line of ring-and-dot; additional holea at end for fixing to base; W 29mm; L 173mm	c.1850	
842	50	bone toothbrush; rectangular stock with four rows of wire-drawn bristle; oval-section handle with long narrow neck and thickened, spool-shaped end; L 142mm	c.1850	
842	51	flat bone disc with small central perforation; diam. 19mm; ?button stiffener	c.1850	further ident
842	52	copper-alloy embossed mount/plaque, now folded into 65 x 90mm parcel; 55mm circular stamp with lettering in the round	c.1850	x-ray

842	54	copper-alloy barrel tap key; complete with bifurcated handle; ht. 87mm	c.1850	
842	55	copper-alloy button; plain disc type with shank in cone-shaped seating; diam. 16mm	c.1850	
842	127	sturdy copper-alloy mount; oval with pin and two rivets at back for fixing; ?embossed with stamp; ht. 75mm; W 55mm	c.1850	x-ray
842	114	?stone alley; diam. 15mm	c.1850	further ident
842		iron ?nails; two heavily corroded; L 90 and 100mm	c.1850	x-ray
842		iron nails; three incomplete	c.1850	
842	132	copper-alloy ?objects; two hollow pieces; L 70 and 80mm	c.1850	x-ray
842	131	copper-alloy ?object; corroded lump; 40 x 60mm	c.1850	x-ray
842	130	copper-alloy nails; at least seven corroded together	c.1850	x-ray
	397	copper-alloy ?object; three corroded pieces; one hollow, diam. 25mm	c.1850	x-ray
846		iron nails; three incomplete	1820-1840	
866		iron nails; three incomplete	1480-1600	
868	56	pewter tankard, complete but squashed; inscribed 'MARY JACKSON/KINGS HEAD/TOOLEY STRT' in punched shield; handle stamped 'M I'; ht. 113mm; base diam. 100mm	1780-1810	
868	57	pewter tankard, complete but squashed; inscribed 'MARY JACKSON/KINGS HEAD/TOOLEY STRT' in punched shield; handle stamped 'M I'; ht. 113mm; base diam. 100mm	1780-1810	
868	58	pewter tankard, complete but squashed; inscribed 'J. MAINS/ST JOHNS COFFEE HOUSE/BERMONDSEY STRT' in punched circle; handle stamped 'M' above 'I D'; ht. 113mm; base diam. 100mm	1780-1810	
868	61	copper-alloy button; plain disc type with shank in cone-shaped seating; diam. 13mm	1780-1810	
869	134	copper-alloy pins; three Caple Type C; L 25-30mm; gauge 0.8-0.9mm	1775-1840	
869	133	copper-alloy button; plain disc type with shank in cone-shaped seating; diam. 25mm	1775-1840	
869	115	cylindrical glass beads; three white; diam. 3mm; ht. 3mm	1775-1840	
1208 (6bii)		iron nails; three incomplete	1830-1850	
1214 (6bi)	146	iron strap; W 60mm; L 160mm	1820-1900	
	135	copper-alloy barrel tap; near-complete but lacking turning key; L 110mm; diam. 17mm	1820-1900	
1217 (6bi)	118	substantial tapering copper-alloy ?lace-chape; edge-to-edge welded seam; L 205mm; top W 12mm	19th century	further ident
1227 (6bi)	86	white-metal ?bracelet or fitting of welded milled strap; machine-made decoration of reeding either side of raised centre; diam. 65mm; strap W 3.5mm	early 19th century	further ident
	88	pewter teaspoon; oval rat-tail bowl with short drop and incomplete narrow handle; bowl L 43mm	early 19th century	

	89	iron candle snuffer; near-complete but embedded in concrete; simple looped handles and ?rectangular or semi-circular box attached to one blade; L 145mm+; box 40 x 30mm	early 19th century	x-ray from both angles
		iron nails; three; L 70-125mm	early 19th century	
	136	copper-alloy ring; diam. 40mm; body diam. 3.2mm	early 19th century	
	270	iron ?tool; spool-shaped elongated pin with collared tang for handle; full L 330mm; handle 115mm	early 19th century	x-ray
1502 (6bi)	140	copper-alloy ?coin; heavily corroded disc; diam. 30mm	1830-1900	x-ray/clean
1510 (6bii)		iron nail; incomplete	1830-1900	
1914	92	bone spoon ; finely carved with drop-shaped bowl and narrow rounded-rectangular handle; bowl L 35mm	n/a	further ident

### Unstratified

sf	description		pot date	recommendation
	iron ?structural fitting; partly overlapping curved and straight straps held with single large rivet; strap W 20mm; L 150mm+; Arch 57 (N)			further ident
	iron ?structural fitting; T-shaped bar with recessed back; single hole for fixing at head; L 150mm+; W (top) 100mm; Arch 63 (N)			further ident
31	copper-alloy coin or jeton; thin corroded disc; diam. 25mm			clean
102	ivory comb-making waste; three pieces, one with partly sawn teeth		post-medieval	
71	iron weight with integral pin; globular with two flattened, opposite sides; diam. 85mm; pin L 210mm+; possibly part of ?railway chain coupler sf 72			further ident
72	?railway iron chain coupler; complete with central jointed bar with oval loops at either end; smaller oval chain link extant at one side; L 1m+			further ident
271	iron ?cramp for fixing masonry; flat-section horizontal spike with flat expanding head at angle; L 125mm			

### Void contexts

context	sf	description	pot date	recommendation
138		iron nail; incomplete	1720-1760	
149		iron nail; incomplete	1630-1750	
182	3	small and delicate tang-hafted iron knife, incomplete; short tapering bone handle with bulbous end; handle L 45mm	n/a	x-ray
1346	84	iron horseshoe; London Type 4; complete with broad web, angular inner profile and four rectangular nail holes on each side; web W 35mm; L 120mm; two nails extant	n/a	x-ray

## APPENDIX 9: ASSESSMENT OF IRON SLAG AND OTHER HIGH-TEMPERATURE DEBRIS

Lynne Keys

### Introduction and methodology

A medium-sized assemblage (weighing 44.3kg) was recovered by hand on site and from soil samples processed after excavation. For this report it was examined by eye and categorised on the basis of morphology; a magnet was used to test for iron-rich material and detect smithing microslags in the soil adhering to slags. Each slag or other material type in each context was weighed except for smithing hearth bottoms, which were individually weighed and measured for statistical purposes. Quantification data and details are given in the table below (Table 1) in which weight (wt.) is shown in grams, and length (len.), breadth (br.) and depth (dp.) in millimetres.

**Table 1: Quantification: iron slag and related high-temperature debris:**

		BVM12					Thameslink, Southwark	
cxt	<s>	identification	wt	len	br	dp	comment	pcs
14		smithing hearth bottom	216	120	80	50		
31	2	burnt coal	16					
31	2	coal	22					
31	2	undiagnostic	138					
56	3	fuel ash slag	68					
57		coal	233					1
57		fired clay	40					
130	1	fuel ash slag	265					
135		undiagnostic	280	100	0	40	fragment of smithing hearth bottom	
381		undiagnostic	32					
388	31	cinder	17					
388	31	coal	47					
388	31	ferruginous concretion	12					
388	31	fuel ash slag	60					
388	31	sample residue	56				iron pins, iron flakes, small undiagnostic, one large flake & many spheres	
388	31	undiagnostic	321					
407		undiagnostic	36					
420		ferruginous concretion	22				with coal inclusions	
420		undiagnostic	15					
422	8	ferruginous concretion	81					
422	8	iron flakes	0					
422	8	sample residue	157				small undiagnostic, large iron flakes, iron	
422	8	slagged tile	28					
422	8	undiagnostic	586					

423	7	coal	6					
423	7	sample residue	91				includes hammer scale spheres and flakes	
423	7	undiagnostic	562					lots
426	9	iron	27				flat	
426	9	iron	34					
426	9	sample residue	116				lots hammer scale spheres and flake in soil	
426	9	undiagnostic	2148					lots
440		hammer scale	0				broken flake in soil	
440		smithing hearth bottom	622	110	85	60		
440		smithing hearth bottom	404	125	85	50		
440		undiagnostic	342				possibly a malformed smithing hearth bottom	
440		undiagnostic	322				incomplete smithing hearth bottom?	
443		undiagnostic	22					
443		vitrified hearth lining	21				copper-alloy inclusions in surface	
447		hammer scale	0				occasional spheres and broken flakes in soil	
447		iron	2					
448		hammer scale	0				spheres & microslags in soil	
448		undiagnostic	99					1
450		iron	33				flat, curved fragment	
450		iron-rich undiagnostic	23					
450		undiagnostic	167				cindery runs on surface	
459	15	cinder	66					
459	15	coal	12					
459	15	iron-rich undiagnostic	341					lots
459	15	sample residue	341				hammer scale spheres of all sizes & flakes	
459	15	smithing hearth bottom	148	75	60	30		
459	15	smithing hearth bottom	482	90	80	40		
459	15	smithing hearth bottom	436	125	85	40		
459	15	smithing hearth bottom	262	100	70	40		
459	15	undiagnostic	3336					lots
459	15	undiagnostic	26				flowed	
459		cinder	98					
459		smithing hearth bottom	473	110	95	60		
459		smithing hearth bottom	138	75	55	50		
459		smithing hearth bottom	501	135	100	50		
461		cinder	34					
462		hammer scale	0				flakes in soil	
462		undiagnostic	137					
464		cinder	27					
464		hammer scale	0					
464		iron-rich undiagnostic	39					
464		smithing hearth bottom	330	80	75	50		

464		undiagnostic	156					3
466		iron	13					
466		sample residue	90				mixed undiagnostic, coal, iron flakes, some hammerscale spheres	
466		smithing hearth bottom	538	120	90	80		
466		smithing hearth bottom	469	100	90	65		
466		smithing hearth bottom	636	100	90	60		
466		smithing hearth bottom	686	155	70	55	incomplete	
466		undiagnostic	159					
466		undiagnostic	6					
466		undiagnostic	495					3
472		undiagnostic	208					
473		cinder	4					
473		iron-rich undiagnostic	16					
473		undiagnostic	117					
475	12	sample residue	13				mostly microslags, hammerscale flakes & spheres of all sizes, iron flakes	
475		iron-rich undiagnostic	45					
476		cinder	53					
476		hammerscale	0				in only a few broken flakes in the soil	
476		undiagnostic	54					
478		undiagnostic	198					2
480	13	burnt coal	34					
480	13	cinder	47					
480	13	coal	83					
480	13	iron-rich undiagnostic	108					
480	13	undiagnostic	173					
480		hammerscale	1				some flake and spheres	
480		smithing hearth bottom	1339	155	110	65		
480		smithing hearth bottom	663	110	85	55		
480		smithing hearth bottom	649	135	105	55		
480		smithing hearth bottom	444	110	90	55		
480		smithing hearth bottom	377	170	60	45	incomplete	
480		smithing hearth bottom	241	99	75	55		
480		smithing hearth bottom	335	90	80	70		
480		smithing hearth bottom	349	100	70	35		
480		smithing hearth bottom	244	85	65	50		
480		smithing hearth bottom	160	80	65	30		
480		undiagnostic	503					4
481		smithing hearth bottom	239	90	85	45		
486		iron-rich undiagnostic	112					
486		smithing hearth bottom	276	85	85	45		
486		undiagnostic	202					2
489	14	burnt coal	17					
489	14	sample residue	34				lots iron flakes, hammerscale spheres & flakes	
489	14	undiagnostic	80					

489	14	undiagnostic	18				very cindery	
489		iron flakes	0				some	
489		iron-rich undiagnostic	88					
491		foundry slag	5000	260	220	60	over 5kgs.	1
491		foundry slag	1477					1
491		sample residue	31				very few microslags	
491		undiagnostic	334					1
500		ferruginous concretion	195				discarded	
507		hammerscale	0				very occasional flake in soil	
507		smithing hearth bottom	300	115	90	45	with concretion adhering and copper-alloy pin head	
522		undiagnostic	206					
534		undiagnostic	147					1
537		smithing hearth bottom	389	80	75	45		
539		hammerscale	0				lots flakes in soil	
539		smithing hearth bottom	230	90	60	60		
539		undiagnostic	213					
548		smithing hearth bottom	730	105	95	60	with concretion adhering	
553		smithing hearth bottom	628	0	0	50		
553		undiagnostic	317				with coal	3
557		iron	99					
566		iron	136				thin, decorative, petalled roundel	
579		undiagnostic	96				flowed	
581		iron-rich undiagnostic	92					
581		smithing hearth bottom	310	90	75	55		
608		undiagnostic	94					
612		iron-rich undiagnostic	87					
725	23	cinder	8					
749		charcoal	13					
767		dense slag	50					
767		undiagnostic	511			50	?unusually-shaped smithing hearth bottom	
816		burnt coal	344					1
842		cinder	16					
842		ferruginous concretion	2760					
842		sample residue	162				small undiagnostic & tiny frags coal. All discarded	
842		undiagnostic	1302					
846		undiagnostic	464					
858	25	burnt coal	13					
858	25	coal	37					
858	25	iron flakes	10					
865	26	burnt coal	17					
865	26	coal	47					
865	26	sample residue	24				smithing spheres and iron flakes	
866	27	ferruginous concretion	124				discarded	
914		slagged coal	116					

914		undiagnostic	99				cindery - post-med	
915		cinder	4					
915		coal	27					
915		hammerscale	0				some flake	
915		undiagnostic	785				cindery - post-med	
1303	35	cinder	96					
1303	35	sample residue	123				microslags, lots hammerscale spheres, iron flakes, small undiagnostic, very few hammerscale flakes	
1303	35	undiagnostic	224					
		<b>Total wt = 44.28kg</b>						

### Discussion of the assemblage

Apart from a small quantity of what may be foundry slag, which was recovered from post-medieval layers, the diagnostic slags present in the assemblage were produced by secondary smithing: the hot working of one or more pieces of iron to create or to repair an object (secondary smithing). As well as bulk slags, including the smithing hearth bottom (a plano-convex slag cake which builds up under the tuyère hole - hottest part - where the air from the bellows enters the hearth), smithing generates micro-slags; these can be hammerscale flakes from ordinary hot working of a piece of iron (making or repairing an object) and/or tiny spheres from bloom smithing or high temperature welding used to join or fuse two pieces of iron. Hammerscale, because of its tiny size, is usually only recovered by taking soil samples from fills and deposits but it is very magnetic and its presence can be detected using a magnet; it is most prevalent (thickest) in the immediate area of smithing, i.e. in the vicinity of the anvil and between it and the smithing hearth. In Phase 5 in Trenches A3, F(S), and Phase 6 Trench D1, hammerscale was present in such quantities as to suggest ironworking was taking place on the site or the material had come from smithing activity taking place immediately nearby.

#### Phase 4

Evidence for smithing is first encountered in Phase 4b (Trench A2), in dump layers [537], in pits [609] and [613] and in ditch/pit [559] - fills [658], [581].

In Phase 4c (Trench A3) pit [540] fill [539] the soil adhering to the slags contained lots of hammerscale flake, one smithing hearth bottom and some undiagnostic slag. No samples for this context were present for examination to determine quantity of microslags present.

#### Phase 5

This phase is extremely significant for ironworking evidence, which took the form of slag and iron fragments or flakes. Most of the slag and iron flakes come from Trench A3.



Posthole [441], fill [440] contained two smithing hearth bottoms which may have been used to prevent the post sitting in water that might seep in. Surface layer [459] contained 6.67kg of slag including a great deal of hammerscale flake and spheres of all sized, seven smithing hearth bottoms, 3.7kg of undiagnostic slag. Posthole [467] fill [466] contained 3.1kg of slag, including four smithing hearth bottoms, some hammerscale flakes and spheres and iron flakes from shaving or shaping iron.

Fill [475] of pit [477] contained significant quantities of microslags in the form of hammerscale flakes and spheres of all sizes, and iron shavings and flakes. Surface [480] had 5.75kg of slag which included ten smithing hearth bottoms. The question arises whether this was a metallised surface – utilising slag from a nearby smithy/forge – or whether it is waste from nearby activity. Fill [489] of gully [490] contained some slag and a great deal of iron flakes from the shaping of iron, hammerscale spheres from high temperature welding and hammerscale flakes from ordinary smithing. The location of this gully to any building that may have been a forge/smithy is a prime question for this phase.

Layer [491] represents industrial waste and contains some foundry slag but very few microslags. The backfill [464] of a posthole [465] contained a smithing hearth bottom and some undiagnostic slag; it may be this was a post-pad to keep the post dry (see above).

Many other contexts in Trench A3 contained slag so post-excavation analysis should attempt to determine where the activity was taking place – if it wasn't just redeposition of large quantities of dumped material.

Also in Phase 5, Trench F (S) industrial layer [865] contained a great deal of hammerscale flake and spheres.

## Phase 6

Again, it is Trench A3 which yielded most evidence for ironworking. Working surface [422] contained lots of small pieces of slag, large iron flakes and iron, as well as lumps of undiagnostic slag. Similarly, working surface [426] also contained lots of hammerscale flakes and spheres, pieces of iron and 2.1kg of undiagnostic iron slag. Occupation layer [423] also contained a great deal of hammerscale flakes and spheres. Further analysis is required to determine the nature of these working surfaces and the occupation layer in relation to evidence from Phase 5?

In Trench D1, dumped layer [1303] contained many microslags from smithing, including hammerscale flakes and spheres; it also contained small fragments of undiagnostic slag and flakes of iron.

## Significance of the assemblage

The assemblage is significant at this stage in that it appears to indicate early post-medieval ironworking on or very near the site.

## Recommendation for further work

The assemblage requires further analysis before it can be written up for inclusion in any publication.

Detailed plans showing all features with slag (particularly in Phases 5 and 6) will be required so the spatial distribution of the assemblage can be examined.

Information on any tools, whetstones, grinding stones or iron objects relevant to the activity would be helpful in gaining an idea of the ironworking process and what was being made.

## **APPENDIX 10: CBM/STONE ASSESSMENT**

**Kevin Hayward**

### **Introduction and Aims**

Forty-two crates, 3 shoe boxes and 50 items of loose stone, tile and brick ceramic building material, mortar and daub were retained from 17 excavation trenches relating to BVM12 London Bridge Station.

This very large sized assemblage, 4243 examples 1440kg, was assessed in order to:

Identify (under binocular microscope) the fabric and forms of the Roman, medieval and post-medieval ceramic building material, (brick, roofing tile, floor tile; mortar; daub) in order to verify, refine or revise the phasing of the site and to produce a list of spot dates.

Use the fabrics and forms (particularly with brick and mortar from the numerous brick and stone structures) to correlate the post-medieval archaeological sequence in all trenches from the London Bridge Improvement Works.

Compare the building material assemblage with adjoining Thameslink sites especially TAA9 (Sudds 2013) but also TAA6 (Hayward 2013b) where there is also substantial post-medieval residential development.

Identify (under binocular microscope) the fabric and forms of stone samples to determine the geological character and source and (where possible) the function of the stone.

Set up two access catalogues, one each for the stone (BVM12 Stone database.accdb) and ceramic building material (BVM12 cbm and daub database.accdb) that accompany this document. Excel versions of these documents are also available.

Make recommendations for further study, illustration and publication.

### **Methodology**

Where possible, two whole brick samples were retained from each structure in order to determine their construction date. For the remaining contexts especially from the earlier Roman, medieval and post-medieval features, tile, brick, stone, plaster, mortar and daub was retained.

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). The building material was examined using the London system of classification with a fabric number allocated to each object.

The methodology, layout of the text and recommendations are in accordance with template guidelines set out for the Thameslink sites.

### **Ceramic Building Material**

4113 examples 1011kg

#### **Roman Ceramic Building Material 243 examples 40.6kg**

Compared to the ceramic building materials recovered from other Thameslink sites (e.g. TAA1 (78%); TAA4 (71%) (Hayward 2013a; 2013b)) away from London Bridge, the proportion 4.1% by weight) of Roman ceramic building material is negligible. A very low figure has, however been recorded from the adjoining Western Approach site (TAA9) (Sudds 2013). The London Bridge Station excavations lie away from the main focus of Roman activity in Southwark in a marginal area subject to periodic flooding. The abraded nature of the fragments indicates extensive water action. Only three trench areas revealed substantial groups of Roman material that contained little or no medieval material. These were Trench A5 Phase 3 dump and alluvial layers [903] to [906], Trench H2 Phase 4a natural layers [1923] [1924] and Trench H1 Phase 4a layers [2014] [2016]. Elsewhere they form a background component to the much larger medieval and post-medieval groups.

### **Fabrics**

The key fabrics and their proportion summarised below (see Figure 1) are broadly consistent with the percentages from other sites at Southwark as a whole (Pringle 2009, 191). But proportions of the very early white/pink Eccles fabric (4%) are much lower than other Thameslink sites TAA4 (9%) (Hayward 2013a) and TAA6 (20%) (Hayward 2013b). Furthermore the later 2nd to 4th-century sandy and calcareous fabric groups nos 5 and 6 (6%) forming a much larger component than these other Thameslink sites TAA6 (<1%). From this we may surmise that there was a great deal of alluvial intermixing which we would expect from marginal areas somewhat off-kilter to the main settlement of Southwark.

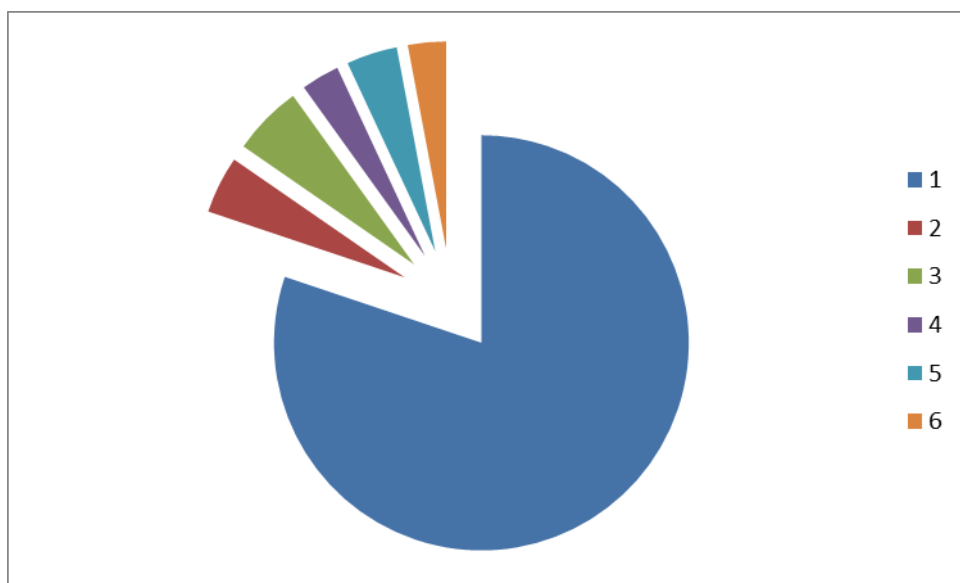


Figure 1: proportions of Roman fabric (by number of fragments) at London Bridge Station

1= Early London sandy group 2815 (AD 50-160)

2= Eccles fabric 2454 (AD 50-80)

3= Radlett group 3023 (AD 50-120)

4= Silty/Hartfield Groups (AD 70-120)

5= Late London sandy fabrics 2459b (AD 120-250) and Late Radlett fabrics 3023b 3060b

6= Late Calcareous fabrics (AD 140-300)

Early London Sandy Fabric Group 2815 (AD 55-160) 188 examples 32.3kg

2452; 2459a; 3004; 3006

By far the most common fabric (79% by weight) both here and in Roman London are the early (AD 50-160) 2815 red group using local brickearth with coarse moulding sand. The very fine vitrified fabric 2452 is especially common. Coarser sandy fabrics 3004 and 3006 are more common than at other Thameslink sites.

The fabric is well represented in all types of ceramic building material.

Later London Sandy Fabric Group 2459b (AD 120-250) 2 examples 0.4kg

By contrast examples of ceramic building material with much finer moulding sand associated with the mica dusted rich later London group are poorly represented.

Eccles Sandy Fabric 2454; 2455; 3022 (AD 50-80) 14 examples 1.8kg

As has already been demonstrated (Figure 1), the proportions of this very fine early cream-pink fabric manufactured around the area of the Eccles villa site in Kent during the mid-late 1st century are much lower (4%) than Thameslink sites especially TAA6 (20%), but in keeping with what has been uncovered at many sites in the City and at Southwark (<5%).

Radlett Iron oxide Group early 3023; 3060 (AD 50-120) 11 examples 2.2kg

Radlett Iron oxide Group early 3023b; 3060b (AD 170-230) 6 example 1.2kg

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 forms the second most common fabric group with proportions (5.4%) in keeping with Southwark as a whole (Pringle 2009, 191)

Examples from the coarser, later (AD 170-230) iron oxide group 3023b and 3060b (3% by weight) are greater than for other Thameslink sites (Hayward 2013a) and Southwark (Pringle 2009, 191). As has already been shown above this is a feature of the calcareous group at BVM12.

Silty Fabric 3238 (AD 71-100) 8 examples 0.8kg

The low proportions of the coarse banded silty group 3238 (AD 71-100) manufactured from the kilns in Kent are in keeping with figures from Southwark as a whole.

Hartfield Fabrics 3009; 3018 (AD100-120) 3 examples 0.4kg

The early Hampshire lumpy silty groups 3009; 3018 (AD 100-120) forms a background component.

Calcareous Fabrics 2453; 2457; 3013; 3020; 3026; 3027 (AD 140-350) 8 examples 1.2kg

Unlike sites TAA1 (Hayward 2013c) and TAA4 (Hayward 2013a), the proportion of pale-grey to pale-yellow calcareous building material recovered from the trenches from London Bridge Station is much higher (3% by weight) probably due to extensive alluvial intermixing. Some fabrics are rare for London such as the imbrex made from fabric 3020 with its large white silty lumps black and red iron oxide with a dusting of red moulding sand from [1923].

Unidentified Fabrics 3500 1 example 0.1kg

One of the fabrics from context [873] a red clay silty fabric has not been assigned a code but has already been identified at Tobacco Dock (Douglas *et al.* 2011)

**Box Flue** 4 examples 0.2kg

All of the very small box flue tile assemblage have a combed design made from the early sandy fabric group 2815 (AD 50-160) and are located in medieval alluvial levels in Trench H2 .They would have been used to circulate hot air in a very early heated structure in the vicinity such as at TAA2. They are listed below (Table 1)

Type of Die	Context	Description	Fabric	Date
Combed	Dirty Clay Layer H2 [1913]	Tight wavy design	3006	AD 50-160
	Alluvium H2 [1923]	Narrow straight design x2	3006	AD 50-160
	Natural H2 [1924]	Narrow chevron design	3006	AD 50-160

Table 1: Combed box flue tiles from London Bridge Station

**Tegula Mammata** 1 example 0.1kg

One fragment of a small purpose made brick with a clay projection, a *tegula mammata*, was identified from medieval pit fill [539] from Trench A3. It was made from the early Radlett fabric 3023 and was evidently once used as heated walling for a late first to early second-century building.

**Brick** 59 examples 17.5kg

With an absence of Roman structures from BVM12 it was inevitable that the brick assemblage was all going to be in a fragmentary condition. There was a high proportion (43% by weight) of these narrow (32-45mm) bricks, none of which attained the thickness of a bipedalis, Lydion (e.g. 50-60mm+) as seen at the bathhouse building at BVK11 (TAA2). Nearly all of them are made from the early sandy fabric group 2815 (AD 50-160).

**Roofing Material** 172 examples 22.3kg

Broken up roofing material, in the form of curved imbrex, flanged tegulae and undiagnostic fragments of thin tile account for over 55% (by weight) of the Roman assemblage at BVM12. Most of the later calcareous, Radlett and sandy fabrics were used for roofing.

**Imbrex** 41 examples 4.8kg

Rather like the Roman ceramic building material assemblage both at Stoney Street (TAA6) and Bedale Street (TAA4), the proportion of the curved roofing element, the imbrex, is high (11%). This could either represent a dump of discarded roofing material not suitable for reuse or merely the high background reading for roofing material seen at other Thameslink sites in this area of Southwark such as Stoney Street (TAA6) (Hayward 2012b). The sample size, however, is too small to warrant detailed statistical interpretation.

**Tegulae** 32 examples 6.7kg

Over 16% of the recovered Roman ceramic building material consists of fragmentary tegulae, just 13 of which have definable profiles, consisting of 5 different forms (see Table 2).

<b>Flange Profile</b>	1	2	7	13	35	<b>TOTAL</b>
<b>Fabric</b>						
Eccles	-	-	-	-	-	0
Early sandy 2815	6	1	1	1	1	10
Radlett	1	-	-	-	-	1
Late sandy	1	-	-	-	-	1
Calcareous	-	-	-	-	-	0
Other	1	-	-	-	1	1
<b>TOTAL</b>	9	1	1	1	1	13

Table 2: Range of tegulae flange profiles and fabrics recovered from London Bridge Station

As expected, the common 2815 fabric group dominates having the standard straight faced curved flange profile 1. The undercut White Eccles tegulae profile, such a feature of roofing material from Thameslink sites to the west (e.g. TAA4 and TAA6) are entirely absent at BVM12.

#### **Tile** 99 examples 10.8kg

As well as accounting for the un-diagnostic tile, analysis of the ceramic building material obtained from environmental samples permitted a more accurate assessment of the fabric types and their distribution at London Bridge Station. Their proportions which are included in Figure 1, merely verify the dominance of the sandy group 2815, and the much lower proportion of the very early Eccles fabric 2454 (AD 50-80) when compared to Thameslink sites towards the Roman settlement of Southwark such as Stoney Street TAA6 (Hayward 2013b).

#### **Tessera** 1 example 12g

A solitary border tessera in the early white Eccles fabric 3022 (AD 50-80) was recovered residually from a medieval layer from Trench H2 [1924]. A dearth of cavity walling and bathhouse material (box flue, tessera and tegula mammata bricks) is a feature of the assemblage from BVM12.



## **Medieval Ceramic Building Material**

1323 examples 113.3kg

Large quantities of group of medieval ceramic building material (peg tile; bat tile and floor tile) were recovered from BVM12. On top of this there are a handful of structures assigned a medieval-transitional date on the basis of stratigraphic, building material fabric and mortar type (Table 4).

### **Peg Tile** 1275 examples 103.4kg

Poorly made peg tile, sometimes glazed, having a medium to coarse moulding sand when fresh, dominates the medieval component of the assemblage, throughout the site. The key fabrics are listed below. It goes without saying that most was used primarily for roofing. However, many of the fragments are burnt suggesting that they were also stacked vertically to form ovens or bonded in a low density tuffaceous mortar (Type 7) (see Table 7) suggesting they formed layers of coursed tile within a medieval wall.

2586 (1180-1800) 135 examples 11.2kg

2587 (1240-1450) 199 examples 12.3kg

2271; 2271nr2276 (1180-1800) 836 examples 70.7kg

2271nr2272; 2272; 2273 (1135-1220) 72 examples 5.9kg

3205; Wealden (1180-1800) 7 examples 0.4kg

Noak Organic Core 3 examples 0.2kg

Most of the peg tile dates to between 1240 and 1450 (fabrics 2271 in conjunction with 2587). Most concentrate in medieval and early post-medieval features in Trenches A2, A3 and G and also where there is medieval activity. An example is the tiled floor surface [244] from Trench C bonded with Type 7 mortar.

There is an earlier 12th to early 13th-century group containing the early coarse fabrics 2272; 2273; 2271nr2272 (1135-1220) and those with an organic core, comparable somewhat to the early Noak Group from the kilns to the north of Barking (Meddens *et al.* 2003). These were recovered specifically from Phase 4a and 4b organic layers and alluvium [2201] - [2219] from Trench G.

A small group of Wealden type fabrics, including the yellow 3205 and silty fabric (1180-1800), were also recovered. These were also observed at TAA6 (Hayward 2013b) and Bermondsey Abbey (Hayward in prep).

### **Bat, Curved and Flanged Tile** 14 examples 2kg

2271 (1180-1800) 8 examples 1.1kg

2272; 2273 (1135-1220) 3 examples 0.7kg

2586; 2587 (1180-1450) 3 examples 0.4kg

A small group of glazed bat, curved and one flanged tile made from the early sandy fabric 2272 (1135-1220) and early sandy 2271 and iron oxide fabrics probably date to the 12th and 13th century.

Very early flanged medieval peg tiles, which resemble Roman tegulae, have also been identified both at Stoney Street (TAA6) (Hayward 2013b) and Bedale Street (TAA4) (Hayward 2013a).

**Floor Tile** 35 examples 8.8kg

Scattered throughout the site are examples of the 13th- and 14th-century decorative patterned and plain glazed floor tile (Westminster; Penn; Chertsey) as well as later 14th-and 15th-century plain glazed Flemish Calcareous floor tile and locally produced forms.

2892 Westminster Floor Tile (1225-1275) 4 examples 1.3kg

Chertsey Floor Tiles 2 examples 0.7kg

1810; 1811; 2324; 2894; 3076 Penn Tile (1330-1390) 11 examples 2.5kg

2320 Local Sandy Floor Tiles (1300-1500) 4 examples 1.1kg

1678; 2191 Calcareous Flemish Tile (1300-1550) 14 examples 3.3kg

Four 13th-century Westminster Floor Tiles in fabric 2892 produced from the Farringdon Road kiln (Betts 2002) (typically 105mm x 105mm x 22mm) include an example from a tile surface [293], the only ceramic building material recovered from this context – which may date it to the 13th century and medieval dumps from a pit fill in Trench A3 [677], Trench F(S) [877] and a post-medieval brick buttress rebuild from Trench B2 [45].

Mid-late 13th-century Chertsey Tiles (Betts 2002, 3) or the Chertsey-Westminster Group made of a distinctive sandier reddened version of 2892 are represented by examples from a medieval grave fill cut in Trench A3 [579] and medieval pit fill in Trench G [1669] and have what appears to be white slip.

Later 14th-century Penn Tiles manufactured in tile kilns in Penn Buckinghamshire (1330-1390) are far more common (11 examples). Although one is found on the same Phase 5 brick surface as the early post-medieval bricks mentioned below [494] Trench A3 most occur in possible earlier medieval pits, and grave cuts in Trenches A2 and A3 [548] [579] [594] [674] [675]. Most are plain glazed yellow or brown.

Later medieval (1300-1500) black and yellow glazed locally produced sandy plain glazed sandy fabrics (fabric 2320) occur on the same medieval dumps as the Westminster Tiles from A3 [677] [877], with reworked examples in medieval alluvial layers in Trench G [2200] [2204].

The most ubiquitous of the medieval glazed floor tiles from BVM12 are the plain glazed black, yellow and green thicker late medieval Flemish calcareous group (1300-1550). Like the Penn Tiles these accumulate mainly in medieval pits in Trenches A2 and A3 [537] [548] [562] [566] [595] [674] with some in Trench G [1653] [1681] and may have originated from the same floor as the Penn Tile.

The decorative examples of the Westminster and Penn Tiles, designs which are comparable with the Betts (2002) and Eames (1980) catalogues (Tables 3a and 3c). Two Chertsey designs with a distinctive red sandy fabric (Table 3b) require further analysis.

Table 3a: Westminster Floor Tile designs from London Bridge Station

<b>Betts code</b>	<b>Context</b>	<b>No.</b>	<b>Description Design</b>	<b>Fabric</b>
W74?	[877]	1	Large Fleur-de-Lys	2892
W108	[293]	1	4 small Fleur-De-Lys	2892
W112	[677]	1	Petal Design	2892

Table 3b: Chertsey Floor Tile designs from London Bridge Station

<b>Design (To check)</b>	<b>Context</b>	<b>No.</b>	<b>Description Design</b>	<b>Fabric</b>
Unknown	[1669]	1	Large Fleur-De-Lys	Red sandy
Unknown	[579]	1	Unknown design	Red sandy

Table 3c: Penn Floor Tile designs from London Bridge Station

<b>Design (Eames Number)</b>	<b>Context</b>	<b>No.</b>	<b>Description Design</b>	<b>Fabric</b>
2028	[675]	1	Floral Design	2894
Unknown	[494]	1	Unknown design	2324

The concentration of medieval floor tiles (and indeed the peg tile and earliest bricks) in Trenches A3 and A2 should be attributed to the excavations proximity to medieval St Thomas's Hospital.

### **Transitional Brick and Floor Tile (1400-1660)**

93 examples 33.7kg

A small group of high-status items of ceramic building material dating from as early as the late medieval into the Tudor period, including Flemish glazed silty Floor tile, and late medieval brick require a section by themselves.

**Brick** 70 examples 27.5kg

3030; 3030coarse dark brown fabric (1400-1660)

3030nr3065 3030nr3046 dark brown fabric with flint (1400-1660) 59 examples 23kg

3031 white Flanders tile (1350-1450) 2 examples 0.5kg

3031 yellow early kiln brick (1350+) 4 examples 1.5kg

3031nr3042 early kiln brick (1350+) 9 examples 0.9kg

3042 maroon small brick (1400+) 6 examples 1.5kg

Small, low density white and yellow fabric bricks 3031 resembling Flanders tiles were used extensively in Essex between 1350 and 1450 (Ryan 1996) and sites of later medieval monastic drainage throughout London including Bermondsey Abbey (Betts 2011; Hayward 2010) and Merton Priory (Miller & Saxby 2007). Similar bricks were also recorded at other Thameslink sites such as TAA1 (Hayward 2013c) and together may represent demolition or partial demolition of an ecclesiastical drainage structure e.g. St Thomas's Hospital.

However, it is more likely that these other early fabrics relate to the construction of late medieval to early post-medieval kilns or industrial floors. Other small, earthy late medieval brick, some of which have the same intermediate fabric 3031nr3042 as that recovered from early post-medieval demolition rubble from TAA4 (Hayward 2013a) and TAA6 (Hayward 2013b), also turn up at BVM12 in early post-medieval (Phase 5) surface layers in Trench A3 [449] [469] [480] [486] [493] and in smaller quantities elsewhere along with large quantities of the brown brick fabrics 3030 and 3030nr3065 (1400-1660), red Tudor bricks 3033; 3046; 3039 (see early post-medieval section) and other late medieval fabrics 3042 and the small white flanderstiles and yellow variant 3031. It is possible that this intermixed group may represent a kiln or working (industrial) surface especially as some of these fabrics have stack lines, copper residue [492], glaze [760] and vitrification [553] [557] and slag [1441] perhaps indicating glass manufacture or other high temperature processes and unusual dome, circular [492] angled and voussoir [494] shapes perhaps represent items of kiln furniture. Others have evidence for nail holes suggesting tight affixation to walls or floors. Kilns have been excavated in the area from as early as 1613 at Montague Close (Dawson 1976) and later (Divers & Jarrett 2009) and terracotta kilns may exist in Southwark (Thurley 2003)

Some were used in early post-medieval brick stone walls [759] also in Trench A3.

#### **Floor Tile** 23 examples 6.2 kg

Flemish glazed silty tile fabrics 1977; 2850; 3063 (1450-1600)

This group of cream, black, green and brown glazed tile imports, made from a fabric characterised by silty lenses and bands, was the flooring material of choice between 1450 and 1600, prior to the widespread production of locally produced tin-glaze tiles. Some cluster in the same Phase 5 surfaces and dumps as the early brick in Trench A3 [449] [494] [500] [566] with other groups in late medieval dumps from Trench F(N) [828] and Trench G [1653] 1656] [1693]. They are much thicker (30-40mm) than the earlier medieval Penn and Westminster, reflecting a much greater overall dimension up to 240mm x 240mm.

They may represent recycled 15th- and 16th-century glazed flooring material from an ecclesiastical structure e.g. St Thomas's Hospital reused as a surface for possible kiln or industrial structure.

### Medieval-Transitional Structures

A small quantity of structures that can be assigned a medieval/late medieval date through to early 16th century on the basis of their stratigraphy, brick and stone fabric and mortar are listed below. (Table 4). It is clear from the Agas map of c. 1562 that there was already extensive structural development in this area. Some may relate to abbey town houses such as those documented nearby as belonging to the Abbots of Battle, St Augustine (St Leger House) or Priors of Lewes.

Table 4: list of medieval and transitional structures from BVM12 (excluding possible surfaces from Trench A3)

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
244	C	2271; 2272; 2587; 3101	T	PEG	7	4B	Red tile surface trench
293	E2 (N)	2892	FT	WEST	No mortar	5B	1 tiled floor Westminster floor tile
317	D2	3033;3042; 3046; 3101	B	U	7	5B	E-w red brick floor
318	D2	3033; 3101	B	U	7	5B	NE-SW brick floor finger marked red brick
759	E2 (S)	3031; 3046	B	U	No mortar	5A	Brick stone wall
851	F (S)	2586, 2271	T	PEG	No mortar	5	Layer possible tile and mortar floor
976	E1	2587; 2271	T	PEG	No mortar	5B	Fragmentary tiled floor possibly later
1675	G	3116; 3117; 3101; 3033; 2271	S B T	RUBB U PEG	2/7	4B	Chalk foundation
1676	G	3116; 3117; 3101; 2271	S T	RUB PEG	2/7	4B	Chalk foundation part of NE-SW aligned structure
1741	H3	3116; 3117; 3101	S	RUBB	15	5B	Chalk foundation
1742	H3	3101	M		15	5B	Wall foundation gravel sand
1801	TST	3117	S	RUBB	2	5	Chalk wall foundation possibly later
1806	TST	3105;	S	PAV		5	Green sandstone wall possibly later
1854	AT1	3117; 3116	S	RUB	No mortar	4B	Chalk footing nodules with flint

## **Post-Medieval Ceramic Building Material**

2288 examples 824kg

The large quantity (78.9% by weight) of post-medieval ceramic building material recovered from London Bridge Station mostly as whole brick samples, are in marked contrast to the proportions seen at other Thameslink sites with 18.2% at TAA4 (Hayward 2013a) and 43.2% at TAA6 (Hayward 2013b). This can be simply put down to the intensity of structural development in this part of Southwark with extensive builds and rebuilds associated with residential, commercial and municipal construction with the railways as seen in numerous developmental maps since the 1550s.

**Brick** 454 examples 539kg

Most of the bricks recorded from these excavations had a fabric and form typical of manufacture during from the 16th-17th centuries through to the 19th centuries. This was verified by the types of mortar associated with them (Table 7). The 17th-18th century (Table 5) and late 18th-19th-century brick structures are tabulated (Table 6) below. On the basis of mortar type (2; 3a; 10) and brick fabric (3033; 3032nr3033; proto 3032) it seems likely that some of these were constructed towards the second half of the 17th century perhaps associated with rebuilding following the documented 1676 Great Fire of Southwark.

Tudor Red Bricks 3033; 3039; 3046; 3065 (1450-1700) 301 examples 307kg

As with some of the other excavations from the Thameslink area (Hayward 2013b), red unfrogged fabrics form the largest proportion (57% by weight) of the brick assemblage at the London Bridge Station. These bricks can be broadly subdivided into two types. Those associated with very early post-medieval industrial floors, especially in Trench A3 and later groups used in the construction of 17th to early 18th-century structures.

The first group (160 examples 100kg) are often very shallow (42-55mm), sometimes wide (105-115mm), poorly made crinkly forms often associated with some of the transitional/late medieval brick fabrics e.g. 3031mr 3043; 3030nr3065; 3031; 3042 described above and often bonded in a low density tuffaceous white mortar (Type 7) (1300-1650). Forms of this size and fabric (3033; 3039; 3065) typify Tudor or even late 15th to early 16th-century bricks. They cluster (16kg) especially around Trench A3 in late medieval to early post-medieval floor surfaces [449] [469] [480] [481] [486] [491] [493] [494] [500]. It is possible that red brick structures from this area [416] [437] may be broadly contemporary. It is in Trench A3 where there are examples of flange-shaped [491] domed-shaped [486], voussoir [494] and wedge-shaped [491] red brick which are likely to represent kiln furniture or specialist brick associated with industrial processes. The presence of copper residue, burnt brick and slag (see Keys Appendix 9) merely reinforce this link still further. Indeed Keys highlights large significant quantities of smithing waste and hearth material, cinder and hammerscale in this area, requiring further work.

Other clusters of these early bricks locate in late medieval/early post-medieval layers in nearby Trench A2 (7kg) [548] and further afield at Trench D2 (12 examples 13.4kg) [347] [348] [358] [359] including two brick structures [317] and [318] with mortar type 7 and Trench E1 as alluvial deposits [1457].

The complete red bricks (207kg) associated with the many later 17th to 18th-century structures such as those characterised by intermediate and proto post Great Fire bricks (see below) are thicker (59-62mm) and generally narrower (105mm) in mortar types 2; 3a and 10. Type 2 brown mortar is especially in the culvert buildings of Trench B2 [35] [36] [39] [40] [41] that may relate to the alignment of the housing and pre-railway street the Maze and in the wall foundations of Trench E1 [911] [917] [919] and floor [925]. Other red bricks cluster around truncated walls and stubs of Trench E2 (N) [276] [283] [1103] [1104] [1116], Trench E2 (S) [706] [719] [751], Trench G [1634] [1676] and Trench BHD [2100] – [2014]

Intermediate Brick 3032nr3033; 3032nr3065 (1664-1725) 27 examples 59.3kg

Nearly all of the examples of this distinctive hard early post Great Fire maroon brick were used along with later red fabrics and proto post Great Fire bricks (see below) in structures associated with early post-medieval mortar types 2, 3a and 10 (see Table7). These include structures associated with culvert (structure 68 and 69) from Trench B2 [21] [37]-[38] and [40]-[41] [49] in sandy brown mortar T2, and early brick sewer in Trench B1. Other clusters include walls in Trench C [202] [204] and Trench F [800] [810].

The limited production period (1664-1725) of these wide and shallow bricks 230mm x 111mm x 55mm, would suggest that these builds are broadly contemporary late 17th to early 18th-century structural episodes in different parts of the London Bridge Station area, perhaps following the documented Great Fire of Southwark in 1676.

Elsewhere on the Thameslink sites, these bricks are associated with mid-late 17th-century cellar construction at 6-7 Stoney Street (TAA6) (Hayward 2013c) with a notable peak in their use nearby along the Western Approach (TAA9) (Sudds 2013a). This would point to a concerted phase of building in the mid-late 17th to 18th century in Southwark, backed up by the abundance of proto 3032 bricks and later Stuart reds.

Post Great Fire Brick 3032; 3034; 3032R; 3034R (1664-1900) 106 examples 150kg

Just over a third (by weight) of the brick assemblage from London Bridge Station consists of poorly made purple-red post Great Fire bricks, most of which are associated with the later 18th to 19th-century drainage and structural development of this area (Table 6). It is, however, important to distinguish these later forms from the earlier “proto” post Great Fire bricks associated with 17th- and 18th-century structural development (Table 5). Essentially the latter are wider (105-112mm) and shallower (55mm-60mm) poorly made unfrosted bricks. By contrast the former are always small

narrow (95-102mm) thick (62-68mm) purple spotted and streaked clinker rich fabrics, whose smaller dimensions conform with the brick tax regulations brought in after 1775. Furthermore some of these bricks have a defined frog. Frogging was introduced after 1750 and this coupled with the fact that most of the mortar consist of the later clinker rich dark grey mortar (Type 3), shelly mortars (Type 12), Roman cement (Type 4) and hard concretonary gravel cement (Type 5) show that most of this group date to the second half of the 18th to 19th century.

In detail the early, proto-Great Fire bricks (1664-1750) were used in some of the Phase 6 culvert structures [45] [47] associated with the transitional 3032nr3033 and late reds from Trench B2. Proto post Great Fire bricks were reused in a late drainage complex from Trench D2 [301] [307], and used in the construction of the Phase 6a structures in Trench F [810], Trench E1 [926] [933] [934] [938], Trench G [1619] [1622] and in [1504] [1505] [1509] (see Table 5). These bricks are pointed with the same earlier (1450-1800) post-medieval mortars (Type 2; 3a; 10) (see Table 7) as the 3032nr3033 bricks (1664-1725) and should be seen as broadly contemporary.

By contrast, the later post Great Fire bricks (Table 6) concentrate in later building phases in Trenches E2(S) and E2(N) [701] [705] [711] [714] [717] [750] [755] including the walls to the clay tobacco pipe kiln [786] [787] [1106]. Many of the Victorian drains contain frogged examples in Trench H1 [1901] [2004], Trench E3 [1200] [1207], Trench E2N [295], Trench D1 [383] as well the boundary wall in Trench A3 [511] [512], together suggesting a more concerted effort of Victorian building in these areas. All these later brick structures are pointed in later post-medieval mortar recipes especially the clinker rich Type 3; sandy Type 4 and hard concrete Type 5 and are often associated with 18th-early 20th-century yellow estuarine bricks (see below).

Yellow London Stock Brick 3034nr3035 (1780-1900) 3035 (1780-1940)

9 examples 19kg

A small group of Medway produced yellow London stock bricks were identified at BVM12. These bricks were produced from the late 18th century onwards but on a large scale only from the mid-late 19th century onwards. With this in mind they are all associated with the structures relating to or extensions/repairs/services to London Bridge Station. They are associated with purple post Great Fire machine frogged bricks and are bonded in very late hard mortar types such as the very sandy T4 Roman mortar in a brick culvert from Trench E3 [1207] the concrete like T5 from wall repairs in Trench B2 [42] and cellar wall from Trench H1 [1901] or the clinker rich T3 in the brick drain from Trench F(S) [838].

Dutch paving brick 3036 (1600-1800)

1 example 0.5kg

One small 17th to 18th-century 90mm x 45mm yellow imported Dutch paving brick was identified in a post-medieval Phase 5a fill from Trench E2 (S) [760].



#### Red Paving Brick 3047 (1690-1900)

3 examples 1.2kg

Paved sandy red bricks are represented from a pit fill in Trench B1 [6] and used as coursing bonded by the late post-medieval T3 clinker mortar (Table 5) in a brick wall from Trench E2(S) [701].

#### Fletton Brick 3038 1890-Present Day

1 example 0.2kg

Heavy machine frogged bricks manufactured from the Oxford Clays of Peterborough and Bedfordshire are represented by a fragment from a late post-medieval pit fill in Trench B1 [5].

#### Kiln Brick 3261 1850-Present Day

2 examples 25.1kg

Dense yellow highly refractive fireclay bricks made from high alumina clays of the Coal Measures of Scotland, northern England and the Midlands were identified from a late post-medieval rubbish pit fill in Trench F(S) [826] and a late post-medieval pit in Trench H3 [1724]. The latter, part of an enormous bat brick (25kg) may be related to heating/furnace relating to London Bridge Station.

Table 5: Early Post-medieval brick structures from BVM12

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
10	B1	3032nr3033 3046	B	U	3a	6A	Red brick sewer
35	B2	3033	B	U	No mortar	6	NW-SE tile mortar capping
36	B2	3033 3046	B	U	2	6	Orange red brick floor
37	B2	3033 3032nr3033	B	U	2	6	Brick vault culvert
38	B2	3032nr3033	B	U	2	6	Red brick culvert
39	B2	3046	B	U	2	6	Support for wall 21
40	B2	3032nr3033	B	U	3a/2	6	Rebuild of wall 39
41	B2	3032nr3033 3033	B	U	2	6	NE-SW wall culvert st 68
45	B2	3034 EARLY; 3046	B	U	2	6	NE-SW rebuild buttress
47	B2	3034 EARLY 3046	B	U	2	6B	Buttress of culvert
49	B2	3032nr3033 3046	B	U	10	6	Wall culvert [69]
202	C	3032nr3033	B	U	3a	6	Brick floor 203/204
203	C	3046	B	U	3a	6	N-S brick wall
204	C	3032nr3033	B	U	3a/2	6	N-S brick wall
247	E2 (N)	3032nr3033 3046	B	U	10/2	6B	E-W brick wall

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
258	E2 (N)	3032nr3033	B	U	10/3a	6A	NE-SW wall stub
264	E2 (N)	3032 EARLY 3033	B	U	3a	6B	Cobbled floor surface
276	E2 (N)	3033	B	U	10/2	6A	N-S wall
283	E2 (N)	3046	B	U	10/2	6A	N-S curvilinear wall
437	A3	3033 3065	B	U	3a	5	N-S brick wall
706	E2 (S)	3039 3046	B	U	3a	6B	Red brick surface
719	E2 (S)	3033	B	U	10/3a	5	ENE-WSW aligned wall
751	E2 (S)	3033 3046	B	U	10	6A	Brick foundation
800	F	3032nr3033 3046	B	U	No mortar	7?	N-S brick wall
810	F (N)	3033nr3034 3032 EARLY	B	U	3a	6A	Brick floor
911	E1	3046	B	U	2	6A	Wall foundation
917	E1	3033	B	U	2	6A	Damaged foundation
918	E1	3033	B	U	3a	6A	Wall foundation
919	E1	3033	B	U	2	6A	Wall foundation
920	E1	3033	B	U	3a	6A	Wall foundation
921	E1	3033 3032nr3033	B	U	10	6A	Wall foundation
925	E1	3046 3065	B	U	2	6A	Brick floor
926	E1	3032 EARLY	B	U	2	6A	Brick floor
930	E1	3046 3065	B	U	No mortar	6A	Cobbled surface
933	E1	3032 EARLY 3046	B	U	2	6A	Wall chute
934	E1	3032 EARLY 3046	B	U	10	6A	Wall chute
938	E1	3032 EARLY	B	U	2	5B	Wall foundation stub
950	E1	3065	B	U	10	5B	Masonry floor
1103	E2 (N)	3033	B	U	10	5B	Masonry brick lining
1104	E2 (N)	3033 3046	B	U	10	6B?	Truncated wall floor
1116	E2 (N)	3046	B	U	2	5B	Wall stub
1118	E2 (N)	3033 3032nr3033	B	U	10	5B	Collapsed wall
1407	E1	3033	B	U	10	5B	Wall foundation
1504	n/a	3032 EARLY 3046	B	U	3a	6BI	Boundary wall
1505	n/a	3034	B	U	10	6BI	Sub-circular soakaway

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
		EARLY 3032nr3065					
1509	?n/a	3032 EARLY	B	U	3a/10	6BI	Brick floor
1619	G	3032 EARLY 3046 3039	B	U	2	6BI	L shaped brick foundation
1622	G	3032 EARLY 3032nr3033	B	U	10	6B	Brick floor
1634	G	3033 3046	B	U	No Mortar	6B	Possible floor
1676	G	3033	B	U	2/7	4B	Wall foundation medieval
2002	H1	3046	B	U	3a/10	6B	E-W earlier wall foundation

Table 6: Late post-medieval structures from BVM 12

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
2	B1	3032	B	F	12	6B	18th-19th-century brick wall
21	B2	3032nr3033	B	U	3	6	E-W brick wall part of structure 68
27	B2	3032 EARLY	B	U	12	6	Unfrogged red brick wall
42	B2	3032 3035	B	F	5	6	Orange/yellow frogged brick wall
295	E2N	3032R 3032nr3033	B	U	3	6	Floor of brick drain
301	D2	3032 EARLY	B	U	1	6B	Drainage complex small building
307	D2	3032 EARLY	B	U	1	6B	Drainage complex NW-SE wall
377	D1	3135 3120 3035	S	COBB	3	6B	Yellow frogged brick and granite setts
383	D1	3032	B	F	4	6B	Large 19th-century brick culvert
511	A3	3032	B	F	1	6B	N-S boundary wall projections formed hearth
512	A3	3032 3105	B S	F RUBB	1	6B	NE-SW brick wall base
701	E2 (S)	3032 3047	B B	U PAV	3	6B	NE-SW aligned brick wall
705	E2 (S)	3032 3046 3135 3108	B B S S	U U COBB COBB	3/12	6B	Cobbled surface of brick and stone
711	E2 (S)	3033 3039	B	U	3	6A	Reused NNE-SSW wall English bond
714	E2 (S)	3032R 3033	B	U	3	6A	NW-SE aligned wall

Context	Trench	Fabric	Type	Suffix	Mortar	Phase	Structure
717	E2 (S)	3033 3046	B	U	3	6A	NE-SW aligned floor
750	E2 (S)	3034	B	U	1/12	6A	Brick surface
755	E2 (S)	3032 3034	B	U	3	6A	NE-SW brick wall
786	E2 (N)	3032 3046	B	U	3	6B	Brick lining of possible ctp kiln
787	E2 (N)	3032	B	U	3	6B	Brick lining of possible ctp kiln
797	E2 (N)	3032 3032R	B	U	3	6B	E-W wall possible beam pad
838	F (S)	3032R 3035	B	U	3	6B	N-S brick drain
843	F (S)	3032	B	U	3	6B	Fill of soakaway cess pit
1106	E2 (N)	3032	B	U	3	6B	Possible return of [786] ctp kiln
1200	E3	3032	B	F	3	7	Modern brick drain
1207	E3	3032 3034nr3035	B	F	4	6B	N-S brick culvert
1500	-	3032	B	U	No mortar	6BI	Brick structure
1501	-	3032	B	U	No mortar	6BI	Brick structure
1508	-	3032	B	U	3	6BII	Manhole
1610	G	3032	B	U	12	6B	NE-SW wall foundation
1724		3261	KB	BAT	-		
1733	H3	3032 EARLY 3035	B	U	5	6B	Possible foundation for concrete
1800	AT1	3032 3035	B	U	3	6	E-W aligned brick foundation
1901	H1	3034 3034nr3035	B B	U F	5	6B	N-S orientated cellar wall
2001	H1	3032	B	F	4	6B	E-W return of N-S cellar wall
2003	H1	3032	B	U	3	6B	Wall foundation
2004	H1	3034	B	F	5	6B	N-S brick drain
2101	BHD	3032	B	U	3	-	Brick structure

**Roofing Tile** 1772 examples 221kg.

**Peg Tile** 1523 examples 164kg

Sandy 2276 (1480-1900); 2271 (1180-1800) fine moulding sand; 2586 (1180-1800) fine moulding sand

The very common, locally produced London sandy peg tile fabric 2276 was identified throughout the excavations. Early forms (1480-1700) are characterised by coarse moulding sand and uneven surface occur in similar areas as the early red post-medieval brick fabrics. Later regular forms with a fine

moulding sand cluster in later post-medieval dumps in association with pan tile, unglazed floor tile and post Great Fire brick.

#### **Pan Tile** 249 examples 57kg

2271; 2586 (1630-1800) 2279 (1630-1850)

An extremely large assemblage of curved, flanged pan tile in iron oxide fabric 2586 and sandy fabrics 2271 and 2279 are associated with Victorian dumps. The fashion for roofing premises using these tiles only came in after 1630, following their popularity in the Low Countries. Many of the roofing tiles are fresh, sooted and associated with early modern mortar types and frogged brick, suggesting that they roofed much of the slum, better quality housing, inns, commercial and industrial premises in the part of Southwark, prior to the construction of London Bridge Station in 1850.

Quantities far exceed any of the other Thameslink sites perhaps indicating the importance of Regency/Victorian social housing in this part of Southwark. Included are large clusters (9kg) in late post-medieval pits in Trench E2 (N) and at Trench B2 (5kg) and Trench A1 (6.5kg).

#### **Floor Tile** 21 examples 12.8kg

Flemish Silt Tile 2850; 1977 (1600-1850)

Like the peg tile and pan tile above large unglazed Dutch imported silty floor tiles are found dumped in later post-medieval deposits especially Trench B2 [30], Trench F[816] and Trench E2 (N) [782]. Examples are also reused in cobbled yard [705].

#### **Wall Tile** 6 examples 433g

3076 Plain Glazed Victorian Wall Tile

With no Delftware or earlier Rotherhithe wall and floor tiles, only small (120mm x 120mm x7mm) plain coloured tin-glazed wall tile are represented in white-cream-grey colours in late post-medieval dumps [142] [1214] [1227]. These like the toilet sink may have come from public amenities associated with London Bridge Railway Station.

#### **Chimney Fragments** 2 examples 0.6kg

2271; 2276

At least two sooted curved and turned chimney fragments were identified from a post-medieval pit [44] and ditch [1132]. It may be that some of the curved, sooted fragments identified above in these sandy fabrics as pan tile may instead be chimney fragments.

#### **Victorian Drain Pipes**

3261 19 examples 3kg

Associated with Victorian soakaways [382] [1111] [1121] and dumps [789] [903] [972] in the excavation area are brown glazed drain pipes made from a high alumina clay fabric 3261 that typifies certain mudstone types from the Coal Measures of e.g. West Midlands, North East England and Yorkshire. These were manufactured in large quantity and supplied by boat and train to the capital to meet the demand for improved sanitation after the 1850s.

### **Sink**

3261 1 example 1.7kg

From a later post-medieval layer [119] in Trench A1 of the excavations came part of a duck green sink. These were widely manufactured out of the local carboniferous clays of South Glasgow and glazed for sanitary purposes by companies such as Shanks. In all probability this is an early 20th century example as catalogues from this period begin to show the use of different coloured glazes.

### **Daub and Mortar,**

**Daub;** 3102 6 examples 0.7kg

Very small quantities of orange daub attest to the probable remains of Roman timber framed wattle and daub structures, with one lump 0.5kg in weight from medieval natural in Trench H2 [1924].

### **Mortar and Concrete**

A summary of mortar types as well as their period of use from the excavations at BVM12 are given below (Table 7) and provide a chronological framework, which along with the brick and other building materials help to subdivide some of the, medieval and post-medieval construction phases. Any similarities, may also serve to link with other adjoining Thameslink sites especially TAA9 (Sudds 2013) but also TAA6 (Hayward 2013b)

No Roman mortar types were identified from TAA10 which given the dearth of occupation in this part of Southwark is hardly surprising.

In terms of medieval and post-medieval mortars, there are considerably more types here (13) than at other Thameslink sites, reflecting the greater excavation area and consequently the greater number of different building types with their separate construction phases. In addition there is a more complex, intensive later post-medieval structural development (1800-1950) in a part of Southwark characterised by residential/commercial/industrial development and the 1850s building of London Bridge Station. They are listed chronologically.

Medieval and early post-medieval mortars are of three types. Type 7, the most common, seems to be associated with the extensive early post-medieval surface "industrial" development of Trench A3

following the Dissolution of the monasteries. The lime rich white mortar Type 16 is associated with loose dumped medieval peg and medieval floor tile especially Trenches A3 and A2 and is almost certainly medieval and was observed in loose building material at BVT09 (TAA6) in the Abbots of Waverley's Townhouse (Hayward 2013b). As both Trenches A3 and A2 are the closest trenches to St Thomas's Hospital it seems logical to assume that these relate to monastic builds and subsequent dissolution structures. Finally there is the hard Type 15 which is restricted to medieval chalk walls in Trench H3 and is probably toughened bonding material to strengthen these structures.

Earlier post-medieval stone and brick structural development (1500-1800) of this part of Southwark sees a sizeable group of red 3033 and purple and transitional/proto post Great Fire brick structures 3032nr3033 and 3032 bonded by three mortar types the brown T2, grey T10 and the similar clinker rich T3a. All three recipes seem to be used at around the same time especially in structures from Trenches B2, E1, E2 (S), E2 (N), E3 and G.

Finally, later post-medieval structural development (1750-1900) contains a whole raft of recipe types which is not surprising as it was during this period that waterproof concrete type mortars and strengthening mortars were patented. These all relate to building just prior to the construction of London Bridge Station and structures relating to the station itself.

Table 7: Mortar types at BVM12

<b>Mortar/Concrete Type</b>	<b>Description</b>	<b>Use at BVM12</b>
<b>Medieval – early post-medieval 1200-1600</b>		
T15 Earthy dense shelly sand mortar some gravelly	Off-brown dense quite hard compact mortar with comminuted shell and sand	Restricted to 1200-1500 Early chalk wall foundation in H3 [1741] [1742] and features [1746] [1747]
T16 White chalky mortar	White very fine chalky mortar with very rare flecks of charcoal	Common 1300-1600 especially attached/ smeared late medieval floor tile and early brick from pits medieval/early post-medieval trenches towards St Thomas's Hospital A3 [566] [595] [599] A2 [537] [548] [579]
T7 low density tuffaceous grey-brown mortar	Low density woody sometimes gravelly grey-brown mortar with occasional charcoal rods	Common 1300-1600 Concentrates along with late medieval to early post-medieval brick 3031nr3043; 3030nr3065; 3033; industrial surfaces with domed and shaped kiln furniture and reused decorated floor tile nearly all in A3 e.g. [463] [487] [491] [500] [504] [594] [671] [674] [675] [677] E2 (S) [742] [743] [744] [746] structures C [244] D2 [317]
<b>Post-medieval 1450-1800</b>		
T2 /T9 Friable brown mortar	Fine fawn sandy-brown mortar with large chalk lumps. T9 calf	Common 1450-1750 Associated with early chalk and red 3033;

	brown variant	3046 maroon transitional 3032nr3033 /proto Great Fire brick 3032 walls especially B2 [36]- [41] [45]-[47] E1 e.g. [911] [917] [925] [933] E3 [1211] BHD [2102] [2103] G [1619] [1676] AT1 chalk and flint foundation [1801] [1804] some post-date Type 10 mortar E2 (N) [247] [283]
T10 soft light grey earthy mortar	Soft light grey earthy mortar with occasional chalk inclusions when hard tuffaceous mix with lumps of orange tile/brick charcoal and wood	Common 1600-1750 (some predate T2) and may be variant of T3a associated with transitional 3032nr3033; 3046 proto 3032 brick structures B2 [934] E2 (N) [247] [276] [283] E2(S) [719] [751] E1 [921] [950] [934] [1407] G [1622]
T3a fine light grey powdery clinker mortar	Fine pale grey powdery clinker mortar with chalk often appears on brick as a grey powdery veneer	Common 1600-1800 associated with transitional 3032nr3033 post Great Fire and red brick 3046 structures especially in C [202] – [204] E2N [258] [1103] A3 [416] [437] F(N) [810] E1 [918] [1504] BHD [2104]
<b>Late post-medieval 1750-1950</b>		
T14 hard gravelly mortar	Hard brown gravelly mortar	Rare 1700-1900 restricted to Cobbled surface E2(S) [705]
T1 Very hard light grey chalk rich mortar	Hard light grey chalk rich recipe	Fair quantity 1750-1900 used to point reused proto post Great Fire bricks and early post-medieval red brick structures in Trench D2 [301] [307] and narrow post Great Fire bricks in Trench A3 [511] [512]
T3 harder grey clinker mortar	Dark grey sometimes coarse mortar with numerous black charcoal/clinker lumps and occasional shell	Very common 1750-1900 Associated with narrow unfrogged post Great Fire brick structures and yellow estuarine brick especially E2 (S) [701] [706] [711] [714] [755] E2 (N) [786] [797] later activity A3 [511] [512] F(S) [838] [843] G [1528] AT1 [1800] H1[2003] BHD [2101]
T12 Very shelly lime rich mortar	Very white shelly lime rich mortar- complete bivalve	Rare 1750-1900 Associated with frogged and unfrogged narrow post Great Fire brick structure B1 [2] B2 [27] G [1610]
T11 Hard white Portland type mortar	Hard White Portland Type Mortar	Rare 1830-1950+ reused brick structure E3 [1219]
T4/6 Loose Roman mortar	Modern very loose consistent sandy brown mortar	Rare 1850-1950 restricted to well-made frogged 3032 and 3035 structures D1 [383] E3 [1207] H1 [1901] [2001] [2004]
T5/13 Hard dark grey concretionary mortar	Very hard concretionary dark grey mortar lumps of burnt flint and brick sometimes gravelly	Rare 1850-1950 restricted to well-made frogged 3032 and 3035 brick structures B2 [42] H3 [1733]



## **The Worked Stone**

131 examples 429kg

Unlike, other Thameslink sites, e.g. TAA4 (Hayward 2013a) and TAA6 (Hayward 2013b), this large worked stone assemblage has a lower number of different stone types (20 lithotypes). This is due to the low proportion of Roman contexts, a source of so many different rock types for Southwark. Post-medieval stone types (granite, basalt, York stone, Portland stone, Kimmeridge shale) are well represented. This was to be expected given the extensive 18th-19th-century structural development of this part of Southwark.

The 20 rock types identified are classified according to function.

### **Mouldings and Ashlar** 27 examples 80.6kg

Most of the materials below can be described as freestone, a fine grained, open porous limestone or sandstone that permits the rock to be worked or carved in any direction (Leary 1989; Stanier 2000; Sutherland 2003).

#### **Medieval Origin**

The following suite of rocks, especially Caen stone and Reigate stone and Tufa are typical of the medieval construction materials in ecclesiastical projects throughout London and Southwark. Many of the late medieval and post-medieval brick and stone walls from TAA10 contain recycled ashlar and moulding in these materials, a feature seen in 17th-century walls from TAA6 (Hayward 2013b).

Reigate stone 3107– Fine low density lime green glauconitic limestone. Lower Cretaceous (Upper Greensand) Reigate-Mertsham 24 examples 71kg

It is a feature of the site that large quantities of reused Reigate stone ashlar and occasional degraded mouldings such as a door jamb with slot, roll/holl mould and bevelled edge mould are re-incorporated in to the fabric of some of the foundations of post-medieval (17th-18th century) walling [525] [917] [920] and cobbled surfaces [705]. There is a notable concentration around Trenches E2 and E1 [917] [920] [924] some distance from St Thomas's Hospital.

Caen stone 3119 pale yellow dense pelletal limestone (Middle Jurassic – Caen, Departement Calvados) 1 example 5kg

This much harder, robust continental freestones were shipped in from Normandy and used throughout medieval London in huge quantities for medieval construction projects. In Southwark Cathedral (Divers *et al.* 2009) and Bermondsey Abbey (Dyson *et al.* 2011; Hayward in prep a). Just one ornately

carved late medieval roll/holl example was recovered from an early post-medieval pit fill from [600] possibly originating from St Thomas's Hospital.

Tufa 3118 calcite precipitation deposit, Holocene, Medway or Thames Valley 2 examples 4kg

Recorded from an early post-medieval bedding deposit in Trench H3 BVM12 [1746] bonded in an early T16 mortar associated with early chalk walling in Trench H3.

**Medieval and Post-medieval Flooring (Paving)** 19 examples 138.3kg

A large quantity of mainly post-medieval paving materials was recovered and account for a third of the stone assemblage. Some materials York stone, Portland stone, Carrara marble, Purbeck limestone are almost certainly 18th- or 19th-century doorway steps or industrial surfaces. The Kentish ragstone is however, likely to derive from St Thomas's Hospital.

Purbeck limestone 3126 either light grey or dark shelly oyster fragments set in a fine dark micritic limestone matrix Upper Jurassic (Purbeckian) Isle of Purbeck e.g. Winspit Quarry/St Aldheim's Head 6 examples 25.8kg

Complete paving slabs in different sizes of this shelly limestone were recovered mainly from post-medieval deposits from Trench F [842] [868] [874]. Quarries were opened up on a large scale on the Isle of Purbeck to meet the demand for paving in large cities during the 18th and 19th century (Stanier 2000).

York stone (Elland Flags) 3108 Olive green banded fine micaceous sandstone. Upper Carboniferous (Namurian-Westphalian) 7 examples 42.7kg Large slabs (up to 500mm x 300mm x 55mm) of what are later post-medieval flooring materials were recovered mainly from Trench B2 [15] [56] [72].

Kentish ragstone 3105 hard dark grey calcareous sandstone (Kent ragstone); Hythe Beds. Lower Cretaceous (Lower Greensand) Maidstone area, North Downs 4 examples 60kg.

Very large complete square floor slabs 420mm x 420mm x 55mm of Kentish ragstone were in post-medieval boundary wall structures in Trench A2 [525] including its base [511]. In all probability these represent recycled flooring materials from St Thomas's Hospital Precinct.

Carrara Marble 3114PM Tertiary, Tuscany northern Italy 1 example 0.6kg

A white saccharoidal marble slab came from the same post-medieval area (Trench B2) [72] as the York stone and Portland limestone There was a great upsurge in demand for white marble in fireplaces and funerary objects during the 18th and 19th century.

Portland Whit Bed 3110PM Upper Jurassic (Portlandian) Isle of Portland, Dorset. Fine white-grey oolitic limestone, 1 example 0.3kg

A 32mm thick paving slab of this common 18th- and 19th-century building material was recovered from TrenchB2 [18].

**Post-medieval cobble stones** 21 examples 75kg

The following durable stone materials identified mainly from yard and road surfaces [377] [705] were fashionable in the post-medieval period for cobbles and setts. Some, however, have a secondary reuse as walling material [416], however the flint cobble from the early post-medieval chalk wall foundation in Trench AT1 [1801] is a natural beach/river cobble. It is possible that some of these cobbled surfaces [705] relate to yards or stable blocks for horse transport of goods from the Railway Station. However, there are numerous yards and alleys that criss-cross this area as shown by the many late 18th to early 19th-century maps in this area. One surface alone [705] uses 5 different rock types as well as Flemish floor tile, post Great Fire brick and pan tile bonded with a late 18th -19th-century clinker rich mortar.

Granite 3135 very coarse crystalline pink quartzose acid igneous rock Western or Northern Britain source 4 examples 27kg

A large pink granite rectangular sett from surface [377] and cobbles from surface [705] and reuse as walling material [416] are typical of mid-late 19th-century yard or road materials.

Basalt 3120 Fine dark-grey basic igneous rock. Probably Tertiary Northern England or Scotland 2 examples 13kg

Used in conjunction with white or pink granite, these large dark cobbles from surface [377] are almost certainly 19th century, when the demand for durable geologically old rocks from western and northern Britain was great, not doubt facilitated by the expanding railway and shipping networks.

Kentish ragstone 3105 hard dark grey calcareous sandstone (Kent ragstone); Hythe Beds. Lower Cretaceous (Lower Greensand) Maidstone area, North Downs 4 examples 3.5kg

Used in cobbled surface [705] in Trench E2 (S).

Flint 3117 hard fine cryptocrystalline concretionary sandstone Upper Cretaceous (Upper Chalk) London Basin 2 examples 7.4kg. Used in a late post-medieval cobbled surface from [705] along with the other materials and post Great Fire brick.

York stone 3120 Olive green banded fine micaceous sandstone. Upper Carboniferous (Namurian-Westphalian) 1 example 1kg

A cobble of this material came from surface [705] in Trench E2 (S).

Reigate stone 3107– Fine low density lime green glauconitic limestone. Lower Cretaceous (Upper Greensand) Reigate- Mertsham 1 examples 2kg

Cobble material extended to reused chunks of softer Reigate stone for surface [705]

**Rubble** 27 examples 136kg

Included in this group are not only the sole representatives of Roman stone from BVM12 (Bargate; Septarian Nodule and Kentish ragstone) but also a small quantity of chalk, flint and Kentish ragstone retained from the earliest masonry features (late medieval chalk and flint walls) bonded with the tuffaceous type 7 and harder brown shelly type 16 mortars.

Bargate stone 3120 shelly oolitic glauconitic sandstone Lower Cretaceous (Lower Greensand) Farnham/Godalming area. 1 example 0.8kg

As Bargate stone is associated with deposits from Roman Southwark (Hayward in prep b), including TAA4 (Hayward 2013a) and TAA6 (Hayward 2013b), its occurrence in a post-medieval dump layer [170] must therefore be viewed as residual stone probably deriving from one of the Roman masonry structures from Southwark.

Septarian Nodule 3122 Concretionary calcareous nodule within London Clay (Tertiary) London Basin; 2 examples 0.3kg

This second Roman type stone construction material, was identified from small fragments in medieval alluvial deposits from Trench D2 [365] and Trench A3 [504].

Kentish ragstone 3105 hard dark grey calcareous sandstone (Kent ragstone); Hythe Beds. Lower Cretaceous (Lower Greensand) Maidstone area, North Downs 20 examples 123kg

Large unmortared blocks of this robust building material, were recovered from medieval alluvial and natural deposits from Trench H2 [1923] [1925] along with the Roman ceramic building material and evidently derived from a Roman masonry structure in and around the north Southwark area.

Elsewhere, later medieval and early post-medieval walls from Trench G [1675] [1676] are constructed from Kentish ragstone, Hassock stone and chalk with medieval peg tile and brick and pointed in a late medieval/early post-medieval type 7 tuffaceous mortar and continue to be used in later post-medieval walls along with brick in Trench A3 [416] and Trench E2 (S) [759] pointed in 18th- and 19th-century mortars

Hassock stone 3106 Medium-grained glauconitic sandstone - Hythe Beds. Lower Cretaceous (Lower Greensand) Maidstone area, North Downs 3 examples 11.1kg

Sandier glauconitic sandstones that interbed at outcrop with Kentish ragstone are represented by walling material from early post-medieval walls in Trench G [1675] [1676].

Chalk 3116 fine white micrite and Flint 3117 hard fine cryptocrystalline concretionary sandstone Upper Cretaceous (Upper Chalk) London Basin 2 examples 2kg

As well as Kentish ragstone, chalk and associated flint form the principal construction materials for some of the earliest structures from BVM12 such as the chalk walls [1675] [1676] [1741].

**Roofing** 7 examples 0.5kg

North Wales slate 3115M (1050-1900) dark grey slate; Palaeozoic North Wales 6 examples 0.2kg

Small fragments of thin slate roofing tile were recovered throughout the site. These were found in post-medieval dumps and were originally used to roof earlier residential structures.

Upper Greensand or Wealden sandstone 3120 1 example 0.2kg

A roofing tile fragment from a Roman dump layer [904] in Trench A5 is made of a fine, green, calcareous sandstone that resembles the greensand from Folkestone area usually associated with the production of quern stones. It is associated with a later Roman calcareous ceramic roofing tile, which is not surprising given that the tradition of roofing in stone is essentially a late Roman phenomenon (Boon 1974).

**Whetstone** 1 example 0.1kg

Hone stones

Norwegian ragstone - Fissile micaceous banded phyllite schist; Palaeozoic source.

These Saxon and medieval hone materials turn up in some quantity in Southwark including the medieval ditch at TAA4 (Hayward 2013a) as well as TAA6 (Hayward 2013b). The example from TAA10 was recovered from a medieval demolition layer in Trench E2 (S) [762].

**Fuel** 27 examples 0.3kg

Kimmeridge Oil Shale 3120 – Upper Jurassic (Kimmeridgian) Dorset coast fissile dark-grey-black carbonaceous shale

Associated with post-medieval layers from BVM12 are small quantities of this burnt shale. These mainly concentrate in post-medieval layers in Trench A3 including working surfaces e.g. [426] [429] [447] and may be associated with some form of industrial activity.

**Victorian Lithographic/Machine base stone material** 9 examples 14.7kg

Caithness Slate or Cornish Slate 3120 Very dense fine elongate purple metaflagstone materials with machine criss-cross saw marks along the edge.

A sizeable group of elongated tapering machine made flaggy stones concentrate in late post-medieval and modern pits in Trench B2 [19] [44] and Trench G [1624]. These appear to be either machine bases given their fine, very even surface or lithographic plates associated maybe with printing.

## Summary

The composition of the worked stone assemblage at TAA10 London Bridge Station, on the basis of rock-type, moulding style and stratigraphic position, is dominated by post-medieval cobble stone, paving and rubble stone materials with some reused medieval mouldings and ashlar and only the occasional example of Roman stone.

A small group of Roman rubblestone materials include Kentish ragstone, Bargate stone and Septarian Nodules and a solitary roofing tile.

The medieval freestone types identified include a small quantity of recycled Reigate stone, Tufa and Caen stone supplemented by Kentish ragstone paving stones many that which probably derived from the partial demolition of St Thomas's Hospital.

Fresh post-medieval consignments of Purbeck limestone and Portland stone paving from Dorset, York stone paving from north-east England and granite and basalt cobbles and setts including represent 19th-century activity in and around this part of Southwark. Improved railway and maritime communications would have made these geologically older, durable materials more accessible.

## Distribution

NB Please note spot dates for brick structures (bold) refer to just the brick form and fabric. The spot dates of mortar taken from these brick structures should be used as the final spot dates.

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
BH3 EXT	3032	Post Great Fire Frogged Brick no mortar	1	1664	1900	1664	1900	1850-1900	No mortar
WB Sewer Hdg Set 1	3033; 3046; 3101	Reused Early Post-medieval brick; Type 1 and 10 white mortar	4	1450	1700	1450	1700	1550-1700+	1650-1800
WD Sewer Hdg Set 4	3033; 3101	Early post-medieval brick Type 2 early mortar	1	1450	1700	1450	1700	1550-1700+	1450-1700+
WD Sewer Hdg Set 5	3033; 3101	Early post-medieval brick Type 2 early mortar	2	1450	1700	1450	1700	1550-1700+	1450-1700+
2	3032; 3046; 3101	Frogged post Great Fire brick and reused early post-medieval brick Type 12 shell mortar	3	1450	1900	1664	1900	1800-1900	1780-1900
3	2276; 2279;	Early post-med peg	7	1450	1900	1664	1900	1775-	1850-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	3046; 3032; 3034; 3101	tile; pan tile early post-medieval and narrow post Great Fire brick T5 hard brown mortar and T12 hard shelly mortar						1900	
5	3032; 3038	Frogged LBC brick and narrow post Great Fire brick	2	1664	Present day	1880	Present Day	1880- Present day	No mortar
6	2276; 2279; 3063; 2850 3047; 3101; 3107; 3126	Fine peg tile and pan tile unglazed Flemish floor tile and later post-medieval paving brick; T3 mortar and T12 ; shelly Mortar Purbeck Limestone paver and Reigate stone ashlar	8	1050	1900	1690	1900	1750-1900	1800-1900
7	2276; 3046; 3032nr3033	Post-medieval floor tile; early post Great Fire brick; and fresh early post-med brick	4	1450	1900	1480	1900	1664-1800+	No mortar
10	3032nr3065; 3046; 3101	<b>Early post Great Fire brick and early post-medieval brick T3a soft clinker mortar</b>	2	1450	1900	1664	1900	1664-1800	1600-1800
14	2271; 2276; 3046; 3032nr3033; 3101	Broken up post-medieval peg tile and brick; reused early post Great Fire brick T3 mortar	4	1180	1900	1480	1900	1664-1800	1750-1900
18	2276; 2850; 3046; 3101; 3110PM; 3108	Fresh post-med brick, peg tile and Flemish unglazed reused T3 mortar; Portland whit Bed and York stone paving	6	1450	1900	1480	1900	1600-1800+	1750-1900
19	3120	Lithographic plate Cornish meta rock	2	1750	1900	1750	1900	1750-1900+	No mortar
21	3032nr3033; 3101	<b>Early post Great Fire brick reused in T3 shelly clinker mortar</b>	1	1664	1725	1664	1725	1664-1750	1750-1850
22	2271; 2276; 2279	Fresh pan tile and peg tile fine mould sand	5	1180	1900	1480	1900	1630-1850	No mortar
27	3032nr3065; 3101	<b>Early post Great Fire brick unfrogged possibly reused T1/12 hard mortar</b>	1	1664	1900	1664	1900	1664-1800	1780-1900
29	2271; 2276;	Post-medieval peg	5	1180	1900	1664	1900	1664-	1750-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	3034; 3101	tile fine; post Great Fire brick T3 hard clinker mortar						1900	
30	2276; 2279; 2850; 3101; 3033	Post-medieval reused peg tile; pan tile; unglazed floor tile and early post-medieval brick T5 hard concrete mortar and T3 hard clinker mortar	5	1480	1900	1664	1900	1700-1900	1850-1950
32	3046; 2276	Post-medieval peg tile and brick	4	1450	1900	1480	1900	1600-1900	No mortar
33	2276; 3101;	Burnt fine post-medieval peg tile T12 shelly mort attached	3	1480	1900	1480	1900	1600-1900	1800-1900
34	2271; 2586; 2276	Peg tile and curved tile sandy and iron oxide coarse mould sand med and early post-med possibly indistinct hard shelly mort attached T12?	8	1180	1900	1480	1900	1500-1800	1800-1900?
35	3009; 3033; 2276; 3101	Roman silty imbrex; early post-medieval brick and peg tile no mortar;	7	100	1900	1480	1900	1500-1800	No mortar
36	3033; 3046; 3101	Early post-medieval bricks and T2 brown mortar	3	1450	1700	1450	1700	1550-1700+	1450-1700+
37	3032nr3033; 3033; 3101	Early post Great Fire and early post-medieval brick; t2 brown mortar	2	1450	1725	1664	1725	1664-1750	1450-1700+
38	3032nr3033; 3101	Reused early post Great Fire brick and T3a soft clinker mortar on top of T2 mortar	2	1664	1725	1664	1725	1664-1750+	1600-1800
39	3046	Tudor/Stuart Reds; T2 brown mortar	2	1450	1700	1450	1700	1550-1750	1450-1700+
40	3032nr3033; 3101	Early post Great Fire brick and T3a soft clinker mortar T2/T9 brown sandy mortar	2	1664	1725	1664	1725	1664-1750	1450-1700+
41	3032nr3033; 3033 3101	Reused early post Great Fire and early post-medieval brick; T2 brown mortar	2	1450	1725	1664	1725	1664-1750+	1450-1700+
42	3032; 3035; 3101	Well-made frogged post Great Fire and yellow Estuarine brick T5 hard sandy	2	1664	1940	1780	1940	1850-1900	1850-1900+



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		<b>concrete mortar</b>							
44	1977; 2271; 2279; 3120	Fine mould sand sooted chimney fragment, pan tile and peg tile no mortar; machine made lithographic stone plates Cornish metamorphic material	8	1180	1900	1480	1900	1800-1900+	No mortar
45	2276; 2586; 2815; 3081; 3046; 2271; 3034R; 3115PM 3101	<b>Fragments of Roman brick; 13th century medieval floor tile; medieval and early post-medieval peg tile; early post-medieval and early post Great Fire brick; North Wales Roofing slate T2 mortar brown</b>	12	55	1900	1664	1900	1664-1900	1450-1700+ (residual)
47	3034; 3046; 3101	Fragments of early post-medieval and post Great Fire brick; T2 mortar brown	2	1450	1900	1664	1900	1664-1900	1450-1700+
49	3032nr3033; 3046; 3101	Early post-medieval and post Great Fire brick fragments T1B/T10 light earthy mortar	2	1450	1725	1664	1725	1664-1750	1600-1750
50	2276	Peg tile post-medieval undiagnostic striations	2	1480	1900	1480	1900	1500-1900	No mortar
52	2271	Fine moulded sand early post-med peg tile	1	1180	1800	1400	1800	1600-1800	No mortar
56	3120; 3115PM; 3090; 2279; 2276; 3032; 3032R; 3101	York stone paving and North Wales Slate roofing; Pan and fine peg tile narrow post Great Fire brick; T12 shelly mortar	15	1480	1900	1664	1900	1775-1900	1800-1900
57	2271; 2273; 2276; 2452; 2587; 3023; 3046; 3101	Large group of residue early sandy Roman tile, imbrex and brick with medieval peg tile some early and a small group of post-medieval peg tile and brick some reused in a lime mortar undiagnostic	20	55	1700	1450	1700	1450-1650	Early post-medieval mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
59	3107; 2271; 2276; 2586; 3046; 2452	Fragment of Reigate stone ashlar; remnants of Roman and medieval cbm mainly post-medieval peg tile and brick	27	55	1900	1480	1900	1480-1800	Indefinable mortar
71	2276	Early post-medieval peg tile	6	1480	1900	1480	1900	1480-1800+	No mortar
72	2271; 2276; 2279; 3114PM; 3108; 3032; 3033	York stone and Carrara marble paving medieval but mainly early post-medieval pan and peg tile; post-medieval and narrow post Great Fire brick	7	1180	1900	1664	1900	1775-1900	No mortar
73	2271; 2276	Early post-medieval peg tile	3	1180	1900	1480	1900	1480-1800+	No mortar
74	2586; 2276	Early post-medieval peg tile	2	1180	1900	1480	1900	1480-1800+	No mortar
86	3120; 2276; 2279	Burnt Kimmeridge shale; pan tile and fine mould sand peg tile	12	1480	1900	1480	1900	1700-1900	No mortar
88	2587; 2276; 2279	Lots of pan tile and fine post-medieval peg tile sooted	7	1480	1900	1480	1900	1700-1900	No mortar
90	2276; 3046	Fine peg tile and early post-medieval brick	2	1450	1900	1480	1900	1480-1800+	No mortar
92	2276; 3046	Early post-medieval tile and brick	12	1450	1900	1480	1900	1480-1800	No mortar
93	2271; 2273; 2276; 2587	Medieval glazed and possibly early post-med peg tile	9	1135	1900	1480	1900	1480-1600	No mortar
94	2587	Medieval peg tile unglazed	1	1240	1450	1240	1450	1240-1450+	No mortar
97	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1700	No mortar
99	2271; 2587; 2276	Mixture of med and mainly post-medieval peg tile	9	1180	1900	1480	1900	1480-1700	No mortar
105	2276	Post-medieval peg tile	1	1480	1900	1480	1900	1480-1900	No mortar
119	3261	Sanitary Ware Toilet Fitting	1	1850	1950+	1850	1950+	1880-1950+	No mortar
130	2276; 3046; 3126; 3100	Purbeck limestone paving; Early post-medieval brick and post-medieval peg tile; white wall plaster	3	400	1900	1480	1900	1600-1900	No mortar
131	2276	Post-medieval peg tile	4	1480	1900	1480	1900	1480-1900	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
136	2271; 3032	Post-medieval peg tile and post Great Fire brick	3	1180	1900	1664	1900	1700-1900	No mortar
138	3107; 2586; 2271; 3090; 2279; 2850; 3032; 3030; 3039	Reigate stone rubble pan tile; unglazed Flemish floor tile; post Great Fire brick and early post-medieval brick	35	1050	1900	1664	1900	1750-1900	No mortar
139	2271; 2276; 3090; 2279	Post-medieval peg tile and pan tile	12	1180	1900	1480	1900	1750-1900	No mortar
142	2271; 2276; 2279; 3067W	Pan tile and post-medieval peg tile Encaustic wall tile	11	1480	1950	1850	1950	1850-1900	No mortar
144	3034; 2279	Sooted pan tile and post Great Fire brick	2	1630	1900	1664	1900	1750-1900	No mortar
145	2271; 3046	Fragments of early post-medieval peg tile and brick	2	1180	1800	1180	1800	1600-1800+	No mortar
149	1977; 2279; 2271; 2276; 3046	Pan tile and post-medieval peg tile post-medieval brick and unglazed Flemish floor tile	8	1180	1900	1480	1900	1700-1900	No mortar
150	2276	Post-medieval peg tile	2	1480	1900	1480	1900	1700-1900	No mortar
161	2271; 2276; 3032	Post Great Fire brick and post-medieval peg tile all burnt/sooted	6	1180	1900	1664	1900	1700-1900	No mortar
163	2276; 3090	Post-medieval peg tile	3	1180	1900	1480	1900	1700-1900	No mortar
166	2271; 2276; 2586	Post-medieval peg tile and pan tile	4	1180	1900	1480	1900	1700-1900	No mortar
168	2276	Sooted burnt post-medieval peg tile	4	1480	1900	1480	1900	1700-1900	No mortar
170	2271; 2276; 3032; 3101; 3120	Post-medieval peg tile and narrow post Great Fire brick; hard lime shelly mortar type B ; possible Bargate Stone	8	50	1900	1664	1900	1770-1900	1750-1900
172	2276	Post-medieval peg tile	2	1480	1900	1480	1900	1700-1900	No mortar
174	2276; 2279	Burnt/sooted post-medieval peg tile and pan tile	3	1480	1900	1480	1900	1750-1900	No mortar
175	2276	Post-medieval peg tile burnt	2	1480	1900	1480	1900	1700-1900	No mortar
177	2271	Abraded medieval peg tile	1	1180	1800	1180	1800	1400-1700+	No mortar
185	2271; 2276; 3101	Post-medieval peg tile and Type B shelly	3	1180	1900	1480	1900	1600-1900	1750-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		mortar							
186	2271; 2587	Glazed and unglazed medieval peg tile	5	1180	1800	1180	1800	1240-1450+	No mortar
187	2271	Unglazed medieval peg tile coarse mould sand	2	1180	1800	1180	1800	1400-1700+	No mortar
189	2271; 2587; 2276; 3101	Medieval and early post-medieval peg tile; lime mortar	7	1180	1900	1480	1900	1480-1700+	1500-1800
<b>202</b>	<b>3032nr3033; 3101</b>	<b>Reused early post Great Fire brick and soft T3a mortar</b>	<b>1</b>	<b>1664</b>	<b>1725</b>	<b>1664</b>	<b>1725</b>	<b>1664-1750</b>	<b>1600-1800</b>
<b>203</b>	<b>3046; 3101</b>	<b>Reused early post-medieval red brick soft T3a mortar</b>	<b>1</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1550-1700</b>	<b>1600-1800</b>
<b>204</b>	<b>3032nr3033; 3101</b>	<b>Reused early post Great Fire brick and soft T3a mortar on top of earlier T2 brown sandy mortar</b>	<b>1</b>	<b>1664</b>	<b>1725</b>	<b>1664</b>	<b>1725</b>	<b>1664-1750</b>	<b>1600-1800</b>
205	2276; 2586; 3101	Very thick post-medieval late medieval peg tile and smear of lime mortar	7	1180	1900	1480	1900	1480-1800	1500-1800
208	2271; 2276	Late medieval early post-medieval peg tile coarse mould sand	3	1180	1900	1480	1900	1480-1800	No mortar
209	2276; 3102; 2459a; 2586	Medieval early post-medieval peg tile, daub and abraded Roman brick	10	1500bc	1900	1480	1900	1480-1600+	No mortar
210	2271; 2276; 3046; 2587; 2459a; 2850; 3101	Mixture of Roman Imbrex, medieval and post-medieval glazed and unglazed peg tile; post-medieval brick and glazed Flemish floor tile; undiagnostic	19	50	1900	1480	1900	1480-1700	Unknown
214	2271; 2587	Medieval peg tile	2	1180	1800	1180	1800	1240-1600+	No mortar
216	2452; 2459a; 2271; 2273; 2587; 2276; 3030; 3046; 3205	Roman tile and brick; medieval and early post-medieval brick and peg tile including Wealden	59	50	1900	1480	1900	1480-1600	No mortar
218	2271	Late medieval early post-medieval peg tile no glaze	2	1180	1800	1180	1800	1400-1700	No mortar
228	2587	Medieval peg tile no glaze	1	1240	1450	1240	1450	1240-1450+	No mortar
235	2271	Medieval peg tile splash glaze	1	1180	1800	1180	1800	1180-1450+	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
237	2271	Medieval peg tile no glaze	2	1180	1800	1180	1800	1180-1600+	No mortar
239	2271; 2587	Medieval peg tile no glaze	2	1180	1800	1180	1800	1240-1450+	No mortar
241	2271	Medieval peg tile some glazed	14	1180	1800	1180	1800	1180-1450+	No mortar
243	2271; 2586; 2587	Medieval peg tile some glazed	24	1180	1800	1180	1800	1240-1450+	No mortar
<b>244</b>	<b>2271; 2272; 2587; 3101</b>	<b>Massive group of medieval tile many glazed and a T7 low density mortar</b>	<b>147</b>	<b>1135</b>	<b>1800</b>	<b>1180</b>	<b>1800</b>	<b>1240-1600</b>	<b>1300-1650</b>
246	2271; 2587; 3028	Glazed medieval peg tile and silty tegula	8	60	1800	1180	1800	1240-1600	No mortar
<b>247</b>	<b>3046; 3032nr3033; 3101 (2 mortars)</b>	<b>Fresh and reused early post Great Fire bricks and early post-medieval reds T10 overlain by T2</b>	<b>4</b>	<b>1450</b>	<b>1725</b>	<b>1664</b>	<b>1725</b>	<b>1664-1725</b>	<b>1600-1700+</b>
251	2279; 2586; 2276; 3101	Post-medieval peg and pan tile C clinker mortar	9	1480	1900	1480	1900	1700-1900	1750-1900
255	2271	Early post-medieval peg tile fine mould sand	1	1180	1800	1180	1800	1400-1800	No mortar
<b>258</b>	<b>3033nr3034; 3032nr3033 3101</b>	<b>Reused intermediate and early post Great Fire bricks T10 mortar / T3a</b>	<b>2</b>	<b>1664</b>	<b>1725</b>	<b>1664</b>	<b>1725</b>	<b>1664-1725</b>	<b>1600-1750</b>
259	2276; 2279; 3101	Post-medieval peg tile and pan tile; Type C clinker mortar	2	1480	1900	1480	1900	1630-1900	1750-1900
260	2276; 3090	Pan tile soot and peg tile not paint on pan tile	4	1480	1900	1480	1900	1730-1800+	No mortar
261	2271; 2276; 2279; 3101	Pan tile; sooted post-medieval peg tile and type C clinker mortar	7	1480	1900	1480	1900	1630-1800+	1750-1900
<b>264</b>	<b>3032; 3033; 3101</b>	<b>Reused post Great Fire Brick; early post-medieval brick; soft T3a mortar</b>	<b>2</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1900+</b>	<b>1600-1800+</b>
267	2271; 2279; 3108	Fresh pan tile and post-medieval peg tile; York stone paving	5	1180	1950	1700	1950	1750-1900	No mortar
268	2279	Fresh pan tile	1	1630	1850	1630	1850	1750-1850	No mortar
270	2271; 2276; 2586; 3032	Post-medieval peg tile; pan tile and post Great Fire brick	6	1180	1900	1664	1900	1750-1900	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
273	2279	Pan tile fresh	2	1630	1850	1630	1850	1750-1850+	No mortar
275	2271; 3090; 2279; 3101	Sooty pan tile; Type C clinker mortar	3	1630	1850	1630	1850	1750-1850	1750-1900
<b>276</b>	<b>3033; 3101</b>	<b>Reused early post-medieval red t10 overlain by T2</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700+</b>	<b>1600-1750</b>
278	2271; 2276	Post-medieval peg tile kiln material evidence for glazing	3	1180	1900	1480	1900	1500-1800	No mortar
280	2276; 2279; 2850	Fresh and sooted pan tile and post-medieval peg tile unglazed Flemish floor tile	13	1480	1900	1480	1900	1750-1900	No mortar
<b>283</b>	<b>3046; 3101 (2 mortars)</b>	<b>Reused Stuart red brick reused T10 mortar gravelly grey overlain by T2 sandy brown mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1600-1700+</b>	<b>1600-1750+</b>
289	2586	Pan tile	1	1630	1800	1630	1800	1700-1850	No mortar
<b>293</b>	<b>2892</b>	<b>Whole medieval probably Westminster patterned floor tile no mortar</b>	<b>1</b>	<b>1225</b>	<b>1275</b>	<b>1225</b>	<b>1275</b>	<b>1225-1275+</b>	<b>No mortar</b>
<b>294</b>	<b>2276; 3101; 3033</b>	<b>Early post-medieval peg tile white lime mortar and early post-medieval red reused in T3a</b>	<b>3</b>	<b>1450</b>	<b>1900</b>	<b>1480</b>	<b>1900</b>	<b>1480-1700</b>	<b>1600-1800</b>
<b>295</b>	<b>2276; 3032nr3033; 3032; 3101</b>	<b>Reused early post-medieval peg tile; Fresh post Great Fire narrow unfrogged and reused early post Great Fire intermediate T3 classic grey clinker mortar overlies T2 sandy lime</b>	<b>3</b>	<b>1480</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1850</b>	<b>1750-1900</b>
300	3046; 3101	Reused post-medieval brick; T1 hard mortar	1	1450	1700	1450	1700	1600-1700+	1750-1900
<b>301</b>	<b>3032R; 3046; 3101</b>	<b>Reused proto post Great Fire brick and early post-medieval brick; T1 hard mortar</b>	<b>3</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1800+</b>	<b>1750-1900</b>
<b>307</b>	<b>3046; 3101</b>	<b>Reused early post-medieval brick T1 hard mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700+</b>	<b>1750-1900</b>
<b>317</b>	<b>3033; 3042;</b>	<b>Medieval and early</b>	<b>3</b>	<b>1400</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-</b>	<b>1300-1600</b>

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	<b>3046</b>	<b>post-medieval brick sunken margin T7 soft grey low density mortar</b>						<b>1600</b>	
<b>318</b>	<b>3033; 3101</b>	<b>Very early thin post-medieval bricks with finger marks T7 soft grey low density mortar</b>	<b>5</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1600</b>	<b>1300-1600</b>
321	2271; 2587	Medieval early post-medieval peg tile	2	1180	1800	1180	1800	1400-1700	No mortar
322	2587	Medieval peg tile	1	1240	1450	1240	1450	1240-1450+	No Mortar
324	2271; 2276	Medieval and early post-medieval peg tile	3	1180	1900	1480	1900	1480-1700+	No mortar
326	2271; 2587; 2276	Medieval and early post-medieval peg tile no glaze	5	1180	1900	1480	1900	1480-1700+	No mortar
328	2271; 2587; 3101	Medieval peg tile unglazed; Type 7 mortar /Type D	9	1180	1800	1180	1800	1240-1450+	1300-1650
335	2271; 2587; 2452	Roman brick; medieval peg tile	7	55	1800	1180	1800	1240-1450+	No mortar
339	Wealden, 2271; 2271nr2276; 2587	Medieval peg tile unglazed	31	1180	1800	1180	1800	1240-1450+	No mortar
341	2271nr2276	Medieval peg tile	1	1180	1800	1180	1800	1180-1600	No mortar
347	2271; 2276; 3033	Medieval and early post-medieval peg tile and brick	5	1180	1900	1480	1900	1480-1600+	No mortar
348	2271; 2276; 3030; 3046; 3101;	Medieval and early post-medieval peg tile; late medieval to early post-medieval brick; T7 Type D mortar	19	1180	1900	1480	1900	1480-1600+	1300-1650
350	2271; 3030nr3046; 3120	Medieval peg tile unglazed 3030nr3046; burnt kimmeridge shale	3	1180	1800	1500	1800	1400-1660+	No mortar
353	2271; 2276; 3030; 2459a; 3101	Medieval to early post-medieval peg tile; late med to early post-med brick Roman tile; Type 7 mortar	7	1180	1900	1480	1900	1400-1660+	1300-1650
355	2271; 2587	Medieval peg tile	2	1180	1800	1180	1800	1240-1450+	No mortar
358	3033	Shallow early post-medieval brick reused	1	1450	1700	1450	1700	1450-1600+	Unknown mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
359	3033; 2271; 2276; 2587	Medieval glaze and early post-medieval peg tile; early post-medieval brick	58	1180	1900	1480	1900	1480-1600+	No mortar
361	2452; 2271; 2272	Abraded Roman tile early medieval bat and flange peg tile	4	55	1800	1180	1800	1180-1400	No mortar
362	2271; 2587; 2452	Roman imbrex medieval unglazed peg tile	13	55	1800	1180	1800	1180-1600	No mortar
363	2271; 2587	Medieval peg and curved tile	21	1180	1800	1180	1800	1240-1450+	No mortar
365	3122	Fragment of Septarian nodule	1	50	400	50	400	50-400+	No mortar
366	2271; 2276; 3046; 2452; 3101	Roman tile medieval and early post-medieval peg tile and early post-medieval brick; T10/E mortar	13	55	1900	1480	1900	1480-1800	1500-1800
<b>377</b>	<b>3135; 3120; 3107; 3117</b>	<b>Granite setts and Basalt cobbles; Reigate ashlar and Flint nodules</b>	<b>5</b>	<b>50BC</b>	<b>1950</b>	<b>1800</b>	<b>1950</b>	<b>1800-1950</b>	<b>No mortar</b>
382	3261; 2271; 2276; 2279; 3090	Pan tile; Victorian drain pipe; peg tile	13	1180	1950	1850	1950	1850-1950	No mortar
<b>383</b>	<b>3032; 3101</b>	<b>Frogged narrow post Great Fire brick soft Roman mortar T6</b>	<b>2</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1850-1900</b>	<b>1850-1950</b>
384	2271; 2276	Post-medieval peg tile	3	1180	1900	1480	1900	1700-1900	No mortar
388	3115PM; 2279; 3032; 2271; 3101	North Wales Slate roof; post Great Fire brick; pan tile and post-medieval peg tile; Type B/ 12 hard shelly mortar	6	1050	1950	1050	1950	1800-1900	1750-1900
406	2271; 2276; 2587; 3046	Medieval to early post-medieval peg tile; Voussoir red brick	6	1180	1900	1480	1900	1480-1700+	No mortar
407	2271; 2276	Early post-medieval peg tile	3	1180	1900	1480	1900	1480-1700+	No mortar
415	2271; 2587; 2279	Medieval and post-medieval peg tile and pan tile	5	1180	1900	1480	1900	1630-1850	No mortar
<b>416</b>	<b>3033; 3046; 3101; 3135; 3105; 3126; 3120</b>	<b>Early post-medieval brick soft t3 light grey mortar; Granite cobbles, Kent ragstone, Purbeck limestone, Granite, York stone</b>	<b>2</b>	<b>50</b>	<b>1950</b>	<b>1700</b>	<b>1950</b>	<b>1700-1900</b>	<b>1600-1800+</b>



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
417	2276	Post-medieval peg tile	3	1480	1900	1480	1900	1480-1800	No mortar
420	2271; 2586; 2276; 2279	Pan tile and post-medieval peg tile	9	1180	1900	1480	1900	1700-1900	No mortar
421	2276; 2586	Post-medieval peg tile	4	1180	1900	1480	1900	1600-1800+	No mortar
422	2271; 2586; 3046; 3034; 3032R	Slag attached to numerous post-medieval peg tile 2586 and what appear to be wide proto post Great Fire bricks	36	1180	1900	1664	1900	1664-1750+	No mortar
423	2271; 2276; 310; 31001	Burnt thick early and later post-medieval peg tile; brown/red plaster	9	1180	1900	1480	1900	1480-1800	No mortar
425	2276	Post-medieval peg tile	3	1480	1900	1480	1900	1480-1800	No mortar
426	2271; 2276; 3120	Medieval and burnt post-medieval peg tile; Kimmeridge Oil Shale	9	1180	1900	1480	1900	1600-1800	No mortar
427	2276; 2279	Post-medieval peg and pan tile fresh	4	1480	1900	1480	1900	1630-1850	No mortar
429	2276; 3120	Early post-medieval peg tile; burnt Kimmeridge Shale	2	1480	1900	1480	1900	1600-1800	No mortar
436	2271; 2587; 3046	Medieval and early post-medieval peg tile and post-med brick	6	1180	1800	1180	1800	1500-1800	No mortar
<b>437</b>	<b>3033; 3065; 3101</b>	<b>Early post-medieval brick soft T3a grey mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700+</b>	<b>1600-1800</b>
440	2276; 3033	Crinkly early post-med brick and peg tile	4	1450	1900	1480	1900	1480-1700+	No mortar
443	2271; 2276; 2587	Medieval and early post-medieval peg tile	4	1180	1900	1480	1900	1480-1700+	No mortar
445	2276	Early post-med peg tile	3	1480	1900	1480	1900	1480-1700+	No mortar
447	2276; 3046; 3120	Early post-med peg tile and brick; Kimmeridge Oil Shale	5	1450	1900	1480	1900	1600-1800	No mortar
448	2271; 2276	Med to early post-medieval peg tile	11	1180	1900	1480	1900	1480-1700+	No mortar
449	2276; 2850; 3030nr3065; 3031nr3043; 3046	Large group of late medieval to early post-medieval brick inc voussoir; early post-medieval peg	16	1350	1900	1480	1900	1480-1700	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		tile and glazed Flemish floor tile							
450	2452; 2276	Reused Roman tile and post-medieval peg tile	2	55	1900	1480	1900	1480-1700	No mortar
455	2271; 2276	Medieval to post-medieval peg tile	3	1180	1900	1480	1900	1480-1700	No mortar
456	2587	Medieval peg tile	1	1240	1450	1240	1450	1240-1450+	No mortar
458	3105	Kentish ragstone rubble	4	50	1600	50	1600	50-1600	No mortar
459	3030nr3065; 2271; 2276; 2586; 3126;	Late medieval to early post-medieval brick medieval to post-medieval peg tile; Shelly Purbeck limestone slab;	18	50	1900	1480	1900	1600-1800	No mortar
460	2271	Mainly abraded medieval peg tile	3	1180	1800	1180	1800	1300-1600	No mortar
461	2271	Medieval early post-medieval peg tile slag attached	5	1180	1800	1180	1800	1400-1700	No mortar
462	2271; 3120	Medieval early post-medieval peg tile; burnt Kimmeridge Oil Shale	5	1180	1800	1600	1800	1600-1700	No mortar
463	2271; 2276; 3033; 3101	Medieval to early post-medieval peg tile early post-med brick; Type D/7 mortar	13	1180	1900	1480	1900	1480-1700	1300-1650
464	2271	Medieval early post-medieval peg tile	5	1180	1800	1180	1800	1400-1700	No mortar
468	2459a; 2276; 3101	Roman tile and early post-med peg tile; lime mortar	2	40	1900	1480	1900	1480-1700	Unknown mortar
469	3031nr3043; 3039; 3046; 3101	Late medieval to early post-medieval brick like 449 one with edge; T7 mortar tuffaceous	5	1350	1700	1450	1700	1450-1600+	1300-1600
472	2276; 2850	Post-medieval peg tile and unglazed Flemish Floor tile	5	1450	1900	1480	1900	1600-1800	No mortar
473	2276; 2586; 3120	Medieval to early post-medieval peg tile; burnt Kimmeridge Oil Shale	6	1180	1900	1480	1900	1600-1800	No mortar
475	2276; 2586	Medieval to early post-medieval peg tile	3	1180	1900	1480	1900	1480-1700	No mortar
476	2271; 2276; 3114PM	Medieval to early post-medieval peg	9	1180	1900	1480	1900	1700-1900	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		tile; burnt Saccharoidal marble slab							
478	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1800	No mortar
479	2271; 2271nr2276; 2276; 3039; 2452; 3027	Roman imbrex and late Roman tegula; glazed and unglazed medieval peg tile post-med peg tile and brick	21	55	1900	1480	1900	1480-1600+	No mortar
480	2271; 2276; 3031nr3043; 3030nr3065; 3039; 3046	Big group of late medieval early post-medieval bricks like 449 and 469 early post-medieval peg tile	13	1180	1900	1480	1900	1480-1600+	No mortar
481	2276; 3039; 3046	Early post-medieval peg tile and red and mottled brick	6	1450	1900	1480	1900	1480-1650+	No mortar
482	2271nr2276; 3030nr3065	Late medieval early post-medieval brick and peg tile	2	1180	1800	1180	1800	1450-1600	No mortar
486	2276; 3030mr3065; 3046; 3039; 3031nr3046	Late medieval to early post-medieval brick 1 domed crinkley and peg tile	13	1350	1900	1480	1900	1480-1600+	No mortar
487	2276; 3030nr3065; 301nr3043; 3101	Late medieval to early post-medieval brick/kiln furniture and peg tile; earthy grey mortar T10	5	1350	1900	1480	1900	1480-1600+	1600-1750
488	2586; 2276	Early post-medieval peg tile	7	1180	1900	1480	1900	1480-1700	No mortar
489	2276; 3120	Early post-medieval peg tile ; Burnt Oil Shale	18	1480	1900	1480	1900	1480-1700	No mortar
491	2276; 3039; 3101	Wedge shaped mottled brick; peg tile post-medieval grey mortar T10	5	1450	1900	1480	1900	1480-1700	1600-1750
492	2271; 2276; 3030; 3101	Late medieval early post-medieval peg tile and circular brick possibly kiln furniture copper residue; T10 grey earthy mortar	5	1180	1900	1480	1900	1480-1700	1600-1750
493	3031nr3043; 3046; 2276; 2586; 2271; 1977	Burnt domed circular brick kiln yellow; red brick post-medieval peg tile early post-medieval and Flemish floor tile unglazed	11	1180	1900	1480	1900	1480-1800	No mortar
494	3030nr3065;	Huge group of late	20	1180	1900	1480	1900	1480-	1600-1750

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	3033; 3039; 3046; 1678; 1977; 2324; 2271; 2276; 3101	medieval early post-medieval peg tile and brick, glazed voussoir, domed, flanged glazed Flemish calc; Penn tile and Flemish silt floor tile; T10 mortar						1700	
495	2586; 2276	Residue on late med to early post-med peg tile	3	1180	1900	1480	1900	1480-1700	No mortar
497	2271; 2276; 3030nr3065; 3046	Residue on late med to early post-med peg tile	7	1180	1900	1480	1900	1480-1700	No mortar
499	2271; 2273; 2276; 1678	Flemish Calc floor tile; early-late glazed medieval peg tile and post-medieval peg tile	4	1135	1900	1480	1900	1480-1600	No mortar
500	2271; 2276; 2587; 3042; 3046; 2850; 3101	Late medieval to early post-medieval peg tile; brick and glazed Flemish floor tile; Type 7 mortar	21	1180	1900	1480	1900	1480-1700	1300-1650
501	2271; 2586	Late medieval to early post-medieval peg tile	3	1180	1800	1180	1800	1300-1700	No mortar
504	3122; 3105; 2271; 2276; 3046; 303nr3065; 3101	Septarian nodule and Kentish ragstone fragment; medieval to early post-medieval peg tile and brick residue attached T7 mortar	22	50	1900	1480	1900	1480-1700	1300-1650
505	2271; 2276; 2586; 2587	Mixture of medieval and early post-medieval peg tile	7	1180	1900	1490	1900	1480-1800	No mortar
506	2587; 2276; 3033; 3046	Mixture of medieval and mainly early post-medieval peg tile and crinkly brick	18	1240	1900	1480	1900	1500-1800	No mortar
507	2276; 3030nr3065	Post-medieval peg tile and late medieval to early post-medieval brick	2	1400	1900	1480	1900	1480-1700	No mortar
509	2586	Early post-medieval peg tile	3	1180	1800	1180	1800	1500-1800	No mortar
511	3032R; 3101; 3105	Post Great Fire frogged brick; hard Type 1 mortar; Kentish ragstone paver Type T3	2	1664	1900	1664	1900	1850-1900	1750-1900
512	3032R; 3101;	Post Great Fire frogged brick; hard Type 1	1	50	1900	1664	1900	1850-1900	1750-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
513	2850	Unglazed Flemish silt floor tile or possibly glazed	1	1450	1850	1600	1850	1700-1850	
514	3108; 3032	York stone paving slab; thick post Great Fire brick	3	1664	1900	1664	1900	1750-1900	No mortar
522	2271; 2276; 2586; 2850; 3101	Post-medieval peg tile and Flemish floor tile silt; hard shelly clinker mortar T3	8	1180	1900	1480	1900	1700-1850	1750-1900
<b>525</b>	<b>3105; 3107</b>	<b>Large Kentish ragstone paving slab and reused Reigate stone door fragment no mortar</b>	<b>2</b>	<b>50</b>	<b>1660</b>	<b>1060</b>	<b>1660</b>	<b>1300-1800+</b>	<b>No mortar</b>
534	2271	Medieval and early post-medieval peg tile unglazed	5	1180	1800	1180	1800	1400-1700	No mortar
535	2271; 2276; 2586; 2587; 3039; 3101	Medieval glazed and post-medieval unglazed peg tile and brick lime mortar	11	1180	1900	1480	1900	1480-1700	Unknown mortar
537	2271; 2276; 2586; 2587; 1678; 3046; 2850; 3031; 3046; 3101; 2279	Medieval glazed and early post-medieval peg tile and brick, Glazed Calc Flemish tile and Silt tile floor; lime mortar; pan tile? 1 frag	29	1180	1900	1480	1900	1630-1750	Unknown mortar
538	2586; 2276	Early post-medieval peg tile	4	1180	1900	1480	1900	1480-1700	No mortar
539	2271; 2276; 2587; 2452; 2459a; 3009; 3013; 3023;	Reused Roman tegula, brick with teg mammata including late calc; medieval to early post-medieval peg tile	14	50	1900	1480	1900	1480-1600	No mortar
541	2452; 2271; 2276; 2586; 3030; 3046	Roman tile; medieval to early post-medieval peg tile and brick	12	55	1900	1480	1900	1480-1600	No mortar
548	1810; 1811; 3076; 2191; 2271; 2276; 2586; 2587; 3030; 3046; 3101	Huge group of medieval peg tile, curved tile and Penn; Flemish Calc Floor tile; late medieval to early post-medieval brick sunken margin and peg tile; residual lime mortar	84	1190	1900	1480	1900	1480-1700	Unknown mortar
553	2586; 2587; 3030; 2276	Late medieval to early post-medieval brick and peg tile	8	1180	1900	1480	1900	1480-1700	No mortar
557	2271; 2276;	Late medieval to	13	1180	1900	1480	1800	1480-	Unknown

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	1678; 3030; 3101	early post-medieval brick; Flemish calc floor tile and late med to early post-med peg tile; smear lime mortar						1700	mortar
560	2271; 2586; 3101	Smear lime mortar late medieval to early post-medieval peg tile	7	1180	1800	1180	1800	1400-1800	Unknown mortar
562	2271; 2586; 1678; 3046	Early post-medieval brick; Flemish calc floor tile quite a lot of medieval glazed peg tile	26	1180	1800	1180	1800	1450-1600+	No mortar
564	2459a; 2271; 3046	Roman tegula; medieval unglazed peg tile and early post-med brick	4	50	1800	1180	1800	1450-1600+	No mortar
566	1678; 2850; 3063; 2271; 2276; 2586; 2587; 3030; 3101	Glazed Flemish calc and silty floor tile; late medieval and early post-medieval peg tile and brick smear white lime mortar	29	1180	1900	1480	1900	1480-1700	Unknown mortar
577	2273; 2276; 2587; 3101	Early medieval glazed peg tile and early post-medieval peg tile; lime mortar	3	1135	1900	1480	1900	1480-1600+	Unknown mortar
579	3076; Chertsey; 3101	Decorated Chertsey Floor tile and fragment Penn Tile; White lime mortar	2	1250	1450	1250	1450	1300-1450+	Unknown mortar
581	2271; 2276	Medieval splash to early post-medieval peg tile one antefix	6	1180	1900	1480	1900	1480-1600	No mortar
582	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1700	No mortar
585	2271	Unglazed thin medieval peg tile	1	1180	1800	1180	1800	1180-1600	No mortar
587	2271; 2586; 2276; 2850; 3101	Glazed Flemish floor tile; medieval to early post-medieval peg tile; D T7 mortar	9	1180	1900	1480	1900	1480-1700	1300-1650
594	1810; 2271; 2276; 3033; 3101	Penn Tile; medieval to early post-medieval peg tile and brick with sunken margin D T7 mortar	16	1180	1900	1480	1900	1480-1700	1300-1650
595	3031; 1678; 3046; 2271; 2276; 3101	White late medieval brick and Flemish calc floor tile; sunken margin early post-medieval and medieval peg tile	9	1180	1900	1480	1900	1480-1550+	Unknown mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		smear lime mortar							
597	2586; 2271; 2276	Medieval to early post-medieval peg tile	5	1180	1900	1480	1900	1480-1700+	No mortar
599	2276; 3033; 3042; 3033; 3101	Group of late medieval to early post-medieval brick and peg tile; white lime mortar	7	1400	1900	1480	1900	1480-1700	Unknown mortar
600	2271; 2276; 3033; 3101; 3119	Early post-medieval brick, peg tile; white lime mortar; medieval decorative Caen stone	12	1060	1900	1480	1900	1480-1700	Unknown mortar
602	2279	Pan tile	2	1630	1850	1630	1850	1630-1850	No mortar
606	2459b	Imbrex late Roman	1	120	250	120	250	120-250+	No mortar
608	2587	Medieval peg tile	2	1240	1450	1240	1450	1240-1450+	No mortar
610	2276; 3101	Early post-medieval peg tile; white lime mortar	2	1480	1900	1480	1900	1480-1700	Unknown mortar
612	2271; 2276	Some med and early post-med peg tile	7	1180	1900	1480	1900	1480-1700	No mortar
614	2271; 2273; 2587	Early medieval peg tile most glazed	13	1135	1800	1180	1800	1240-1450	No mortar
616	2271; 2587; 3033; 3030; 3101	Reused peg tile in Type 7/D mortar and early post-medieval brick	10	1180	1800	1180	1800	1450-1660	1300-1650
651	2271; 2276; 2586	Late medieval to early post-medieval peg tile	4	1180	1900	1480	1900	1480-1700	No mortar
660	2586; 2276; 3101	Late medieval to early post-medieval peg tile; white lime mortar	5	1180	1900	1480	1900	1480-1700	Unknown mortar
670	2271; 3101	Sandwiched course of peg tile T7/D mortar	4	1180	1800	1180	1800	1180-1600	1300-1650
671	2271; 3101	Sandwiched course of peg tile T7/D mortar – hexagonal holes	5	1180	1800	1180	1800	1180-1600	1300-1650
672	2271; 3101	Peg tile lime mortar	1	1180	1800	1180	1800	1180-1600	Unknown mortar
673	2271; 3101	Sandwiched course of peg tile T7/D mortar	6	1180	1800	1180	1800	1180-1600	1300-1650
674	2271; 3046; 1810; 1678; 3042; 3101; 3105	Peg tile medieval; Penn tile and Calc Flemish floor tile; early crinkly post-	13	50	1800	1180	1800	1450-1700	1300-1650

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		medieval bricks T7/D mortar; Kentish ragstone rubble							
675	2276; 2894	Decorated Penn tile and early post-medieval peg tile	2	1330	1900	1480	1900	1480-1700	No mortar
676	2271; 3031; 3101	Late medieval white brick and medieval peg tile thick; T7 d mortar	6	1180	1800	1180	1800	1350-1700	1300-1650
677	2271; 2276; 2894; 3031; 3101	Late medieval white brick; Decorated Westminster Floor Tile and late medieval and early post-medieval peg tile T7 D mortar	12	1180	1900	1480	1900	1480-1700	1300-1650
701	3032; 3047; 3101	Thin post Great Fire Brick and later post-medieval red paver; classic T3 clinker hard mortar	3	1664	1900	1690	1900	1780-1900	1750-1900
704	3046; 3101; 3032R	Reused red Stuart brick; Type H; 12 shelly gravel mortar; fresh well-made narrow post Great Fire brick Type 3 grey clinker mortar	2	1450	1900	1664	1900	1780-1900	1780-1900
705	1977; 2276; 2279; 3101; 3105; 3107; 3032R; 3033; 3046; 3032; 3135; 3108; 3105; 3117; 3116	Unglazed Flemish floor tile; pan tile and post-medieval peg tile Type H; 12 shelly gravel mortar; reused Reigate stone moulding and Kentish ragstone rubble mixture of reused broken up early post-medieval; Stuart reds and post Great Fire bricks in Type 3a classic grey clinker mortar; Granite York stone, Kentish ragstone, Flint cobbles; Chalk lump	19	50BC	1950	1800	1950	1800-1900	1780-1900
706	3039; 3046; 3101	Reused early post-medieval wide Tudor reds in Type 3a (hard concretionary pale	4	1450	1700	1450	1700	1600-1700+	1600-1800



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		grey clinker)							
707	2279	Fresh pan tile no mortar	2	1630	1850	1630	1850	1700-1850	No mortar
711	3033; 3039; 3101	Reused early post-medieval very shallow (Late Med/Tudor) and later Stuart type brick in Type 3 classic grey clinker mortar	2	1450	1700	1450	1700	1600-1700+	1750-1900
714	3032R; 3033; 3101	Reused narrow post Great Fire and early post-medieval red brick with a very thick coating Type 3 clinker grey classic	2	1450	1900	1664	1900	1780-1900	1750-1900
715	2271; 3101	Pan tile reused in coarse hard gravel mortar type H	1	1630	1800	1630	1800	1630-1800	1850-1950
717	3046; 3033; 3101	Reused very early post-medieval red brick (thickness 47mm) and Stuart brick with a thick coating of Type3 (hard concretionary pale grey clinker	2	1450	1700	1450	1700	1600-1700+	1750-1900
718	2276; 3101	Late post-medieval peg tile reused in hard gravel mortar type H	1	1480	1900	1480	1900	1700-1900	1850-1950
719	3033; 3101 (possibly 2 mortars)	Thin early post-medieval red bricks sunken margins in a hard gravelly T10 mortar overprinted by Type 3a (grey clinker mortar)?	2	1450	1700	1450	1700	1600-1700+	1600-1800
723	2276; 2279; 3101	Post-medieval peg tile and pan tile gravel mortar type H reused	3	1480	1900	1480	1900	1700-1900	1850-1950
725	2587; 2276	Abraded medieval peg tile and post-medieval peg tile residue	3	1240	1900	1480	1900	1480-1800	No mortar
726	2271	Reused peg tile medieval early post-med residue	1	1180	1800	11180	1800	1400-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
728	2276	Post-medieval peg tile	2	1480	1900	1480	1900	1600-1800	No mortar
731	3042	Late medieval early post-medieval brick	1	1400	1900	1400	1900	1400-1700	No mortar
736	2452; 2271; 2276; 3046; 3101	Early post-medieval brick; Roman imbrex and early post-medieval peg tile; lime mortar	13	55	1900	1480	1900	1480-1700	Unknown mortar
737	3120; 2271; 2276; 3030	Burnt Kimmeridge Shale; Late medieval to early post-medieval brick late medieval to early post-medieval peg tile vitrified	7	1180	1900	1480	1900	1600-1800	No mortar
738	3101	Type 7 tuffaceous mortar	1	-	-	-	-	--	1300-1600+
741	2271; 3101	Reused medieval peg tile lime mortar	1	1180	1800	1180	1800	1300-1700	Unknown mortar
742	3101	Type 7 tuffaceous mortar	1						1300-1600+
743	3030nr3065; 3046; 3101	Late medieval to early post-medieval brick sunken margins; Type 7 tuffaceous mortar	5	1400	1700	1450	1700	1450-1700	1300-1600
744	3101	Tuffaceous mortar T7	2						1300-1600
745	2276; 3101	Tuffaceous mortar T7 on early post-medieval peg tile	3	1480	1900	1480	1900	1480-1800	1300-1600
746	3101	Type 7 tuffaceous mortar	1						1300-1600
747	2271; 2276	Early post-medieval curved and peg tile	10	1180	1900	1480	1900	1480-700	No mortar
748	3106; 1678; 2271; 2276; 2587; 2850; 3033	Hassock stone rubble; early post-medieval brick; Flemish calc and Flemish silt glazed floor tile; late medieval to early post-medieval peg tile	20	50	1660	50	1660	1000-1660+	No mortar
749	2276; 3046	Lots of crinkly red brick and early post-medieval peg tile	21	1450	1900	1480	1900	1480-1700	No mortar
750	3034; 3101 (possibly 2 mortars)	Wide post Great Fire bricks with T1 mortar overprinted by T12 hard shelly mortar	2	1664	1900	1664	1900	1664-1800	1780-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
751	3033; 3046; 3101	Early post-medieval wide Tudor red and Stuart red with sunken margin fine variant of T10	2	1450	1700	1450	1700	1450-1700+	1600-1750
752	3105; 2276	Kentish ragstone rubble; early post-medieval peg tile	3	50	1900	1480	1900	1480-1700	No mortar
753	3105; 3107; 2586; 3046; 2276	Kentish ragstone rubble and Reigate stone rubble; early post-medieval brick and peg tile	8	50	1900	1480	1900	1480-1700	No mortar
755	3032; 3034; 3101	Thin unfrogged post Great Fire brick; T3 clinker hard mortar similar to 701	2	1664	1900	1664	1900	1780-1900	1750-1900
756	2586	Late medieval Early post-medieval peg tile	1	1180	1800	1180	1800	1300-1700	No mortar
757	3105	Kentish ragstone rubble	3	50	1660	50	1660	50-1660+	No mortar
759	3031; 3046; 3105	Medieval yellow Flanders tile/kiln and very early post-medieval brick no mortar; Kentish ragstone rubble	3	50	1700	1450	1700	1450-1650	No mortar
760	2271; 2276; 3030; 3036; 3046	Late medieval early post-medieval peg tile; Dutch paving brick late medieval to early post-medieval brick glazing	6	1180	1900	1480	1900	1600-1800	No mortar
762	3120; 2276; 3033; 3106	Norwegian ragstone hone; Early post-medieval brick and peg tile; Hassock stone paver	10	50	1900	1480	1900	1480-1700	No mortar
763	2271; 2276; 3046; 3101	Early post-medieval peg tile and brick glazed medieval curved tile; white lime mortar	8	1180	1900	1480	1900	1480-1700	Unknown mortar
764	3107; 2276; 3033; 3101	Reigate stone mould and rubble – early post-medieval peg tile and brick; lime mortar	9	1060	1900	1480	1900	1480-1700	Unknown mortar
766	2276	Peg tile early post-	2	1480	1900	1480	1900	1480-	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		medieval						1800	
767	2452; 2276; 3030	Roman brick early post-medieval peg tile and brick	8	55	1900	1480	1900	1480-1700	No mortar
774	2273	Early medieval peg tile	1	1135	1220	1135	1220	1135-1220+	No mortar
775	3105; 2271; 2276; 3033; 3046; 3042; 3101	Kentish ragstone rubble; late medieval to early post-medieval peg tile and brick; lime mortar	30	50	1900	1480	1900	1480-1700	Unknown mortar
780	2276; 2279; 3046; 3101	Pan tile and peg tile early post-medieval brick; lime mortar	3	1450	1900	1480	1900	1630-1850	Residual unknown mortar
781	3032; 3101	Post Great Fire brick chunk gravel mortar H	1	1664	1900	1664	1900	1700-1900	1850-1950
782	2271; 2276; 2279; 2850	Lots of Pan Tile, peg tile and unglazed Flemish floor tile	12	1480	1900	1480	1900	1700-1900	No mortar
786	3032; 3046; 3101	Thin unfrogged post Great Fire brick and early post-medieval brick T3 clinker hard mortar as 701/755	2	1450	1900	1664	1900	1780-1900	1750-1900
787	3032; 3101	Post Great Fire brick narrow T3 hard clinker mortar	2	1664	1900	1664	1900	1780-1900	1750-1900
789	3261; 2850 2276; 2279	Lots of pan tile; Victorian drain. Flemish floor tile	9	1480	1950	1850	1950	1850-1950	No mortar
790	2279	Pan tile	1	1630	1850	1630	1850	1700-1900	No mortar
792	2276	Post-medieval peg tile	3	1480	1900	1480	1900	1600-1900	No mortar
794	2276; 2279	Post-medieval peg tile and pan tile	2	1480	1900	1480	1900	1700-1900	No mortar
795	2276; 2279; 3039; 3032	Post-medieval peg tile, pan tile early post-medieval brick and post Great Fire brick	4	1450	1900	1660	1900	1700-1900	No mortar
797	3032; 3032R; 3101	Post Great Fire brick large dimensions T3 mortar hard grey clinker	2	1664	1900	1664	1900	1780-1900	1750-1900
799	3033; 3101	Early post-medieval Tudor	2	1450	1700	1450	1700	1450-1700+	1750-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		red reused in T3 mortar							
800	3032nr3033; 3046	Early post Great Fire brick and early post-medieval brick; no mortar	2	1450	1725	1664	1725	1664-1725+	No mortar
801	2279; 3030nr3065; 3032R	Pan tile lots fresh and post Great Fire post-medieval reused brick	9	1400	1900	1664	1900	1750-1900	No mortar
802	2586; 3032; 3033	Pan tile; early post-medieval and post Great Fire brick	3	1450	1900	1664	1900	1700-1900	No mortar
804	2271; 2276; 2279; 3032R; 3101	Post-medieval peg tile, pan tile and post Great Fire brick T3a/T10 to peg tile	5	1180	1900	1664	1900	1700-1900	1600-1750 residual
806	2279	Pan tile	2	1630	1850	1630	1850	1750-1900	No mortar
809	3032R; 3101	Reused narrow post Great Fire brick Type H gravel mortar	1	1664	1900	1664	1900	1700-1900	1850-1950
810	3034nr3033; 3032R; 3101	Early post Great Fire bricks wide; soft type 3a mortar	2	1664	1900	1664	1900	1664-1800	1600-1800
816	1977; 2850; 2271; 2276; 2279; 3032; 3046; 3101	Type 3 grey clinker mortar with a lot of peg tile post-medieval, pan tile, Flemish glazed and unglazed floor tile, narrow post Great Fire and post-medieval brick	18	1180	1900	1664	1900	1775-1900	1750-1900
817	2271; 2276; 3101	Post-medieval peg tile; grey clinker mortar	6	1180	1900	1480	1900	1600-1900	1750-1900
818	2271; 2276; 3101	Post-medieval peg tile; grey clinker mortar	3	1180	1900	1480	1900	1600-1900	1750-1900
820	2276; 2279	Post-medieval peg tile and pan tile	2	1480	1900	1480	1900	1700-1900	No mortar
822	2586; 3046	Fragment of post-medieval peg tile and brick	2	1180	1800	1180	1800	1500-1800	No mortar
824	2271; 2276; 2586 2587; 3101	Medieval and early post-medieval peg tile; white lime mortar	9	1180	1900	1480	1900	1480-1800	Unknown mortar
825	2271; 2276; 2586	Medieval and early post-medieval peg	9	1180	1900	1480	1900	1480-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		tile							
826	3261	Kiln brick fragment	1	1850	1950	1850	1950	1850-1950	No mortar
828	2271; 2276; 2586; 3063; 2850; 3033; 3101	Early post-medieval brick glazed Flemish floor tile, early post-medieval peg tile lime mortar	12	1180	1900	1480	1900	1480-1700+	Unknown mortar
831	2271	Medieval glazed peg tile	2	1180	1800	1180	1800	1180-1450+	No mortar
833	2271	Medieval glazed peg tile	2	1180	1800	1180	1800	1180-1450+	No mortar
835	2587; 3101	Medieval unglazed peg tile; lime mortar	1	1240	1450	1240	1450	1240-1450+	Unknown mortar
837	2459a; 3238; 2271; 2273; 2586; 3076; silt peg tile; 3101	Roman tile and brick, medieval peg tile and Penn Floor Tile; lime mortar	23	50	1800	1180	1800	1330-1500	Unknown mortar
<b>838</b>	<b>3032R; 3035; 3101</b>	<b>Narrow post Great Fire brick and yellow Estuarine late post-medieval unfrogged T3 clinker hard mortar</b>	<b>2</b>	<b>1664</b>	<b>1940</b>	<b>1780</b>	<b>1940</b>	<b>1780-1900</b>	<b>1750-1900</b>
840	2271; 2587	Medieval peg tile glazed	2	1180	1800	1180	1800	1240-1450+	No mortar
842	2271; 2276; 2279; 3063; 3046; 2586; 3101; 3126	Medieval and post-medieval peg tile, pan tile, early post-medieval brick and unglazed Flemish floor tile copper residue; type H gravel mortar; Purbeck limestone paving slab	20	1180	1900	1480	1900	1700-1900	1850-1950
<b>843</b>	<b>3032R; 3101</b>	<b>Narrow post Great Fire brick; T3 clinker hard mortar</b>	<b>2</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1900</b>	<b>1750-1900</b>
844	2279; 3030	Pan tile and early post-medieval brick	2	1400	1850	1630	1850	1630-1850	No mortar
846	1678; 1977; 2271; 2276; 3046; 3034	Post-medieval peg tile and brick. Post Great Fire brick glazed Flemish floor tile	14	1180	1900	1664	1900	1775-1900	No mortar
848	2276; 3030; 3065; 3046	Early post-medieval peg tile and brick	5	1400	1900	1480	1900	1480-1700	No mortar
849	2271; 3030nr3065; 3101	Reused medieval early post-medieval tile and brick Type 7 mortar	8	1180	1800	1180	1800	1450-1700	1300-1600

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
850	2271; 3046	Early post-medieval peg tile and brick	3	1180	1800	1180	1800	1450-1700	No mortar
<b>851</b>	<b>2586; 2271</b>	<b>Medieval to early post-medieval peg tile no mortar</b>	<b>5</b>	<b>1180</b>	<b>1800</b>	<b>1180</b>	<b>1800</b>	<b>1180-1600+</b>	<b>No mortar</b>
852	3039; 3046	Early post-medieval brick	5	1450	1700	1450	1700	1500-1700+	No mortar
853	3039; 3046; 2271	Early post-medieval brick and peg tile	10	1180	1800	1450	1700	1500-1700	No mortar
855	2271; 2587; silty fabric; 2452; 3033	Roman tile, medieval peg tile and early post-medieval brick	20	55	1800	1180	1800	1450-1700	No mortar
857	3101; 2271; 2452	Type 7 mortar; Roman tile and medieval peg tile	3	55	1800	1180	1800	1180-1600	1300-1650
860	2586; 3030; 3039; 3046; 3101	Early post-medieval abraded brick and peg tile; Type 7 mortar	7	1180	1800	1180	1800	1450-1700	1300-1650
862	2586; 2276; 3046; 3101	Late medieval to early post-medieval peg tile and brick; traces lime mortar	5	1180	1900	1480	1900	1480-1700	Unknown mortar
863	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1700	No mortar
866	Silty; 2586; 3033	Late medieval to early post-medieval peg tile and brick	4	1180	1800	1180	1800	1450-1700	No mortar
867	2276; 3205	Early post-medieval peg tile	5	1180	1900	1480	1900	1480-1700	No mortar
868	2850; 2586; 3126	Unglazed burnt Floor tile Flemish and pan tile; Purbeck limestone paver	3	1600	1950	1700	1950	1700-1850	No mortar
870	2586; 2276	Medieval and early post-medieval peg tile	5	1180	1900	1480	1900	1480-1900	No mortar
873	2271; 2587; Red silt 3500	Abraded medieval peg tile and Roman tile	6	100	1800	1180	1800	1240-1450+	No mortar
874	3126; 2586; 2587; 2271; 3101	Purbeck limestone cobble; medieval and early post-medieval peg tile some glazed; T7 D mortar	14	200	1900	200	1900	1300-1600	1300-1650
876	2586; 2271	Medieval peg tile few with splash glaze	26	1180	1800	1180	1800	1300-1600	No mortar
877	1810; 2194; 2892; 2271; 2576; 2587;	Local, Penn and Westminster floor tiles medieval peg	28	1180	1900	1480	1900	1480-1700	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	2276; 3033	tile and occasional post-medieval peg tile and brick							
889	2271; 2586; 2587	Medieval peg tile	15	1180	1800	1180	1800	1240-1600	No mortar
903	2271; 2276; 2279; 2452; 2459a; 3023; 3023b; 3022; 3261	Pan tile and post-medieval peg tile Roman brick, imbrex; tegula lots of fabrics and drain pipe Victorian	21	50	1950	1850	1950	1850-1950	No mortar
904	2452; 2459a; 3102; 2459b; 3006; 3013; 3023b	A mixture of late and early Roman fabrics – brick, tegula, tile, imbrex	17	1500bc	1660	1500bc	1660	170-350+	No mortar
905	2452; 2453; 2459a; 3023b	A mixture of late and early Roman fabrics –brick tile, tegula and imbrex	9	50	350	170	350	170-350+	No mortar
906	2452; 2459a; 2455; 3013; 3023; 3500	Early fabrics and late too in large groups of Roman brick, tile, tegula and imbrex	28	50	350	140	350	140-350+	No mortar
<b>911</b>	<b>3046; 3101</b>	<b>Early post-medieval brick wall; T2 lime brown mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1550-1700+</b>	<b>1450-1700+</b>
914	2271; 2586; 2276	Early post-medieval peg tile and pan tile	8	1180	1900	1480	1900	1630-1800	No mortar
915	3032R; 2279; 2271; 2586; 2276; 3101	Early post-medieval peg tile. Pan tile and post Great Fire brick; shelly brick mortar	12	1180	1900	1664	1900	1700-1900	1700-1800
916	3034R; 2271; 2279; 2586; 2850; 3101	Post Great Fire brick, early post-med peg tile and Flemish floor tile; shelly brick mortar	23	1180	1900	1664	1900	1700-1900	1700-1800
<b>917</b>	<b>3033; 2276; 2271; 2586; 3101; 3107</b>	<b>Medieval and early post-medieval peg tile and early post-medieval brick T2 lime brown mortar; Reigate stone ashlar lime mortar</b>	<b>13</b>	<b>1050</b>	<b>1900</b>	<b>1480</b>	<b>1900</b>	<b>1480-1700</b>	<b>1450-1700+</b>
<b>918</b>	<b>3033; 3101</b>	<b>Early post-medieval brick T3a light grey mortar</b>	<b>5</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1550-1700</b>	<b>1600-1800</b>
<b>919</b>	<b>3033; 3101</b>	<b>Early post-medieval brick T9/</b>	<b>3</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700</b>	<b>1450-1700+</b>



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		T2 lime brown mortar flecks of brick							
920	3033; 3032; 2276; 2586; 3101; 3107	Reused proto post Great Fire; early post-medieval brick and medieval to early post-medieval peg tile; Type 3a light grey mortar; Reigate stone ashlar and moulding	11	1050	1900	1664	1900	1664-1800	1600-1800
921	3032nr3033; 3033	Early post Great Fire and early post-medieval brick Type 10 earthy mortar	2	1450	1725	1664	1725	1664-1750	1600-1750
924	2271; 2276; 3033; 3101; 3107	Early post-medieval peg tile and brick; brick mortar; Reigate stone ashlar	4	1050	1900	1480	1900	1480-1800	1700-1800
925	3046; 3065; 3101	Early post-medieval sunken margin T9/2 calf brown	2	1450	1700	1450	1700	1450-1700+	1450-1700+
926	3032; 3101	Proto post Great Fire brick T9/2 calf brown	1	1664	1900	1664	1900	1664-1800	1450-1700+
930	3046; 3065	Early post-medieval brick no mortar broken up	2	1450	1700	1450	1700	1600-1700+	No mortar
932	3032; 3046; 3101	Early post-medieval and post proto wide Great Fire brick T9/2	2	1450	1900	1664	1900	1664-1800	1450-1700+
933	3032; 3046; 3101	Early post-medieval and post proto wide Great Fire brick T9/2	2	1450	1900	1664	1900	1664-1800	1450-1700+
934	3032; 3046; 3101	Early post-medieval and post proto wide Great Fire brick T10 earthy	2	1450	1900	1664	1900	1664-1800	1600-1750
935	2271; 2276; 3030; 3046; 3032	Early post-medieval and post Great Fire brick and peg tile	8	1180	1900	1664	1900	1664-1900	No mortar
938	3032R; 3101	Post proto Great Fire brick T9/2	1	1664	1900	1664	1900	1664-1800	1450-1700+
940	2276; 3101	Post-medieval peg tile; T2/T10 brown lime mortar	6	1480	1900	1480	1900	1480-1700	1450-1700

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
941	2271; 2276; 3046; 3030nr3065	Early post-medieval peg tile and brick red	21	1180	1900	1480	1900	1480-1700	No mortar
947	2271; 2276; 3033	Early post-medieval peg tile and brick	11	1180	1900	1480	1900	1480-1700	No mortar
948	3101	Mortar T7	1						1300-1600
949	2276	Post-medieval peg tile some reuse	6	1480	1900	1480	1900	1480-1800	Unknown mortar
<b>950</b>	<b>2276; 3065; 3101</b>	<b>Early post-medieval brick sunken margin and peg tile lime mortar possible T10?</b>	<b>3</b>	<b>1450</b>	<b>1900</b>	<b>1480</b>	<b>1900</b>	<b>1480-1700</b>	<b>1600-1750</b>
951	2271; 2276; 2586; 3030; 1977; 3063	Flemish floor tile silt glazed early post-medieval brick and peg tile	26	1180	1900	1480	1900	1480-1700	No mortar
955	2276	Post-medieval peg tile	1	1480	1900	1480	1900	1480-1800	No mortar
957	2271; 2276; 3030; 3033; 3046; 3101	Early post-medieval brick and peg tile; lime mortar traces	27	1180	1900	1480	1900	1480-1700	Unknown mortar
961	2271; 2276; 3030; 3046; 3101	Early post-medieval brick and peg tile; T2 brown mortar	33	1180	1900	1480	1900	1480-1700	1450-1700
963	3046	Early post-medieval brick	1	1450	1700	1450	1700	1450-1700	No mortar
970	2271; 2276	Early post-medieval peg tile	3	1180	1900	1480	1900	1480-1700	No mortar
972	2271; 2276; 3032nr3033; 3261; 3101	Lots of glazed Victorian drain pipe; early post-medieval peg tile transitional post Great Fire brick; traces of white mortar	11	1180	1950	1850	1950	1850-1950	Unknown mortar
973	2271; 2276; 3033; 3101	Early post-medieval brick and peg tile; T10 grey earthy mortar	7	1180	1900	1480	1900	1480-1700+	1600-1750
974	2271; 2276	Early post-medieval peg tile	6	1180	1900	1480	1900	1480-1700	No mortar
<b>976</b>	<b>2586; 2276</b>	<b>Burnt medieval and early post-medieval peg tile no mortar</b>	<b>14</b>	<b>1180</b>	<b>1900</b>	<b>1480</b>	<b>1900</b>	<b>1480-1800</b>	<b>No mortar</b>
977	2271; 2276; 2586; 3033	early post-medieval brick and peg tile	42	1180	1900	1480	1900	1480-1700	No mortar
981	2276	Early post-medieval peg tile	7	1480	1900	1480	1900	1480-1700	No mortar
983	2271; 2276; 3033	early post-medieval brick and peg tile	14	1180	1900	1480	1900	1480-1700	No mortar
986	2586; 2276	Early post-medieval	3	1180	1900	1480	1900	1480-	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		peg tile						1700	
988	2276	Early post-medieval peg tile	5	1480	1900	1480	1900	1480-1700	No mortar
999	2587; 2276	Late medieval and early post-medieval peg tile	5	1240	1900	1480	1900	1480-1700	No mortar
<b>1103</b>	<b>3033; 3101</b>	<b>Half a Tudor brick T10 mortar (soft light cream grey gravel flint mortar)</b>	<b>1</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700+</b>	<b>1600-1750</b>
<b>1104</b>	<b>3033; 3046; 3101</b>	<b>Reused halves of early post-medieval red bricks sunken margin T10 mortar (soft light cream grey gravel flint mortar with chalk inclusions)</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700+</b>	<b>1600-1750</b>
<b>1106</b>	<b>3032; 3101</b>	<b>Poorly made narrow post Great Fire brick T3 mortar grey clinker</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1900</b>	<b>1750-1900</b>
1108	2271; 2586	Late medieval early post-medieval peg tile	2	1180	1800	1180	1800	1430-1700	No mortar
1111	2279; 3261	Pan tile and Victorian drain pipe	7	1630	1950	1850	1950	1850-1950	No mortar
1113	2271; 2279	Large dump of fresh pan tile	14	1630	1850	1630	1850	1750-1900+	No mortar
1114	2276	Peg tile post-medieval	1	1480	1900	1480	1900	1480-1700	No mortar
1115	2279	Pan tile	1	1630	1850	1630	1850	1750-1900	No mortar
<b>1116</b>	<b>3046; 3101</b>	<b>Narrow red Stuart bricks pointed in T2/9 sandy mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1600-1700+</b>	<b>1450-1700+</b>
<b>1118</b>	<b>3033; 3032nr3033; 3101</b>	<b>Early post-medieval Tudor brick and Intermediate early post Great Fire T10 mortar</b>	<b>2</b>	<b>1450</b>	<b>1725</b>	<b>1664</b>	<b>1725</b>	<b>1664-1725</b>	<b>1600-1750</b>
1119	2279	Large dump of fresh pan tile	10	1630	1850	1630	1850	1750-1900	No mortar
1120	2279	Pan tile soot	3	1630	1850	1630	1850	1750-1900	No mortar
1121	3261; 3033	Victorian drain pipe and early post-medieval brick	6	1450	1950	1850	1950	1850-1950	No mortar
1128	2276	Post-medieval peg tile	2	1480	1900	1480	1900	1500-1900	No mortar
1129	2276	Early post-medieval	2	1480	1900	1480	1900	1480-	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		peg tile						1700+	
1132	2279; 2276; 1977	Unglazed Flemish floor tile; pan tile soot and chimney fragment soot	3	1480	1900	1480	1900	1750-1900	No mortar
1200	3032; 3101	<b>Post Great Fire brick frogged Type 3 classic clinker hard mortar as 511; 512</b>	2	1664	1900	1664	1900	1850-1900	1750-1900
1207	3032; 3034nr3035; 3101	<b>Machine frogged post Great Fire and estuarine transitional T6 Soft brown Roman cement</b>	3	1664	1940	1780	1940	1850-1900	1850-1950
1208	2279	Pan tile	3	1630	1850	1630	1850	1750-1900	No mortar
1211	2586; 2276; 3033	<b>Early post-medieval brick and medieval/early post-medieval peg tile T2/T9 sandy lime mortar</b>	4	1180	1900	1480	1900	1480-1700+	1450-1700+
1214	2276; 2279; Encaustic Wall Tile	Post-medieval wall tile; pan tile and peg tile	12	1480	1950	1850	1950	1850-1950	No mortar
1216	2276; 2586; 2587	Medieval and early post-medieval peg tile	4	1180	1900	1480	1900	1500-1800	No mortar
1217	2276; 2279	Pan tile and post-medieval peg tile	3	1490	1900	1480	1900	1750-1900	No mortar
1219	3033; 3101	<b>Reused early post Great Fire brick in hard white Portland mortar/cement</b>	1	1450	1700	1450	1700	1600-1700	1800-1900+
1227	2279; Encaustic Wall Tile; 3107	Post-medieval pan tile and wall tile; Reigate stone ashlar	7	1050	1950	1850	1950	1850-1950	No mortar
1233	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1700	No mortar
1278	2276	Early post-medieval peg tile	1	1480	1900	1480	1900	1480-1700	No mortar
1300	3107	Burnt Reigate stone ashlar fragment	1	1050	1660	1050	1660	1300-1800+	No mortar
1302	2271; 2276; 2279	Early post-medieval peg and pan tile	22	1180	1900	1480	1900	1750-1900	No mortar
1321	2276	Post-medieval peg tile	1	1480	1900	1480	1900	1480-1800	No mortar
1341	2271; 2586	Medieval to possible early post-	2	1180	1800	1180	1800	1300-1700	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		medieval peg tile							
1345	2271	Medieval peg tile	2	1180	1800	1180	1800	1300-1600	No mortar
1348	2271	Medieval peg tile no glaze	2	1180	1800	1180	1800	1300-1600	No mortar
1360	1977; 2271; 2276	Glazed Flemish floor tile silt; late med to early post-med peg tile	3	1180	1900	1480	1900	1480-1600+	No mortar
1382	2271; 2276; 2586; 3046	Early post-medieval peg tile, pan tile and brick	9	1180	1900	1480	1900	1630-1850	No mortar
1401	2271; 3046; 3101	Early post-medieval brick and peg tile; lime mortar traces	3	1180	1800	1180	1800	1450-1700	Unknown mortar
1403	2271; 2276; 3033; 3101	Early post-medieval brick and peg tile lime mortar traces	5	1180	1900	1480	1900	1480-1700	Unknown mortar
1405	2276; 2586	Early post-medieval peg tile	2	1180	1900	1480	1900	1480-1700	No mortar
1406	2276	Early post-medieval peg tile	3	1480	1900	1480	1900	1480-1700	No mortar
<b>1407</b>	<b>3033; 3101</b>	<b>Very early shallow post-medieval red bricks in T10 earthy mortar</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-1700</b>	<b>1600-1750</b>
1409	3006; 3046	Roman brick and early post-medieval brick	2	55	1700	1450	1700	1450-1700	No mortar
1416	2271; 2276	Early post-medieval peg tile	19	1180	1900	1480	1900	1480-1700	No mortar
1423	2271; 2276	Early post-medieval peg tile and curved tile	17	1180	1900	1480	1900	1480-1800	No mortar
1428	2276	Early post-medieval peg tile	2	1480	1900	1480	1900	1480-1700	No mortar
1434	2271; 2276; 2587; 2850; 3030; 3046; 3033	Large group medieval early post-medieval brick and peg tile and glazed Flemish floor tile	34	1180	1900	1480	1900	1480-1600+	No mortar
1435	2271; 2276; 2586; 3030	Large group early post-medieval brick and peg tile	16	1180	1900	1480	1900	1480-1700	No mortar
1439	2271; 2276; 2586; 3046; 3101	Large group early post-medieval brick and peg tile; traces lime mortar	43	1180	1900	1480	1900	1480-1700	Unknown mortar
1440	2271; 2276; 2586; 3030; 3039	Large group early post-medieval brick and peg tile	38	1180	1900	1480	1900	1480-1700	No mortar
1441	2271; 2276; 2586; 3030;	Large group early post-medieval brick	44	1180	1900	1480	1900	1480-1700	1600-1750

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	3046' 3039; 3101	and peg tile and curved tile T10 mortar							
1444	2271	Abraded medieval peg tile	1	1180	1800	1180	1800	1300-1600	No mortar
1457	2271; 2276; 2586; 3033; 3042; 3046; 3101	Large group early post-medieval brick and peg tile; traces lime mortar	57	1180	1900	1480	1900	1480-1700	Unknown mortar
1495	2271; 2276; 2587; 3046	Medieval and early post-medieval brick and peg tile	9	1180	1900	1480	1900	1480-1600+	No mortar
1496	2271; 2276; 2587; 3046	Medieval and early post-medieval brick and peg tile	13	1180	1900	1480	1900	1480-1700	No mortar
<b>1500</b>	<b>3032R</b>	<b>Well-made narrow post Great Fire brick no mortar</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1800-1900</b>	<b>No mortar</b>
<b>1501</b>	<b>3034; 3046</b>	<b>Well-made post Great Fire brick and voussoir red brick no mortar</b>	<b>2</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1800-1900</b>	<b>No mortar</b>
<b>1504</b>	<b>3032; 3046; 3101</b>	<b>Post Great Fire and early post-medieval brick T3a light grey mortar</b>	<b>2</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1800</b>	<b>1600-1800</b>
<b>1505</b>	<b>3034; 3032nr3065; 3101</b>	<b>Proto post Great Fire bricks T10 light grey mortar</b>	<b>2</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1800</b>	<b>1600-1750</b>
<b>1508</b>	<b>3032; 3101</b>	<b>Post Great Fire brick narrow prob T3 mortar</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1900</b>	<b>1750-1900</b>
<b>1509</b>	<b>3032; 3034R; 3101</b>	<b>Proto post Great Fire bricks T3a/T10 mortar</b>	<b>2</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1800</b>	<b>1600-1800</b>
1513	2276	Post-medieval peg tile	1	1480	1900	1480	1900	1480-1700	No mortar
1601	3046	Early post-medieval brick	1	1450	1700	1450	1700	1450-1700	No mortar
1606	2276	Modern roofing and peg tile	2	1480	1900	1480	1900	1800-1900+	No mortar
1609	2276	Peg tile post-med	1	1480	1900	1480	1900	1600-1800	No mortar
<b>1610</b>	<b>3032; 3101</b>	<b>Narrow post Great Fire brick hard white shelly type 12</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1900</b>	<b>1750-1900</b>
1612	3205	Yellow peg tile Wealden	1	1180	1800	1180	1800	1180-1800	No mortar
1615	2276; 2279	Pan tile and peg tile	4	1480	1900	1480	1900	1700-1900	No mortar
<b>1619</b>	<b>3032; 3046; 3033; 3101</b>	<b>T2/T9 mortar adhered to many</b>	<b>7</b>	<b>1450</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1664-1800</b>	<b>1450-1700+</b>

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		proto 3032; 3046 and reused 3033							
1622	3032nr3033; 3034; 3101	Early post Great Fire and proto post Great Fire brick T10 earthy	2	1664	1900	1664	1900	1664-1750	1600-1750
1623	2271; 2276; 3032; 3101	Medieval and early post-medieval peg tile; narrow unfrogged post Great Fire brick T3 classic	6	1180	1900	1664	1900	1780-1900	1750-1900
1624	3120	Lithographic/writing slate Caithness/Cornish	1	1750	1900	1750	1900	1750-1900+	No mortar
1634	3033; 3046	Early post-medieval brick no mortar	2	1450	1700	1450	1700	1450-1700+	No mortar
1635	2271; 2587	Medieval peg tile	3	1180	1800	1180	1800	1240-1450+	No mortar
1646	2271; 2276	Medieval to early post-medieval peg tile	2	1180	1900	1480	1900	1480-1700	No mortar
1649	2276	Early post-medieval peg tile	4	1480	1900	1480	1800	1480-1700	No mortar
1652	2271	Medieval peg tile	1	1180	1800	1180	1800	1300-1700	No mortar
1653	2271; 2276; 1678; 2850	Glazed Calcareous and Flemish silt floor tile and early post-medieval peg tile	5	1180	1900	1480	1900	1480-1600+	No mortar
1654	2586; 3033	Early post-medieval brick sunken margin and peg tile	2	1180	1800	1180	1800	1450-1700	No mortar
1656	2586; 2850	Glazed Flemish silt floor tile and early post-med peg tile	3	1180	1800	1180	1800	1450-1600	No mortar
1657	2271; 2276; 2586	Medieval and early post-medieval peg tile	18	1180	1900	1480	1900	1480-1700	No mortar
1662	2271	Medieval peg tile	1	1180	1800	1180	1800	1300-1700	No mortar
1668	2850	Flemish glazed floor tile silt	1	1450	1600	1450	1600	1450-1600+	No mortar
1669	2271; 2276; Chertsey Floor Tile	Medieval and early post-medieval peg tile and late medieval Chertsey decorated floor tile	16	1180	1900	1480	1900	1480-1600	No mortar
1675	3106; 3116	Hassock Stone and Chalk blocks	3	50	1660	50	1660	1200-1600	No mortar
1676	3033; 2271; 3101; 3105;	Type 7 woody (G) and 2 sandy	8	50	1700	1450	1700	1450-1700+	Residual 1300-1600

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
	<b>2271</b>	<b>mortar present reused on early post-medieval red brick and medieval peg tile; Kentish ragstone and curved peg tile in large block</b>							<b>and 1450-1700 mortar</b>
1679	2276; 3101	Early post-medieval peg tile; T7 mortar	1	1480	1900	1480	1900	1480-1700	1300-1650
1680	2271; 2276; 3101	Post-medieval peg tile and curved tile T7 mortar	3	1180	1900	1480	1900	1480-1700	1300-1650
1681	1678; 2276	Flemish Calc floor tile and early post-med peg tile	4	1300	1900	1480	1900	1480-1600	No mortar
1684	2276	Early post-medieval peg tile	3	1480	1900	1480	1900	1480-1700	No mortar
1691	2271	Abraded peg tile medieval	6	1180	1800	1180	1800	1300-1700	No mortar
1694	2271; 2276; 2586; 3031 YELLOW	Medieval brick and med glazed early post-med peg tile	12	1180	1900	1480	1900	1480-1600	No mortar
1696	2271; 2276; 2587	Glazed medieval and early post-medieval peg tile	10	1180	1900	1480	1900	1480-1600	No mortar
1698	2587; 2271nr 2276	Glazed medieval peg tile	3	1180	1800	1180	1800	1240-1600	No mortar
1699	2271; 2271nr 2276; 2587	Medieval peg tile	7	1180	1800	1180	1800	1240-1600	No mortar
1719	3033; 3101	Early post-medieval red brick crinkly; T12 shelly brick	1	1450	1700	1450	1700	1450-1700	1700-1850
1724;	3034nr3035; 3261	Frogged transitional machine brick sharp arises; Large bat brick Roman cement	1	1780	1950	1850	1950	1850-1950	1850-1950
1725	2276; 3035; 3105	Post-medieval peg tile and yellow sharp arises unfrogged estuarine brick; Kentish ragstone paver	7	50	1940	1780	1940	1800-1940	No mortar
1726	3101	T15 off brown shelly mortar with very fine sandy quite compact	1						1300-1700
1728	2271; 2276; 3101	Reused post-medieval peg tile T3 mortar	3	1180	1900	1480	1900	1480-1900	1750-1900
1732	2271; 2587; 3030; 3033	Medieval and early post-medieval brick	5	1180	1800	1180	1800	1450-1700+	No mortar



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		and peg tile							
1733	3032nr3033; 3035; 3101	Reused early post Great Fire brick; yellow estuarine brick concrete gravel	3	1664	1940	1780	1940	1780-1940	1880-1940
1739	2271; 2587; 3101	Medieval glazed peg tile T7/D	8	1180	1800	1180	1800	1240-1600	1300-1650
1740	2271; 2586	Large group of medieval glazed peg tile	17	1180	1800	1180	1800	1200-1600	No mortar
1741	3101	T15 off brown shelly mortar with very fine sandy quite compact	1						1300-1700
1742	3101	T15 off brown shelly mortar with very fine sandy quite compact	1						1300-1700
1743	2271	Medieval peg tile	1	1180	1800	1180	1800	1300-1700	No mortar
1746	2271; 3105; 3118	Medieval glazed peg tile; Kentish ragstone; Tufa blocksT15 mortar	4	50	1800	1180	1800	1300-1700	1300-1700
1747	3101	T15 off brown shelly mortar with very fine sandy quite compact	2						1300-1700
1748	2273	Medieval glazed peg tile	1	1135	1220	1135	1220	1135-1220	No mortar
1800	3034; 3035; 3101	Reused post Great Fire and yellow brick in classic T3 hard clinker mortar	3	1664	1940	1780	1940	1780-1900	1750-1900
1801	3117; 3116; 3101	Chalk and Flint wall foundation Type 2/9 lime brown mortar	2	50AD	1660	50AD	1660	50AD-1660	1450-1700
1803	3101	Lime mortar T16	1						1300-1700
1804	3101	T2/T9 very sandy lime mortar	1						1450-1700
1806	3105	Kentish ragstone paver	1	50	1600	50	1660	50-1660+	No mortar
1901	3034; 3034nr3035; 3101	Hard Roman mortar T5 on frogged intermediate post great/yellow and narrow post Great Fire	2	1664	1940	1780	1940	1850-1900	1850-1950
1912	3108; 2271; 2452; 3006	York stone paving slab; medieval peg	7	50	1900	1600	1900	1700-1900	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		tile and Roman brick and tile							
1913	2452; 2459a; 3006; 3238	Roman sandy and silty fabrics tile, brick, imbrex and box flue comb	9	50	160	50	160	71-160+	No mortar
1923	2452; 2454; 2459a; 3006; 3020; 3023; 3238; 3105	Large group of Roman sandy, Eccles and Radlett, silty plus long dated calc fabric box flue comb, tegula, brick, tile and imbrex; Kentish ragstone rubble	42	50	1660	50	1660	71-350+	No mortar
1924	2452; 2454; 2457; 2459b; 3004; 3006; 3009; 3022; 3060b; 3102; 3238	Huge group of Roman sandy, Eccles, Radlett, Hartfield, Silty, late Roman sandy Radlett and Calc large daub brick, tile, tegula, imbrex, box comb, tessera	77	50	350	140	350	170-350+	No mortar
1925	3105	Kentish ragstone Rubble	1	50	1660	50	1660	50-1660+	No mortar
<b>2001</b>	<b>3032; 3101</b>	<b>Frogged post Great Fire brick; T6 loose Roman mortar</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1850-1900</b>	<b>1850-1950</b>
<b>2002</b>	<b>3046; 3101</b>	<b>Early post-medieval brick T3a/T10 mortar sunken margin</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1600-1700+</b>	<b>1600-1800</b>
<b>2003</b>	<b>3032; 3101</b>	<b>Narrow unfrogged post Great Fire brick; T3 clinker classic</b>	<b>3</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1780-1900</b>	<b>1750-1900</b>
<b>2004</b>	<b>3032; 3101</b>	<b>Frogged narrow post Great Fire brick hard mortar T5</b>	<b>1</b>	<b>1664</b>	<b>1900</b>	<b>1664</b>	<b>1900</b>	<b>1850-1900</b>	<b>1850-1950</b>
2011	2271	Worn medieval peg tile	1	1180	1800	1180	1800	1180-1600	No mortar
2012	2271; 3032; 3046	Medieval peg tile and post-medieval and post Great Fire brick	3	1180	1900	1664	1900	1664-1900	No mortar
2014	2452; 2459a; 2459b; 3004; 3006	Roman group early and late sandy group of tile, tegula, imbrex and brick	9	50	250	140	250	140-250+	No mortar
2016	2459a	Roman sandy brick, tegula and tile	4	50	160	50	160	50-160+	No mortar
<b>2100</b>	<b>3046</b>	<b>Early post-</b>	<b>2</b>	<b>1450</b>	<b>1700</b>	<b>1450</b>	<b>1700</b>	<b>1450-</b>	<b>No mortar</b>

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
		medieval unfrogged bricks no mortar early crinkly and sunken margin						1700	
2101	3032; 3046; 3101	Early post-medieval unfrogged brick and narrow post Great Fire unfrogged T3 clinker mortar	2	1450	1900	1664	1900	1775-1900	1750-1900
2102	3033; 3101	Early post-medieval bricks T2 brown mortar	2	1450	1700	1450	1700	1450-1700	1450-1700
2103	3033; 3101	Early post-medieval bricks T2 brown mortar	2	1450	1700	1450	1700	1450-1700	1450-1700
2104	3033; 3065	Early post-medieval bricks T3A light grey mortar	2	1450	1700	1450	1700	1450-1700	1600-1800
2200	2271; 2320	Local glazed medieval floor tile and peg tile	2	1180	1800	1180	1800	1300-1600	No mortar
2203	3115M; 2271nr2273; 2271; 2586	North Wales slate possibly roofing; medieval peg tile	18	1050	1950	1050	1950	1200-1600	No mortar
2204	2271; 2271nr2272; 2320; 2272; 3031; 3101	Medieval floor tile local and medieval peg tile; late medieval brick white; lime mortar	26	1135	1800	1180	1800	1350-1500	Unknown mortar
2205	2586; 2271; 2271nr2272	Very large dump of medieval peg tile	103	1135	1800	1180	1800	1200-1500	No mortar
2212	2271; 2273	Medieval peg tile	4	1135	1800	1180	1800	1200-1500	No mortar
2213	2271	Medieval peg tile	4	1180	1800	1180	1800	1200-1500	No mortar
2215	2271; 2587; 2271nr2272	Medieval peg tile	7	1135	1800	1180	1800	1240-1500	No mortar
2216	2271; 2271nr2272; 3101; 2587; Noak organic core	Large group of medieval peg and curved tile; T7 mortar	69	1135	1800	1180	1800	1240-1500	1300-1650
2217	2271; 2271nr2272; Noak Organic core; 3101	Medieval peg tile; T7 mortar	59	1135	1800	1180	1800	1200-1500	1300-1650
2219	2271; 2271nr2272	Abraded medieval peg tile	2	1135	1800	1180	1800	1200-1500	No mortar
2220	2271	Glazed medieval peg tile	1	1180	1800	1180	1800	1200-1500	No mortar

## **Recommendations**

The importance of this, the second largest, assemblage of building material (1400kg) from the Thameslink excavations lies with dating a range of early and later post-medieval brick and stone structures, most of which pre-date the 1830 construction of London Bridge Station. Most of the fabrics are typical of other Thameslink assemblages in Southwark.

Like the adjoining Thameslink Assessment TAA9 (Sudds 2013) the post-medieval building material dominate by number and weight 1179kg (82%) with Roman (<5%) and medieval (>10%) proportionally low. Also like the adjoining Thameslink Assessment TAA9 (Sudds 2013), there are a large group of late 17th-century early 18th-century brick fabrics, notably 3032nr3033 with its narrow date range (1664-1725). These all may relate to rebuilds following the documented Great Fire of Southwark in 1676.

### **Roman Monograph**

Compared to the Thameslink sites closer to or alongside the major Southwark Roman roads at TAA2 (Poole 2013), TAA4 (Hayward 2013a) and TAA6 (Hayward 2013b), the Roman assemblage at TAA10 is unremarkable in terms of quantity or quality. No decorative or sculptural stone items were identified whilst the ceramic building material contains an admixture of broken up standard fabric types for London with very little in the way of cavity walling material. Only passing comment on the assemblage is necessary.

### **Medieval and Post-medieval Monograph**

Medieval building material does, however, contain examples of Westminster, Chertsey and Penn decorative floor tile particularly from areas adjoining medieval St Thomas's Hospital, e.g. Trench A3, which require illustration. Although it is possible some of the material identified from trenches closer to the river may relate to the Norman St Olave's Church dismantled in 1746.

Brick surfaces from Trench A3 contain a set of fabrics that would indicate a late medieval or early post-medieval (post Dissolution) date. Domed, flanged and shaped (kiln furniture?) burnt, vitrified brick with copper residue would indicate an industrial surface, merely backing up the evidence provided from the slag and hammerscale (Keys Appendix 9). These industrial brick features are rare for medieval/early post-medieval London and it would be a worthwhile exercise to identify what may have been manufactured here and what parallels there may be elsewhere in Southwark and the City. One possibility is that they form part of a hard blacksmiths surface. The need for travellers to reshoe their horses at this important nodal point would have been great.

Only one or two items of worked stone warrants further analysis, and illustration including one intricate Caen moulding and a Norwegian ragstone hone.

Very few items from the enormous post-medieval brick and roofing tile assemblage are of any great intrinsic interest. From Agas's map in c. 1562 up to and including the pre-1830s maps the area demarcated by modern day London Bridge Station and its approach was heavily populated.

## Bibliography

Betts, I.M., 2002. *Medieval "Westminster" floor tiles*. Museum of London Archaeology Service Monograph 11.

Betts, I.M., 2003. 'Stone and ceramic building materials', in C. Cowan, *Urban development in north-west Roman Southwark: Excavations 1974-90*. Museum of London Archaeology Service Monograph 16, 105-119.

Betts, I.M., 2011. 'The building materials', in T. Dyson, M. Samuel, A. Steele & S.M. Wright, *The Cluniac priory and abbey of St Saviour Bermondsey, Surrey: Excavations 1984-95*. Museum of London Archaeology Monograph 50, 201-214.

Boon, G.C., 1974. *Silchester: the Roman Town of Calleva*. Newton Abbott, David and Charles.

Dawson, G.J., 1976. 'Montague Close Excavations 1969-73'. *Research Volume of the Surrey Archaeological Society* 3, 37-58.

Divers, D. & Jarrett, C., 2009. 'Delftware Production at Southwark Cathedra', in D. Divers, C. Mayo, N. Cohen & C. Jarrett, *A New Millennium at Southwark Cathedral: Investigations into the first two thousand years*. Pre-Construct Archaeology Monograph 8, 101-124.

Douglas, A., Gerrard, J. & Sudds, B., 2011. *A Roman settlement and bath house at Shadwell. Excavations at Tobacco Docks and Babe Ruth restaurant, The Highway, London*. Pre-Construct Archaeology Monograph 12.

Eames, E., 1980. *Catalogue of medieval lead-glazed earthenware tiles in the Department of Medieval and Later Antiquities British Museum*, London.

Hayward, K.M.J., 2010. *The Ceramic Building Material Bermondsey Square BYQ98*. Unpublished Pre-Construct Archaeology report.

Miller, P. & Saxby, D., 2007. *The Augustinian Priory of St Mary Merton, Surrey: Excavations 1976-90*. Museum of London Archaeology Service Monograph 34.

Hayward, K., 2013a. 'Building materials assessment' in J. Langthorne and J. Taylor, *Thameslink Archaeological Assessment 4: Archaeological Excavations at 2-4 Bedale Street, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.

- Hayward, K., 2013b. 'Building materials assessment' in J. Taylor, *Thameslink Archaeological Assessment 6: Archaeological Excavations at 6-7 Stoney Street, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.
- Hayward, K., 2013c. 'Building materials assessment' in V. Hughes and J. Taylor, *Thameslink Archaeological Assessment 1: Archaeological Excavations at Vaults 2, 5 & 9, Railway Approach, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.
- Hayward, K.M.J., in prep a. 'The Building Materials', in A. Douglas, *Excavations at Bermondsey Square, BYQ98*. Pre-Construct Archaeology Monograph.
- Hayward, K.M.J., in prep b. 'The building materials', in D. Killock & J. Shepherd, *Tabard Square LLS02*. Pre-Construct Archaeology Monograph.
- Leary, E., 1989. *The Building Limestones of the British Isles*. Building Research Establishment Report. London, HMSO.
- Meddens, F., Sabel, K., Akeroyd, A., Egan, G., Horsley, T., Keys, L., Linford, P., Mackley, R., Payne, A., Walsh, N., White, M., Williams, D. & Wilson, D., 2003. 'The excavations of a medieval ceramic production site and tile kiln at Weald View, Noak Hill, Essex'. *Medieval Ceramics* 26 & 27, 3-44.
- Poole, C., 2013. 'Ceramic Building Material, in A. Fairman and J. Taylor, *Thameslink Archaeological Assessment 2: Archaeological Excavations at 11-15 Borough High Street, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.
- Pringle, S., 2009. 'Building materials' in C. Cowan, F. Seeley, A. Wardle, A. Westman and L. Wheeler *Roman Southwark settlement and economy: Excavations in Southwark 1973-91*. Museum of London Archaeology Monograph 42, 187-206.
- Ryan, P., 1996. *Brick in Essex. From the Roman Conquest to the Reformation*. Pat Ryan, Chelmsford.
- Stanier, P., 2000. *Stone Quarry Landscapes: The Archaeology of Quarrying in England*. Stroud, Tempus.
- Sudds, B., 2013. 'Building Material, in J. Taylor and C. Champness, *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.
- Sutherland, D.S., 2003. *Northamptonshire Stone*. Wimborne, The Dovecote Press.
- Thurley, S., 2003. *Hampton Court: A Social and Architectural History*. Yale University Press, New Haven and London.

## APPENDIX 11: HUMAN BONE ASSESSMENT

Mark Gibson

### Introduction

Three partial articulated skeletons, a skull and a quantity of disarticulated human skeletal remains from Trench A3 were submitted for assessment. The three articulated skeletons ([578], [583] and [590]) were recovered from a series of east-west orientated medieval grave cuts. Skull [521] was recovered from a heavily truncated east-west grave and the records indicate that it would have been an articulated skeleton prior to truncation. The disarticulated remains from Trench A3 were recovered from the overburden. Some disarticulated remains from Trench A4 were also submitted for assessment; these were recovered from a post-medieval dump layer [578].

### Methodology

The human bone was assessed in accordance with national guidelines set out by Mays *et al.* (2004) and with reference to standard protocols for examining human skeletal remains from archaeological sites (Brickley and McKinley 2004; Buikstra and Ubelaker 1994; Cox and Mays 2000). The condition was assessed according to the degree of erosion of the bone surface, and assigned a preservation grade 0 - 5+, according to McKinley (2004).

All anthropological and palaeopathological observations were made by rapidly scanning each skeleton. Although these observations provide adequate guidance to the potential of the material for further work they are, by their very nature, preliminary and subject to change as a result of any future high resolution examination.

Apart from the potential of the skeletons to yield information relating to age and sex, the skeletons were also assessed for their potential to yield metrical data that will facilitate the analysis of physical attributes, such as stature, ancestry and biological variation, and age estimation in sub-adults. Potential for metrical assessment was scored on a scale of 1-5, where '1' denotes skeletons that showed no potential (i.e. no elements could be measured owing to fragmentation/poor preservation) and '5' denotes skeletons that showed high potential (i.e. the full range of standard cranial and post-cranial measurements could be taken).

The potential of the skeletons to yield non-metrical data was also assessed. Non-metric traits are morphological variations in the skeleton, influenced by both the environment and genetics, but to variable and unpredictable degrees (Mays 1998). These traits were scored on a scale of 1-5, where '1' denotes skeletons that showed no potential for non-metrical analysis (i.e. the lack of preservation prevented the observation of all standard cranial and post-cranial sites) and '5' denotes skeletons that showed high potential for non-metrical analysis (i.e. all standard cranial and post-cranial sites could be scored). More readily observable traits were noted (but not formally scored) to give an indication of

the level and range of traits present in the population. This will inform a data-collection strategy for full analysis.

## Results

### *Inhumations*

The results of the assessment are summarised in Table 1. Overall the condition of the remains was good, the bone surface condition was excellent and scored as Grade 0, meaning that the surface of the bone was fresh in appearance with no modifications (McKinley 2004, 16). The level of fragmentation was generally low, however the completeness varied greatly. None of the skeletons were entirely complete, two were less than 25% complete, whilst the remaining two were over 50% complete.

The major epiphyses had fused on all of the skeletons indicating that adulthood (>18 years old) had been attained by the time they died. Whilst two skeletons ([521] and [583]) did not have relevant indicators surviving that will allow a more precise age estimate, the remaining two skeletons ([578] and [590]) had a range of indicators preserved and this means that it should be possible to estimate more precise ages, to within ten years. Estimating the age of adult skeletons is more accurate if observations are based on a range of traits or methods, rather than a limited number (Bedford *et al.* 1993).

All of the skeletons had features preserved that will allow the application of standard techniques to estimate their biological sex (Cox and Mays 2000; Brickley and McKinley 2004). A cursory inspection of the material indicates that both sexes were represented in the assemblage. However, further detailed analysis is required to confirm this.

*Table 1: Summary of assessment*

Skeleton number	Condition (McKinley 2004)	Completeness	Further analytical potential for					Pathology noted during assessment	
			Age	Sex	Stature	Other metrics	Non-metric traits	Dental	Skeletal
521	0	0-25%	N	Y	N	1	3	-	-
578	0	76-100%	Y	Y	Y	3	3	Ca, P, C, AMTL, PC	SN on TV
583	0	50-75%	N	Y	Y	2	3	AMTL	SN on TV and LV, SD on LV
590	0	0-25%	Y	Y	N	1	1	-	-

**Pathology Key:**



**Dental:** Ca – calculus; EH – enamel hypoplasia; C – caries; AMTL – antemortem tooth loss, P – periodontal disease, PC – periapical cavity.

**Skeletal:** LV – lumbar vertebra/e; TV – thoracic vertebra/e; SN – Schmorl's nodes; SD – spondylosis deformans

Only two of the skeletons ([578] and [583]) were judged to have bones that were sufficiently preserved for metrical analysis and none of the skeletons had a complete skull which could be fully measured. These measurements will be limited in terms of their application to exploring the physical attributes of the assemblage. Due to the lack of complete long bones in two of the skeletons it will only be possible to estimate the stature of two individuals. The complete lack of lower limb bones means that the exploration of post-cranial indices – the platymeric (degree of flattening of the femoral shaft) platycnemic (degree of flattening in the tibia shaft) – will not be at all possible.

The lack of lower limb bones except for a proximal femur in [590] has limited the number of sites that can be observed for post-cranial non-metric traits. However, three of the skeletons from BVM12 still had the potential for cranial non-metric data to be obtained from them.

All of the skeletons showed some potential for macroscopic analysis and documentation of pathological conditions that would contribute to an understanding of the population's health. However, this will be limited by the low completeness of the two of the remains.

Pathological lesions were noted in passing on two skeletons ([578] and [583]). In both cases they were forms for spinal degenerative joint disease.

Three of the skeletons ([521], [578] and [583]) had dentitions (either teeth or sockets) and detailed macroscopic analysis of all of these, for dental pathologies and anomalies, will be possible. In passing, it was noted that at least two of the dentitions had pathology ([578] and [583]). Calculus, periodontal disease, caries, ante-mortem tooth loss and periapical cavities were all represented.

#### *Disarticulated human bone*

Adults and juveniles were identified amongst the remains from [543] in Trench A4. The remains consisted of mostly long bones with one innominate, some ribs and vertebrae. The minimum number of individuals (MNI) was three, two adults and one juvenile. All except the innominate possessed no indicators that will allow more precise ages, nor sex, to be estimated. The innominate was probably from a prime adult male (?M, 36-45 years old). The disarticulated remains from the overburden in Trench A3 consisted only of three adult long bones with a MNI of one. No indicators of sex or a more precise age survived, however well healed periostitis was observed on two tibiae. Apart from this, there is little scientific value in analysing the remains.

#### **Osteological potential**

The assemblage of articulated human remains from BVM12, although small, is in good condition and has the potential to yield useful information. While the low level of completeness exhibited by two of the remains has limited their osteological potential, certain biological and palaeopathological information may still be gained by analysing them in detail, and would provide significant information about the group, particularly in terms of demography and health.

The excellent surface condition of the remains will enable a good level of palaeopathological and biological analysis to be achieved, despite the low completeness of two of the individuals. Preliminary observations of non-metric traits indicates that they were present on the majority of the skeletons and may yield useful data.

The disarticulated bone has limited potential to further knowledge of the group, especially as the majority of it was recovered from the overburden in Trench A3. A full inventory of the disarticulated remains, their condition, along with age and sex estimations where appropriate was made during the assessment. Due to this no further work is recommended for the disarticulated remains.

It is recommended that all of the articulated human remains ([521], [578], [583] and [590]) are fully analysed and a publication report compiled in accordance with national guidelines (Brickley and McKinley 2004; English Heritage and the Church of England 2005; English Heritage 2002). This would involve a formal inventory of each skeleton, and where possible age, sex and stature estimation. In addition, non-metric traits will be scored as present, absent or not recordable, and any lesions of pathology (skeletal and dental), will be fully recorded, including differential diagnoses.

## **Bibliography**

Bedford, M.E., Russell, K.F., Lovejoy, C.O., Meindl, R.S., Simpson, S.W. and Stuart-Macadam, P., 1993. 'Test of the multifactorial aging method using skeletons with known ages-at-death from the Grant collection', *American J Physical Anthropology*, 91, 287-97,

Brickley, M. and McKinley, J., 2004. *Guidelines to the standards for recording human remains*, IFA Paper No. 7 British Association for Biological Anthropology and Osteoarchaeology and the Institute of Field Archaeologists.

Buikstra, J.E. and Ubelaker, D.H. (eds.), 1994. *Standards for data collection from human skeletal remains*. Arkansas Archaeological Survey Research Series 44, Arkansas.

Cox, M. and Mays, S., 2000. (eds.), *Human Osteology in Archaeology and Forensic Science*. London, Greenwich Medical Media Ltd.

Mays, S., Brickley, M., and Dodwell, N., 2004. *Human bones from archaeological sites - guidelines for producing assessment documents and analytical reports*. English Heritage.

Mays, S., 1998. *The Archaeology of Human Bones* London, Routledge.

McKinley, J., 2004. 'Compiling a skeletal inventory: disarticulated and co-mingled remains', in M.

Brickley and J. McKinley, *Guidelines to the standards for recording human remains*. IFA Paper No. 7  
British Association for Biological Anthropology and Osteoarchaeology and the Institute of Field  
Archaeologists, 14-17.

## **APPENDIX 12: ANIMAL BONE ASSESSMENT**

**Kevin Rielly**

### **Introduction**

Animal bones were found throughout the occupation sequence at Thameslink London Bridge Station although with notable concentrations within the later medieval and post-medieval phases. The great majority of the bones were recovered by hand. However, a large proportion was taken from a number of samples, which, following the hand collected bones, were mainly provided from the medieval and post-medieval levels.

### **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 long bone 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. The sample collections were washed through a modified Siraf tank using a 1mm mesh and the subsequent residues were air dried and sorted.

### **Description of faunal assemblage**

The site provided a grand total of 4,709 hand collected animal bones with an additional 658 taken from the samples (excluding the fish bones, see Appendix 13). The exclusion of certain deposits following the stratigraphic and dating analyses reduces the hand collected assemblage to 4,611 fragments (see Table 1), with no change to the sieved bones. Animal bones were found in all but the earliest of the 7 major phases and were generally widespread across the various trenches, although with some notable concentrations (Table 1). Throughout these phases the bones tend towards a good level of preservation (referring to surface condition) with no collections exhibiting high levels of fragmentation. Table 2 shows the quantity of bones which were less well preserved, including those with minor through to severe surface damage. Such bones were found throughout the archaeological sequence with no obvious concentrations, although it does appear that a greater proportion was found amongst the later levels. It can be proposed that the various bone collections were buried/covered within a relatively short period following their deposition and/or that there was a minimal level of redeposition (see below). The less well preserved bones tend to be included within collections with better preservation, perhaps indicative of the post-depositional mixing of materials arising from varying degrees of burial. There are similarly small proportions of gnawed bones (also shown in Table 2), although these are moderately abundant within Phases 4a and 6b. The later collection is clearly related to a greater than average quantity of rodent gnawing, which may be

indicative of a corresponding rise in the local rat population. By this stage, the brown rat certainly outnumbered the black rat. It is noticeable that rat gnawing is often found at later sites, perhaps suggestive of a habit practised more by brown than black rats.

Phase:	3	4a	4b	4c	5	5a	5b	6	6a	6b	7	UP
<b>Trench</b>												
A1			18						90	26	1	81
A2		2	394				24			19		
A3		1	497	256	390				39	94		
A5	31											
B1									4	2		
B2					84			21	11			
B3			15		12			33				
C		12	52		47			1				
D1			14				3		31	9		17
D2		110	24				26					
E1			379			221	348		280			
E2 (N)			8				15		50	83		
E2 (S)			55			5	16			3		
E3			4							20		
F (N)			64		23					47		
F (S)			50		46					85		
G		113	216				5			5		
H1		2	1									
H2		27	13								1	
H3		20					6			2		
n/a										5		
<b>Grand Total</b>	<b>31</b>	<b>287</b>	<b>1804</b>	<b>256</b>	<b>602</b>	<b>226</b>	<b>443</b>	<b>55</b>	<b>505</b>	<b>400</b>	<b>2</b>	<b>98</b>

Table 1: Distribution of hand collected bones by phase and trench, where UP is unphased.

Phase:	3	4a	4b	4c	5	5a	5b	6	6a	6b	7
<b>Modification</b>											
N abraded	0	0	6	0	8	0	2	2	6	4	0
% abraded	0	0	0.3	0	1.3	0	0.5	3.6	1.2	1	0
N dog gnawed	0	19	66	10	7	3	18	0	22	15	0
N rodent gnawed	0	0	0	0	1	0	0	2	3	17	0
% gnawed	0	6.6	3.7	3.9	1.3	1.3	4.1	3.6	5	8	0
<b>Grand Total</b>	<b>31</b>	<b>287</b>	<b>1804</b>	<b>256</b>	<b>602</b>	<b>226</b>	<b>443</b>	<b>55</b>	<b>505</b>	<b>400</b>	<b>2</b>

Table 2: Quantity and condition of bones in each phase, including percentage abundance of abraded and dog gnawed bones throughout the phase sequence (hand collected only), where N is the number of fragments.

The dating of the various bone bearing deposits is generally good, with most accommodated within the date ranges of the phases in which they have been assigned. Residuality is a minor problem, with

some medieval and post-medieval deposits exhibiting small quantities of Roman artefacts. However, in most cases, as mentioned, there is a general agreeance between the dating and stratigraphic evidence, with the 'correct' dateable artefacts far outnumbering the residual items. Thus while redeposition has undoubtedly occurred, the wealth of information in the majority of levels appears to have followed the described stratigraphical sequence.

#### Roman (Phase 3)

A small number of bones (31 fragments) were taken from a few dump deposits in Trench A5 (Table 1), generally dated to the 2nd/3rd centuries AD. Most of the bones were identified as cattle (Table 3), here featuring a wide array of skeletal parts although with a notable collection of horncores (5 out of 16 bones). There is a wide selection of horncore 'types' (after Armitage and Clutton-Brock 1976) including Short, Medium and Large Horned cores (Armitage and Clutton-Brock 1976, 331). These were accompanied by a selection of food and non-food domesticates. The three dog bones (2 radii and a tibia) probably represent the remains of two adult individuals.

#### Medieval (Phase 4)

This period has been divided into three phases including an initial sequence of flood deposits (Phase 4a dated between the 11th and 13th centuries) followed by water management features and various dumps and pitting (Phase 4b and 4c, dated 13th to late 15th and early to mid 16th centuries respectively). The latest phase also provided a few graves, these in Trench A3. Turning to the earliest phase, it can be seen that most of the bones were taken from alluvial deposits (182 out of 287 fragments) with a large part of the remainder derived from the primary fill [359] of linear feature [360] (Trench D2), this with 86 bones. The great majority of the phase assemblage, here as elsewhere at this site, is composed of cattle, sheep/goat and pig bones. Within this food group, sheep/goat is clearly predominant followed by cattle and then pig, a very poor third (see Table 3 and Figure 1). However, there is a clear over representation of sheep/goat bones due to the presence of a concentration of metapodials and phalanges within this phased assemblage (Figure 2) and in particular within the aforementioned linear feature as well as one of the alluvial deposits (see Table 4). These can be interpreted as tawyers waste and, as will become apparent, constitute the first stage of a long standing local industry based on the preparation of sheep skins. Note that the exclusion of these foot bone rich assemblages causes a reversal of the relative positions of cattle and sheep/goat (Figure 1). The cattle and pig collections, in contrast, are represented by a mix of skeletal parts signifying general preparation and food waste.

Phase:	3	4a	4b	4c
Species				
Cattle	16	58	486	41
Equid	1	13	9	
Cattle-size	8	53	379	58
Sheep/Goat		135	444	72

Sheep			14	
Goat			1	
Pig	1	11	51	12
Sheep-size	1	9	351	57
Fallow deer			1	
Roe deer			3	
Dog	3	3	12	
Cat			2	
Rabbit			9	7
Chicken	1	3	24	3
Goose		2	11	3
Goose-size			1	
Mallard			5	3
Turkey			1	
<b>Grand Total</b>	<b>31</b>	<b>287</b>	1804	<b>256</b>

Table 3: Hand collected species abundance within the Roman (Phase 3) and Medieval (Phase 4) occupation periods

There is a minor representation of poultry (chicken and goose), the poor use of poultry perhaps confirmed by its absence amongst the sieved collection (see Table 5). Otherwise there are two non-food species, equid and dog, the former including various parts of at least two adult individuals (8 bones) from alluvial deposits [1923] and [1924] in Trench H2. A separate collection of equid bones from the same trench, dating to Phase 4b, was found to contain elements which either paired or articulated with these lower remains (see below).

The Phase 4b collection is somewhat larger, with a greater spread amongst the various trenches with a particular concentration in the south-west Trenches A2 and A3 (especially from ditch/pit [559] with 234 bones), but also in particular central eastern and north-eastern trenches –Trench E1 (notably clay layer [1497] with 297 bones) and Trench G respectively. This larger collection provided a notably greater array of species (see Tables 3 and 5) including a high status component consisting of fallow and roe deer (a humerus and a scapula respectively), plus a possible turkey or peacock tibia. The latter bone was taken from fill [775] in ditch [768] (Trench E2) which provided a pottery date up to 1650 which would allow for the presence of turkey, considering that this bird was first imported to Britain in the early 16th century. However, the tibia is insufficiently complete to affirm this identification, hence the reference to turkey/peacock. In either case, nonetheless, it can be equated with a high status diet.

Phase	Deposit	Trench	MP	P	N
4a	Linear feature [360]	D2	74	4	80
	Alluvium [2205]	G	14	0	28
4b	Clay layer [1457]	E1	55	7	67
	Foreshore deposit [1495]	E1	44	0	48
	Dump [1681]	G	15	0	18
	Alluvium [2204]	G	10	0	19

5a	Pit [1400]	E1	17	2	21
	Channel [1433]	E1	108	1	130
	Occupation [988]	E1	15	0	16
5b	Pit [1404]	E1	22	0	28
	Channel [1433]	E1	73	2	108
	Beam slot [952]	E1	21	0	25
	Pit [975]	E1	9	0	11
	Bedding layer [[973]	E1	11	1	13
	Alluvium [986]	E1	10	0	10
6a	Pit [978]	E1	101	0	103
	Pit [984]	E1	12	0	13
	Construction cut [942]	E1	5	0	5
	Post packing [958]	E1	7	0	10
	Pit [971]	E1	6	2	9
	Clay layer [961]	E1	20	1	22
6b	Cut [819]	F(N)	8	0	11
	Cut [847]	F(S)	9	0	12

Table 4: Distribution of sheep/goat foot bones by phase, feature/deposit and trench where MP is metapodial, P is phalange and N is the number of sheep/goat bones.

The major domesticates, unlike the previous phase, are represented by roughly equal proportions of cattle and sheep/goat bones. Within this general pattern there is a notable spatial divide between the western and eastern trenches, specifically Trenches A2 and A3 compared to Trenches E1 and G, these two areas providing cattle, sheep/goat and pig percentages of 61.9, 32.4 and 5.7 (N=506) and 33.1, 63.5 and 3.4% (N=323) respectively. The major proportion of cattle bones in the former area include an above average quantity of skulls, generally consisting of a large part of the posterior or central section of this skeletal part. These, alongside most of the cattle bones, have been heavily butchered. The skulls have typically been chopped along the lateral margins removing the zygomatic arch and temporal condyle exiting or starting close to the occipital condyles. In addition the nuchal part of the skull has been removed, here including the horncores. Concentrations of sheep/goat metapodials are confined to the eastern area (see Table 4), these forming a large proportion of the sheep/goat collection in this area (similar to Phase 4a) but substantially less when compared to the entire assemblage, as shown in Figure 2. This combination of possible cattle butchers waste to the west and sheep/goat tawyers waste to the east undoubtedly explains the lack of any significant change in the domesticate abundance pattern following the exclusion of the foot bone rich collections (Figure 1). It should, however, be mentioned that concentrations of cattle skulls, though smaller, were also found in the eastern area, particularly in the foreshore deposit [1495], this providing the remains of at least 6 skulls, extensively and similarly butchered.



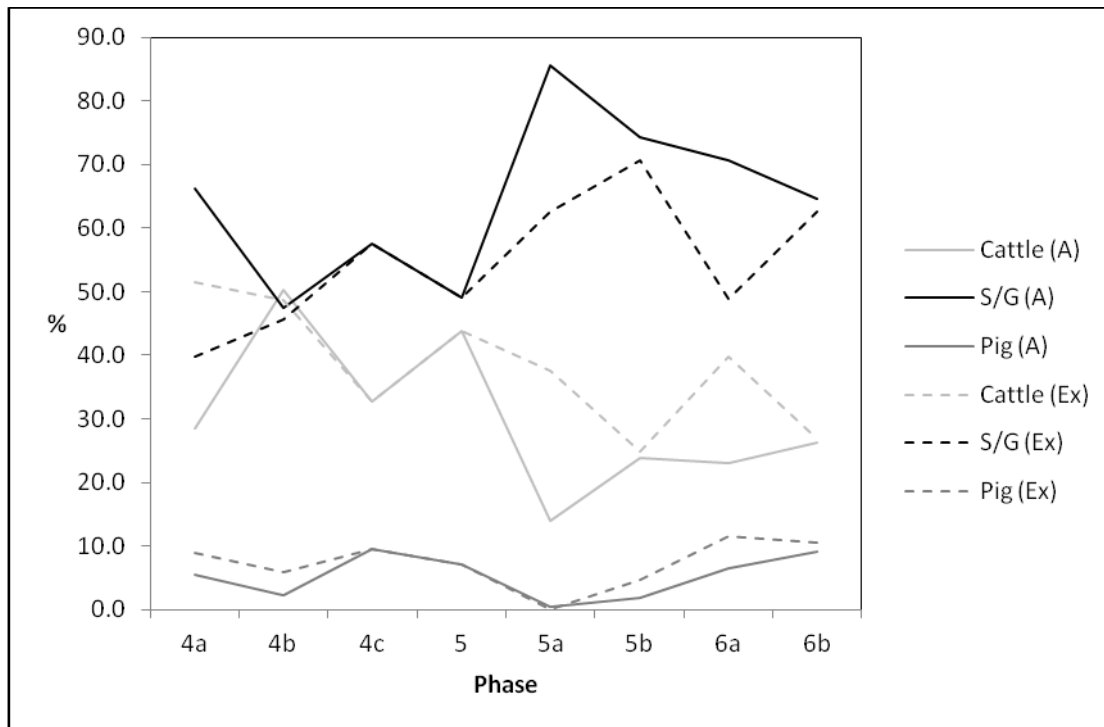


Figure 1: Percentage abundance of hand collected cattle, sheep/goat (S/G) and pig based on all available data (A) and excluding the deposits with large proportions of sheep/goat foot bones (Ex) as described in Table 4.

As previously stated, this phase also provided a collection of equid remains from a deposit [1913] adjacent to the Phase 4a alluvial fills [1923] and [1924], all in Trench H2. This entire collection is undoubtedly part of the same two or possibly three adult individuals. There was also a partial dog skeleton, comprising 4 fore and hind limb bones, belonging to the one adult animal, from pit [596] in Trench A3.

The Phase 4c bones were essentially derived from Trench A3 and while there is a notable abundance of sheep/goat, this is not related, as in previous phases, to concentrations of foot bones (see Figures 1 and 2). This collection was roughly split between dump deposits and cut features, here including pits [554] and [540]. A smaller amount was taken from the backfills of two of the graves, namely from grave cuts [580] and [584], these revealing similar collections to those recovered elsewhere dating to this phase.

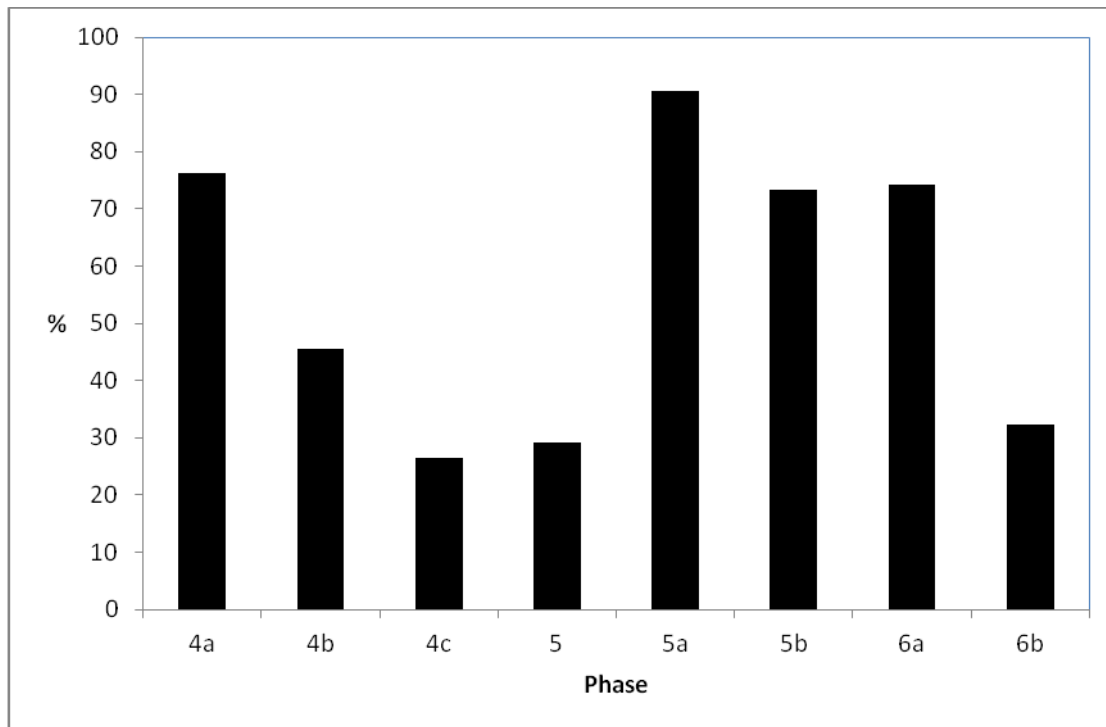


Figure 2: Percentage abundance of metapodials and phalanges within the sheep/goat assemblages in each phase

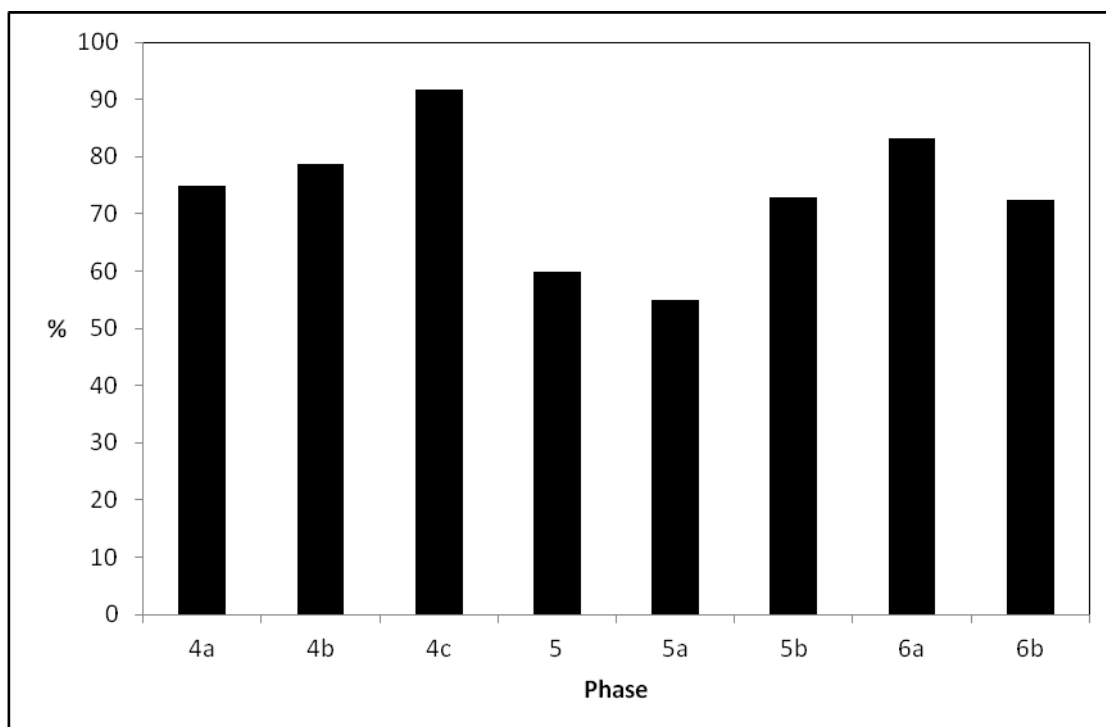


Figure 3: The percentage of fused distal sheep/goat metapodials in each phase

## Early Post-medieval (Phase 5)

This period has also been divided into two phases, corresponding to mid to late 16th century refuse deposition characterised by dumps and pitting, essentially restricted to Trench E1 (Phase 5a); and similar activity alongside evidence for building works dating to the late 16th/17th centuries, in this case involving a greater number of trenches although again largely restricted to Trench E1 (Phase 5b). Most of the earlier collection was derived from just three features/deposits, including the channel [1433], pit [1400] and occupation layer [988], these with 168, 20 and 25 fragments respectively. Each of these featured a major proportion of sheep/goat bones, in turn mainly composed of foot bones (Figure 1 and Table 4). The omission of these features/deposits drastically reduces the number of bones and thus it is not possible to adequately compare the combined and the non-industrial waste deposits from this phase. It is of interest that the sheep/goat metapodials from this phase include a larger proportion of unfused distal ends compared to previous and indeed later collections (see Figure 2). This age difference may suggest some variation in the types of sheep leather produced during this phase or else perhaps relate to the general age of animals arriving at the City abattoirs and which would then be available for tawyers. A sample from one of the aforementioned foot bone deposits (pit [1400]) provided 2 sheep metapodials, 14 phalanges, 11 sesamoids and 10 caudal vertebrae. It can perhaps be assumed that this represents a typical assemblage and that most of the smaller bones were not retrieved from the hand recovered collections. Here it can be observed that tails as well as foot bones accompanied the skins to the tawyer.

Following on from the previous phase, there is further evidence for cattle butchering activity, with a concentration of cattle skulls (at least 8) found in the channel [1433], again heavily and similarly butchered. One of these skulls has clearly been poleaxed.

The Phase 5b assemblage was taken from a wider selection of trenches but mainly from those on the eastern side of the excavation area and again principally from Trench E1. Most of the bones from this and the other trenches were recovered from various cut features, in particular the upper layers of channel [1433] with 175 bones and pit [1404] with 43 bones, both in Trench E1. Sheep/goat continues to provide the major part of the domesticate collection with a notable proportion of foot bones (Figure 2), largely taken from a series of deposits in Trench E1. There is a similar domesticate abundance pattern both before and after excluding these collections, which clearly shows the importance of sheep/goat in the local diet as well as an important source of raw material for the local tawyers. A sample taken from the fill of pit [1404] reflects the information derived from the aforementioned sample from a Phase 5a deposit, this also showing a few sheep/goat metapodials alongside a good proportion of phalanges and caudal vertebrae. Some of these vertebrae were fused, either in pairs or occasionally in groups of 3 or 4 vertebrae, this possibly illustrating a congenital trait. There is a continued presence of cattle butchers waste, as shown by a small concentration of cattle skulls in the upper fills of channel [1433]. Of some concern was the recovery of a small number of sawn cattle and sheep bones from dump deposits [1119] and [1120], both in Trench E2 (N). Such modification, for butchery rather than craft purposes, tends not to be present in deposits predating the latter part of the

18th century (see Rielly in prep and Albarella 2003, 74). However, each of these deposits clearly contain some later pottery and it can be suggested that these layers should be moved up to Phase 6a or 6b or are intrusive deposits.

Phase:	4a	4b	5	5a	5b	6	6a	6b
Species								
Cattle			10				11	
Cattle-size	1		32		2	7	24	2
Sheep/Goat		6	22	29	7	10	18	
Pig		4	7			2	1	1
Sheep-size	4	75	121	15	38	18	65	47
Hare		3	1					
Rabbit		6	1		1			1
Small mammal		13					5	
Chicken		4					1	
Chicken-size		3						
Goose		3						
Mallard							1	
Small thrush		1						
Amphibian		6				10		
<b>Grand Total</b>	<b>5</b>	<b>143</b>	<b>194</b>	<b>44</b>	<b>48</b>	<b>47</b>	<b>126</b>	<b>51</b>

Table 5: Sieved species abundance within all phases

Phase:	5	5a	5b	6	6a	6b	7
Species							
Cattle	131	28	88	14	79	58	
Equid		1	2		1		
Cattle-size	179	18	53	17	87	75	1
Sheep/Goat	141	163	263	9	238	138	1
Sheep	5	9	9		5	4	
Goat	1		2				
Pig	21	1	7	1	22	20	
Sheep-size	99	2	13	14	55	86	
Red deer			1				
Fallow deer	1						
Roe deer	1						
Dog	10	2	4		2	1	

Cat					2	3	
Hare						1	
Rabbit	3				3	2	
Chicken	7	1			7	6	
Chicken-size	1						
Goose	1	1	1		3	5	
Mallard	1				1		
Turkey						1	
<b>Grand Total</b>	<b>602</b>	<b>226</b>	<b>443</b>	<b>55</b>	<b>505</b>	<b>400</b>	<b>2</b>

Table 6: Hand collected species abundance within the post-medieval occupation period (Phases 5, 6 and 7)

Finally, a few early post-medieval deposits could not be readily assigned to either Phases 5a or 5b and remain in a more general Phase 5. These provided a notable quantity of bones, principally derived from Trench A3 and largely taken here from a series of occupation deposits and surfaces. These were not particularly rich in sheep/goat metapodials or indeed with cattle butchers waste. The domesticate pattern consists of approximately similar proportions of cattle and sheep with the usual poor representation of pig. The only notable item is the partial remains of an adult dog, comprising head, fore- and hind-limb parts, taken from dump layer [33] in Trench B2.

#### Post-medieval (Phase 6)

This period covers the next few centuries of occupation, comprising the 17th /18th centuries (Phase 6a) and the 18th/19th centuries (Phase 6b). Each of these phases provides evidence for the continued development of this general area. In the earlier of the two phases, bones were largely recovered from the eastern trenches, in particular Trench E1 (following Phase 5a and 5b), although there was also a sizeable proportion from the western Trenches A1 and A3. The assemblage was divided roughly equally between various layers and cut features, with a notably large collection (118 bones) derived from pit [978] in Trench E1. Sheep/goat are again the best represented major domesticate, with further evidence for tawing activities shown by a wealth of foot bones (Figure 2) encompassing several concentrations, again limited to Trench E1, and in particular from the aforementioned pit (see Table 4). The exclusion of the bones from these deposits greatly reduces the proportion of sheep/goat with a corresponding increase in cattle bones (see Figure 1). Cattle is very well represented by veal-age bones, accounting for about 20% of the total (in Phases 6a and 6b), compared to 10% or less from previous phases. There is undoubtedly a greater use of veal moving into the post-medieval period, although other London sites have demonstrated this change from the 16th rather than, as here, the 17th century (see Rixson 2000, 172 and Rielly in prep a).

The Phase 6b collection is also divided between the western and eastern trenches as well as being derived from a general mix of layers and cut features. Some concentration occurred, principally those taken from the soakaway/cesspit [843] with 55 bones in Trench F (S) and from the garden soil [406] in Trench A3 with 58 bones. While sheep/goat continues to predominate, this is only slightly related to industrial activity, as shown by the far smaller proportion of foot bones compared to previous phases (Figure 2) and the presence of just two small metapodial collections (Table 4). While these were not found in Trench E1, it is perhaps significant that they were both taken from eastern trenches – Trench F (N) and F (S). Several of the domesticated bones within this phase collection exhibited saw marks and a notable proportion were clearly from rather large individuals. These are notable late post-medieval traits, the latter no doubt related to the import of ‘improved’ types to the London meat markets dating from the late 18th/early 19th centuries (see Rixson 2000, 215 and Rielly in prep a).

Finally, as in Phase 5, a proportion of layers/features were classified as Phase 6. These were recovered from western trench deposits, in particular from Trenches B2 and B3. The rather small collection from this phase provided the usual major domesticates without any notable biases concerning skeletal parts. There is again some sawn fragments as well as bones from large animals, both suggesting a date closer to Phase 6b rather than Phase 6a.

#### Modern (Phase 7)

There were just two bones from this late phase, one each from Trenches A1 and H2, comprising a sheep atlas and a cattle-size indeterminate piece respectively.

### Conclusions

The earliest bone collections, generally dated to the 2nd/3rd centuries, while being well preserved, clearly produced too small an assemblage to merit further analysis. A point was made concerning the good representation of cattle horncores, perhaps suggestive of a local butcher and/or craft workshop. Large collections of butcher’s waste have been found in this general area, most notably at two of the nearby Jubilee Line sites with one of the associated buildings interpreted as a butcher’s shop (Drummond-Murray 2002, 55-6). It is conceivable that this small collection may offer additional evidence for this local activity.

There are notably larger collections from the medieval and post-medieval levels, all again in relatively good condition and mainly from well dated deposits. It can perhaps be envisaged that the bones recovered from the rather broadly dated levels within the earliest medieval phase (Phase 4a) may in fact be associated with the later medieval deposits (Phase 4b). This is shown by the presence of bones from demonstrably the same equid individuals within adjacent Phase 4a and 4b deposits (in Trench H2), as well as very similar collections, at least within the eastern trenches, dominated by concentrations of sheep/goat foot bones. As suggested, such collections clearly relate to local tawing activity, following the well known practise of sending skins to the tanner/tawyers with the foot bones, certain head parts and the tail still attached (see Serjeantson 1989, 199). The tanning industry was

removed from its city peripheral haunts down to Southwark in the 14th century. However, previous archaeological evidence was limited to no earlier than the 16th century, with the possible exception of a rectangular timber and clay-lined tank tentatively interpreted as a tanning pit dated to the 13th century from 199 Borough High Street (Rielly 2011, 162). Another possibility is the recently recovered small cache of cattle horncores from another Thameslink excavation (TAA5), generously dated between 1100 and 1400, although the quantity is perhaps more reminiscent of butchers than tanning waste (Rielly 2014). It should also be mentioned that there is historical evidence for tanning in Southwark prior to and including the 14th century, as shown by records of property holdings dated between 1180 and 1350 and the poll tax return of 1381. This shows a minor proportion of households (about 8-9%) working in (as 'fellmonger', 'skinner' and 'tanner') or connected to (as 'saddler' and 'shoemaker') the tanning industry (Carlin 1996 in Yeomans 2006, 65). The evidence from Phase 4a may therefore predate the arrival of the City tanners or, as suggested above, could coincide alongside the Phase 4a foot bone collections with their establishment south of the river. Either way, the foot bone collections from these eastern trenches in Phase 4a and 4b clearly represent some of the earliest archaeological evidence for tanning activities in Southwark.

The Phase 4b collection notably provided concentrations of butchers as well as craft waste, these essentially limited to the western and eastern trenches respectively, perhaps signifying working areas. Comparative evidence, although dated somewhat earlier (dating to the 11th/12th centuries) was found at Bedale Street (TAA4), again involving a number of near complete and heavily butchered cattle skulls (Rielly 2014). A notable presence of both cattle butchers and tanning waste continues into the early post-medieval period, although now with both activities disposing of waste in the eastern trenches. There is greater quantity of comparable sites dating from this period, with a notable collection of cattle metapodials as well as cattle and sheep horncores dating to the 16th/17th centuries from Stoney Street (TAA6); a 16th-century collection of cattle horncores from the West Vent Shaft, London Bridge Street; and more sheep/goat foot bones, dated to the 17th century from the Jubilee Line Ticket Hall, Mayor Sworder's Arches, and dated to the 16th century from sites to the north of London Bridge, from Battlebridge Lane and London Bridge City, Tooley Street, this last site also providing large quantities of cattle skulls (Rielly 2011, 162-164). The evidence for tanning greatly diminishes by Phase 6, no doubt related to the greater development of this locality and the establishment of the tanning industry further east centred around the former site of Bermondsey Abbey (Rielly 2011, 169).

As well as the industrial waste, there are relatively substantial collections of later medieval and post-medieval general food waste, these including slight indications of high status (deer bones), at least in Phases 4b, 5 and 5b. These collections can certainly suggest which meats were more prevalent and/or available within these phases. The ageing and sexing evidence may not be sufficient to warrant a detailed analysis but in contrast, there is more than enough size data to provide information on changes in stature through time, here principally related to the sheep metapodials. An increase in body size moving from the medieval to the early post-medieval has been noted at other London sites,

which is possibly related to improvements in husbandry, including the introduction of winter food crops (Rielly 1997; Rielly in prep b; Trow-Smith 1957, 255).

### **Recommendations for further work**

The potential value of the various collections from this site is essentially related to the medieval and post-medieval evidence for local butchering and, especially, tanning activities. There is certainly scope regarding the analysis of meat use and following on from the two principal concerns, further analysis should include a description of the butchery techniques within the described butcher's waste collections while a review of the size evidence taken from the sheep metapodials will be a useful addition to the information so far compiled concerning changes in sheep stature moving from the medieval through to the early post-medieval era.

This collection will not be looked at in isolation, it will be compared and contrasted to the collection from the nearby site at the Western Approaches (TAA9) (Rielly 2013), and the rest of the Thameslink borough Viaduct sites. Notably, the collections from this site were largely derived from the post-medieval era and they appear to be largely composed of household waste. These can certainly be compared to similar collections from the present site, the combined collections offering sufficient data to examine meat usage in this area in some detail. Other comparisons will also be included, in particular the nearby evidence for medieval and postmedieval occupation described from Winchester Palace and Tabard Square respectively (Rielly 2006 and in prep a), as well as the somewhat removed but nonetheless significant contribution from post-medieval Bermondsey Abbey (Rielly in prep b).

Finally, it is of importance to realise that these recommendations are based on the present stratigraphic and dating evidence and that these will need to be revised if any major changes occur following further site analyses.

### **Bibliography**

- Albarella, U., 2003. 'Tawyers, tanners, horn trade and the mystery of the missing goat,' in P. Murphy and E.J. Wiltshire, *The Environmental Archaeology of Industry*. Symposia of the Association for Environmental Archaeology No.20, Oxbow Books, 71-86.
- Armitage, P.L. and Clutton-Brock, J., 1976. 'A system for the classification and description of the horn cores of cattle from archaeological sites', *J Archaeol Science* 3, 329-48.
- Carlin, M., 1996. *Medieval Southwark*, London: Hambledon Press.
- Drummond-Murray, J. and Thompson, P., 2002. *Settlement in Roman Southwark: archaeological excavations (1991-8) for the London Underground Limited Jubilee Line Extension Project*, Museum of London Archaeology Service Monograph 12.
- Rielly, K., in prep a. 'The post Roman animal bones', in D. Killock and J. Shepherd, *Excavations at Tabard Square, Southwark*, Pre Construct Archaeology Monograph.



- Rielly, K., in prep b. 'The animal bones', in A. Douglas, *Excavations at Bermondsey Abbey, Bermondsey Square, London Borough of Southwark*, Pre Construct Archaeology Monograph.
- Rielly, K., 1997. 'The animal bones', in G. Malcolm, 'Excavations at Island Site, Finsbury Pavement, London EC2', *Transactions of the London and Middlesex Archaeological Society* 48, 52-55.
- Rielly, K., 2006. 'Vertebrate Remains', in D. Seeley, C. Phillpotts and M. Samuel, *Winchester Palace: Excavations at the Southwark residence of the bishops of Winchester*, Museum of London Archaeology Service Monograph 31, 130-142.
- Rielly, K., 2011. 'The leather-production industry in Bermondsey - the archaeological evidence', in R. Thomson and Q. Mould (eds.), *Leather Tanneries - the archaeological evidence*, Exeter: Archetype Publications Ltd in association with the Archaeological Leather Group, 157-186.
- Rielly, K., 2013. 'Animal Bone Assessment', in J. Taylor & C. Champness, *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology - Pre-Construct Archaeology unpublished report.
- Rielly, K., 2014. Assessment of animal bone recovered from the Thameslink sites 1-7, in J. Taylor, *Thameslink Archaeological Assessment: Updated Project Design - Archaeological Assessments 1-7*. Oxford Archaeology – Pre-Construct Archaeology unpublished report.
- Rixson, D., 2000. *The History of Meat Trading*, Nottingham University Press.
- Trow-Smith, R., 1957. *A history of British livestock husbandry to 1700*. London: Routledge and Kegan Paul.
- Yeomans, L.M., 2006. *A zooarchaeological and historical study of the animal product based industries operating in London during the post-medieval period*. Thesis (Phd Archaeology) University College London.

## **APPENDIX 13: ASSESSMENT OF FISH REMAINS**

**Rebecca Nicholson**

Small numbers of fish remains were hand retrieved on site from 11 contexts and were extracted from the dry residues of 21 bulk samples, the latter sieved at PCA to 1mm. Most of the processed samples were fairly small or very small; where processed volumes have been recorded all were in the range 0.5L-28L and this is inevitably reflected in the size of the assemblage. All bones were identified with reference to the author's comparative fish bone collection and (where appropriate) with the aid of a low-power (x10) binocular microscope. The remains extracted from the samples have been fully recorded and the identifications are summarised in Table 1.

### **Results**

Just under 500 bones have been identified to family, genus or species, with the number of bones not clearly related to sample size. The richest sample is S19 from Phase 4b pit fill [595], with 147 identifiable bones recovered from only 10L of sediment. The bones come from late medieval and post-medieval deposits and reflect the fish available in the local markets; as in Roman and medieval deposits from elsewhere along the Thameslink route, pelagic and demersal seafish as well as a few freshwater fish, some very small, were evidently obtained and presumably eaten. The general similarity of species in each of these periods suggests continuity both in dietary preference, fish availability and fishing techniques, which is perhaps surprising given that fishing became increasingly industrialised through the later medieval and post-medieval periods and major fish markets including that at Billingsgate became established in London to deal with the increased trade in fish. Locally, the Thames became increasingly polluted in the 19th century, diminishing and even ruining the fisheries for many species. It would be expected that these changes would be reflected in the fish assemblages and is a topic worthy of fuller consideration when the assemblages from the various sites are reported together.

### **Recommendations**

The bones recovered to date have been fully recorded, although several identifications remain to be checked. Not all recovered sediment has been processed, however, and given the relatively small assemblages and small volume of processed sediment wet sieving any surplus retained sediment from secure and well-dated deposits should be a priority (small finds and fruit stones could also be extracted). Since this site has also produced 19th century fish the recommendations made for London Bridge Western Approach (BVC12) sample 5, also 19th century, should be revised since material extracted from this sample could usefully be considered alongside that from similar deposits from BVM12 with the aim of investigating to what extent fish availability and consumption reflected known changes in water quality in the Thames. Sorting and analysis of bone from BVC12 sample 5 would therefore be worthwhile in this context.

<b>Fish Species</b>	<b>Later Medieval (Phase 4)</b>	<b>Early post-medieval (Phase 5)</b>	<b>Late post-medieval (Phase 6)</b>	<b>Total</b>
Elasmobranch	1			<b>1</b>
Ray			8	<b>8</b>
Thornback ray		2	2	<b>4</b>
Eel	12	13	13	<b>38</b>
Salmonid			1	<b>1</b>
Smelt	2			<b>2</b>
Clupeid			4	<b>4</b>
Herring	73	21	73	<b>167</b>
Shad	2			<b>2</b>
Cyprinid	2	5	1	<b>8</b>
Roach	1			<b>1</b>
Barbel		1		<b>1</b>
Gadid	26	14	16	<b>56</b>
Cod	1	4	2	<b>7</b>
Cod/Saithe	4	2		<b>6</b>
Saithe/Pollack		1	1	<b>2</b>
Haddock	5		7	<b>12</b>
Ling	1			<b>1</b>
Whiting	12	8		<b>20</b>
cf. Perch		1		<b>1</b>
Gurnard	7		3	<b>10</b>
Grey gurnard	1			<b>1</b>
Mackerel	1		1	<b>2</b>
Flatfish	14	13	3	<b>30</b>
Right eyed flatfish	22	11	14	<b>47</b>
Plaice	2	1	3	<b>6</b>
Plaice/flounder	2	15	8	<b>25</b>
Sole	4	2	6	<b>12</b>
Unidentified	10	49	11	<b>70</b>
<b>Total Result</b>	<b>205</b>	<b>163</b>	<b>177</b>	<b>545</b>

Table 1: Fish remains from BVM12 (Number of Identified Specimens)

## APPENDIX 14: LEATHER ASSESSMENT

**Kevin Trott**

The assessment has been based on a preliminary study of the material.

Quantity: 85 individual bags

Condition: Washed and stored wet in double, stapled polythene bags

### **Nature of the assemblage:**

The leather was recovered from sealed and stratified deposits, layers and fills that were preserved in anaerobic conditions of the inter-riverine silts associated with the foreshore of the Thames. The majority of the leather comprises fragmentary shoe components ranging in date from the later medieval period to the interface of the late 18th and early 19th century. Two rectangular panels from either a pouch or jerkin ([676] & [677]) were recovered from the fill of pit [621] Phase 4bii. A decorated stitched strap and two rectangular stitched panels (1227) may derive from an item of clothing. Within the backfill of drain [1219], Phase 6bi, was also found a thick strap complete with corroded iron buckle of a style characteristic of late 18th-century date. Two further thick strap fragments were retained from [842]; fill of soakaway [843], Phase 6b and [1210]; the silt within the base of the brick culvert [1207], Phase 6bi.

Waste leather from shoemaking or translators waste was also found in: [539]; fill of pit [540] Phase 4c, [673]; dump layer Phase 4bi, [674] & [676]; fills of pit [621] Phase 4Bi and clay layer [1457] Phase 4b. Further waste leather was encountered within the fills [1440] & [1433] of Phase 5b channel [1433] and the backfill (388) of Phase 6b culvert [383].

### **The Shoes:**

#### *Medieval (Phase 4):*

A maximum of c. 38 shoes of medieval turnshoe construction was recognised along with c. 3 welted-type turnshoes, c. 2 latchet types and a single strap-fastened type; study of this material may match individual components and reduce the number, if comparison with the phasing and spacial distributions is undertaken. Where sufficiently preserved the sole shapes suggest a late 13th-early 16th century date.

Numerous diagnostic features occur on the highly fragmentary uppers, however, several near-complete shoes were evident within the studied assemblage that included a broad-toed ankle boot from the foreshore deposit [1495], Phase 4b this was popular in the later 12th-late 13th century (cf. 545 Atkinson & Foreman 1992, 179-80). A 14th-century open latchet-type was recovered from the clay layer [1457], Phase 4B and has parallels from Baynards Castle and Trig Lane (Grew & de

Neergaard 1988). A single strap-fastened shoe of 14th-15th-century date was found in fill [677] of pit [621] and is of similar style to one example found at Coppergate in York (cf. 15507 Mould *et al.* 2003, 3334-3336).

#### *Early Post-medieval (Phase 5):*

The vast majority of the early post-medieval shoes excavated consisted of c. 27 welted square toed turnshoes and c. 5 round toed welted shoes. Where sufficiently preserved the sole shapes suggest three groups are present; a mid-late 16th-century dated welted shoe and a 16th and 17th-century square toed shoe with and without heel stacks. A near-complete turn-welted shoe was recovered from fill [1434] of the channel [1433], Phase 5B and was similar to examples encountered on the Mary Rose (cf. Type 3.5 Evans & Mould 2005, 70-72). A further shoe type also found on the wreck of the Mary Rose was a shoe with a square toed vamp, quarters and solid top band, examples of these were found in the fill [1440] of the channel [1433], Phase 5B, and within the layer of silty-peat [1406], Phase 5B (cf. Type 3.3 Evans & Mould 2005, 70-72).

The 17th-century square-toed welted examples mainly derived from the fill [1441] of the channel [1433], Phase 5A, and the alluvial layer [986], Phase 5B. These shoes are of a common style that have been found in pits within Poole in Dorset (cf. Type 10 Thornton 1992, 150-151), and Pontefract Castle, West Yorkshire (cf. 34-52 Swann 2002, 314-20).

#### *Late Post-medieval (Phase 6):*

Fragmentary bottom units and three continuous soles of welted construction were recognised displaying characteristics of shoes dating stylistically to the later 17th, 18th and early 19th century. The near-complete iron hob nailed sole and heel stack of late 17th-century date was found in the fill [816] of linear [819], Phase 6B, with another example from the backfill [388] of culvert [383], Phase 6B. The remainder of the assemblage consisted of fragmentary uppers that included some linen lining on the quarters.

#### *Potential for analysis:*

The majority of the leather recovered is broadly dateable by its construction, following the preliminary study at least half of the assemblage can be securely dated using stylistic criteria, it is hoped to increase this number after more detailed study. The leather will provide valuable dating evidence for the whole assemblage and supplement that provided by the ceramics recovered.

At present the leather assemblage has been washed and stored wet in double stapled polythene bags. The preliminary study analysed each leather component per bag, per context, and certain details on the type of leather and stitching elements/decoration have not been clear, as the leather is currently waterlogged and in cases covered in iron-rich deposits and fungal mould.

It is highly recommended that the leather assemblage is conserved for more detailed analysis and handling prior to completing a final publishable report. The fungal mould requires immediate attention by a trained archaeological conservator. A belt fragment from Context [1227] is currently stored wet but it still retains its iron buckle that will need to be dried by a conservator. Also several shoe elements still exhibit either hob nails or iron lasting pins, as described before these are kept wet but need to be dried by a trained conservator.

*Of note:* A study of leather bagged from Context [1210] produced a broken, but complete, wooden scrubbing brush still retaining some horse/pig-hair bristles set in the drilled circular voids.

A maximum of 30 illustrations will be required for publication. Pencil drawings and conventions to be used will be supplied for the guidance of the illustrator.

### **Bibliography**

Atkinson, D. & Foreman, M., 1992. 'The Leather', in D.H. Evans & D.G. Tomlinson, *Excavations at 33-35 Eastgate, Beverley, 1983-6*. Sheffield Excavation Report 3, 179-80.

Evans, N. & Mould, Q., 2005. 'The Footwear', in J. Gardiner & M.J. Allen (eds.), *Before the Mast Life and Death aboard the Mary Rose*. The Archaeology of the Mary Rose 4, 70-72

Grew, F. & de Neergaard, M., 1988. *Shoes and Pattens*. Medieval Finds from Excavations in London 2.

Mould, Q., Carlisle, I. & Cameron, E., 2003. *Leather and Leatherworking in Anglo-Scandinavian and Medieval York*. The Archaeology of York: The Small finds 17/16 Craft, Industry and Everyday Life.

Swann, J., 2002. 'Leather', in I Roberts, *Pontefract Castle Archaeological Excavations 1982-86*, Yorkshire Archaeology 8, 314-20.

Thornton, J.H., 1992. 'The Leather', in I.P. Horsey, *The Excavations in Poole 1973-1983*, Dorset Natural History and Archaeology Society Monograph 10, 146-52.

## **APPENDIX 15: TIMBER ASSESSMENT**

**Damian Goodburn**

### **Introduction and Terms of Reference for this Report**

This assessment report sets out to summarise the range of waterlogged historic woodwork found, concentrating on its woodworking details such as raw materials, methods of working used and evidence for the reuse of timbers. It also provides a basic assessment of the probable function of the timber and roundwood structures found, based on their form and comparisons with structures found on other sites. For discussion of the overall archaeological sequence, details of the location and extent of the structures discussed and related stratigraphy, the main archaeological sequence should be consulted (Section 7). This report draws on the content of an early draft of the main report and the provisional dating and phasing outlined there. Use is also made of the initial tree-ring and wood species ID report by I Tyers (See Appendix 16).

Previous archaeological work in the area outlined in the main assessment report and the results of this excavation project show that the area of the site lies over what was in Roman and prehistoric times principally wetlands and then tidal mudflats and creek channels to the east of the main early historic Southwark occupation area. The area was gradually raised through land-filling, drainage and the building of river walls in the late medieval and post-medieval periods and is now dry land under London Bridge Station. However, the modern ground surface around the site being well below 5m OD would still flood on the highest tides if it was not protected by the Thames Barrier and local river walls. This situation has maintained a high water table which has preserved the woodwork assessed here through waterlogging. Many of the roundwood and timber structures found were associated with the control of local water courses and the long term drainage of the area.

The last section of this report sets out to assess the significance of the material found and highlight key areas of particular potential for future analysis and publication. A draft outline of how that work might be organised is also laid out there.

### **Recording waterlogged woodwork in the historic core of London, some background in brief**

Space does not permit a broad outline of the development of this specialism in urban archaeology here, but as the City and Southwark and surrounding areas were port zones and contained low lying wetland areas an unusually large amount of historic waterlogged woodwork has been found preserved. This material spans the Roman to industrial period and includes the remains of river and port installations, drains, wells, buildings, foundations and other structures of timber and roundwood. From the early 1970s London archaeologists were forced to develop a systematic approach to the excavation, recording and sampling of this archaeological evidence that rarely survives elsewhere in such quantity and condition. This work was initially lead by G. Milne and, with others (including the author), he was able to prepare a field handbook with practical advice on dealing with structures of

timber and roundwood (Spence 1990), now widely used by archaeologists working in the region). With the systematic recording went systematic use of tree-ring dating (led mainly by I Tyers) which has meant that the, now vast, corpus of comparative records of a range of historic woodwork from the London region is generally closely dated. Initially the principal areas of interest were the earlier historic Roman and medieval periods, but more recently extensive work on post-medieval waterfront sites has provided much additional data, and much of this work was led by Pre-Construct Archaeology. Work by the forerunner units that formed MOLA and PCA have also carried out extensive work on sites in North Southwark and Rotherhithe which were crisscrossed with timber and wattle revetted watercourses. These drainage and related features were a prerequisite for the occupation of the extremely low lying region since Roman times. We may sum up by noting that this writer has first hand familiarity with the vast majority of the archive of records of woodwork found in the London region of Roman to industrial period date, and this is drawn upon for this report.

Latterly, practical experience gained from experimenting with historic woodworking methods, and insights gained from the new wave of investigation and repair of historic standing buildings, has also sharpened our abilities in this specialist area of archaeology.

## **Methodology**

This writer was not able to visit the excavations, and has therefore, compiled this summary assessment based on examining the following sources. First hand examination of the large amount of lifted material and records made on-site including , plans at 1:20 (With a few at 1:10), section and elevation drawings, sketches, photographs, general structure context sheets and for some of the material partially completed timber sheets, and scale timber drawings.

The waterlogged woodwork examined off-site had been carefully excavated and double wrapped in polythene and cling film to keep it reasonably stable prior to specialist examination and recording, off-site. The specialist archaeological work carried out on this material varied, due to the varying level and detail of the records it was possible for the site staff to make. The procedures used by this writer for the cleaning, recording and sampling of the lifted woodwork (principally at PCA facilities in London) are listed below.

- 1) The woodwork was unwrapped in groups, existing records extracted and it was then cleaned. About 50% of this work was carried out by PCA staff.
- 2) For the material that had been largely recorded on pro-forma timber sheets on-site, the records, were checked against the actual material and amended and extended as needed, with additional drawings etc.
- 3) For much of the material a full record was required, including selective timber drawing of key items, with some photographs of particularly diagnostic features. The site conditions had prevented more than numbering and planning and levelling of this material.



4) Finally, a small number of tree-ring, botanical wood species ID, and C14 samples were taken where appropriate. Most of the material was of the oak, and elm Sp groups which can be relatively easily identified visually in good light, during recording by experienced workers. In practice very few timbers were suitable for tree-ring dating or related studies as they either had too few tree rings, c. under 50 or were not of oak or beech, the species group currently used for dating on the vast majority of British excavations.

The procedures used were broadly commensurate with the standards set out in the English Heritage Guidelines on Waterlogged Wood and established practice in the London region (Brunning 1996; Spence 1990). All the relevant original records, samples and two small retained items are temporarily held with the site archive at PCA and OA facilities.

For this assessment summary some general comments are made on the overall nature of the assemblage recorded and then the woodwork found in each trench is discussed briefly, noting broad dating where that is clear (and suggesting some possible revisions to that dating on structural grounds in some cases).

### **Some project specific problems encountered that bear on the recording and interpretation of the woodwork found**

All the normal problems of excavating in an intensively occupied historic town area applied, such as the truncation of earlier structures by later ones and recent foundations. The relatively deep trenches and required shoring also made access difficult at times. One of the other problems encountered during this project that impacted on the interpretation and understanding of the timber and roundwood structures, was that many of the trenches were quite small and separated from each other, and sometimes the trenches could not be fully excavated. In trenches where the timber structures could be exposed and planned in situ but not fully exposed and lifted little more can be said here than is already covered in the main assessment report, e.g. for nearly all the woodwork of revetments exposed in the eastern Trench AT1, timbers [1819] etc. Finally, space, building works and light restrictions also limited some of the on-site opportunities for cleaning and recording woodwork found in some of the trenches.

### **The quantity of historic waterlogged woodwork lifted and recorded in detail upon which this summary report is principally based**

A total of approximately 203 pieces of historic waterlogged woodwork were examined mainly at PCA's stores in SE London (here a lifted section of wattlework is counted as one item). The level and detail of the on-site records of the material varied due to the conditions at the excavation trenches cited above and the experience of the staff working in the particular trench. All the PCA woodwork record sheets and structure context sheets for the timber and roundwood structures have been examined and updated by this writer. This has included the preparation of many measured sketches on the reverse of the timber sheets and detailed scale 'Timber drawings' of a full representative sample of

the better preserved material. Most of the more complex reused timbers of ship, boat and building origin were drawn to scale and a small number of detailed record photographs were also taken by PCA staff.

The woodwork records and lifted woodwork from the very recent excavations of the trenches in the 'W' series on the west side of the site have not been assessed for this report. That material included a total of 73 items exposed and 39 lifted from the excavations. The work required to examine the lifted material and all relevant records including any additional sampling and recording is estimated for in the section below dealing with work required to contribute to the project analysis/publication report.

A total of only seven timbers appeared to be viable for tree-ring dating during the project, and only two could be cross matched and dated, an unfortunately low proportion even for a London post-medieval site (see Tyers Appendix 16). A total of 33 wood Sp ID samples were taken of small roundwood and selected non oak timbers to confirm the species or species group of the item (see Tyers Appendix 16). In practice experienced workers in the field can identify the oaks and elms on the basis of clear diagnostic features but coniferous timbers, small roundwood, and species such as willow, poplar, alder and birch can not usually be reliably identified closely in the field.

#### **Summary of the general range and broad dating of the historic waterlogged wood excavated at the BVM12 site**

The vast bulk of the excavated woodwork appears, on the grounds of technological features, raw materials and associated finds (etc), to be of post-medieval date, spanning the 16th to early 19th centuries. But some structures of later medieval date were also found, and a small amount of Roman period woodwork and cut branchwood.

Here we have to note that a number of previous excavations close by have shown that due to a clear drop in relative sea levels for most of the Roman period waterlogged woodwork of Roman and Bronze Age date are often found at similar levels close to ancient foreshores and in wetlands. This is particularly true for material of later Roman and late Bronze Age date. Typically this level ranges from c. -1m to c. + 0.7m OD along the Thames frontages in central London. The BVM12 project by PCA and OA has also produced evidence of this overlap in OD levels of survival of waterlogged wood of the Bronze Age and Roman periods with woody peats and naturally deposited wood of Bronze Age date and natural and worked wood of Roman date surviving at broadly similar OD levels (see main report discussion of Phases 2 and 3). Unfortunately no clearly worked material of prehistoric date was found in any of the trenches in this case. Neither was any woodwork of the early medieval period found, bar one or two probably displaced, earth-fast post timbers found exposed in much later cut features (see below).

Some of the worked timbers, principally stake and piled structures associated with revetting the edges of water courses, appear to be of late medieval date when it appears organised land winning in the wetland and tidal marsh zones really got underway. However, the vast bulk of the woodwork was

found in post-medieval revetment structures revetting the sides of channels and drains. Other timber structures found were shallow tanks which appear to have been tanning pits or similar features. A small number of bored log pipes found also date to this broad period and were clearly associated with drainage or water supply. Finally, evidence of groups of foundation piles for later post-medieval buildings were also found, usually in clusters. These pile foundations were often well preserved and made of oak and elm converted from the parent logs using combinations of cutting with axes and pit-saws not known before the end of the 15th century.

Clear evidence of the recycling of timber from earlier buildings, ships and barges was also found. Some of this material was well preserved enough to shed useful light on these areas of historic woodwork. In fact a substantial proportion of the planks, beams and piles found in the post-medieval structures were originally derived from other structures including those of later medieval and early post-medieval date. This mixing and recycling of materials also complicated the use of tree-ring dating procedures. The widespread use of second hand materials clearly indicates an attempt to save money by the builders. Many of the structures were of relatively low status such as drainage revetments which were not areas of interest for 'polite society' but were very much part of the character of the area into the 'Dickensian' period.

The nautical timbers must have derived from the Southwark and Rotherhithe shipbreaking yards, a key local industry from the late medieval period to the early 20th century and include a variety of elements of oak and elm. One timber had clear evidence of extensive toredo (larger ship worm) damage and had even so, still then been re-sawn and used in a building and then later a revetment! Might this be a testament to early 'cowboy' contractors in Southwark?

Several roundwood structures were found of early post-medieval date involved in the revetting of watercourses, in some cases it was possible to make quite detailed records and take appropriate sub-samples for species and age determinations. This material has the potential to shed light on the nature of woodland management systems in the London hinterland just before we know they were starting to change and become those of the recent past. The making of wattle hurdles was also an important and little known woodland craft that must have been practiced in many managed woodland areas in what is now Greater London. Unlike timber, roundwood work was of low value and only moved any great distance when used in containers of trade. Overall the freshly cut material and that which was reused up to two or three times, has the potential to shed light on the changing nature of woodlands and timber and wood supply to the historic port of London.

### **The woodwork briefly summarised by trench with broad phasing noted where clear**

Small, isolated timbers or items of roundwood of uncertain function have been ignored here where the principal structural groups have been the main focus, together with key reused material.

Key woodwork found and partially excavated in Trench AT1, and Sewer Heading 1, on the eastern edge of the site.

In this larger trench on the eastern edge of the site the brief did not permit the full excavation or lifting of timbers from the three post-medieval water channel revetments exposed (see main report). Only the upper parts of one timber from this area could be examined off site, Timber [1823] which was the abraded top of a box quartered, revetment upright from the southernmost revetment on the north side of the NE-SW revetted channel. On condition and conservation grounds this timber is probably unlikely to be earlier than the very late 15th to 16th century, and is phased in Phase 4b by associated finds dating. The channel implied by the plan evidence is 22m wide and may well have been navigable at that size, if not blocked by sluices to the north.

A cluster of probable foundation (or jetty?) piles were also found in the northern part of the channel, timbers [1433] etc. These could not be fully excavated but were probably later.

### **Key Woodwork Found in Trench A1**

In this trench on the west side of the site the key woodwork were elements of an E-W pile and plank revetment. The small piles lay on the north side with planking wedged behind to the south implying land on that side and water to the north. Presumably this structure was part of an E-W channel draining into the main N-S 'Maze' channel to the east. The revetment was made of reused timbers from two different sources. The lifted oak retaining piles, [195]-[198], all had features showing that they were recycled rafters from a roof of the mid to late 15th century. They were all sawn to rectangular sections from a hewn baulk, sawn into thick slabs. They also had traces of the iron nails on the external faces that would have held tile battens and interestingly on the internal faces traces of small iron nails for laths were found. It seems that the timbers all derived from the same roof of a building where the attic had been plastered out as a garret for occupation. This is material evidence of the dense nature of occupation and use of many late medieval and 16th-century buildings in London and Southwark. Timber [197] was fairly typical and had a surviving bird's mouth joint from its first rafter use even though the pile point had been axe hewn on that end. Although relatively small timbers they are worthy of publication as vernacular timber roofs of this date in London are very rare.

The surviving sheathing plank of the revetment was thoroughly cleaned and found to have been a sawn elm clinker boat plank as shown by the lap fastenings. This form of planking seems to first appear in London in the 16th century and probably comes from the bottom of a local barge type vessel (see for general information on typical historic reused boat, barge and ship timbers found in London to date, Goodburn 1991; Marsden 1996; Divers 2002).

In sum, the character of the woodwork recorded from this structure seems to suggest a building date in the 16th to 17th centuries or Phase 5b.

### **Key Woodwork Found in Trench A2**

The group of uprights and planks on end forming Structure [665] are difficult to interpret reliably but in the section photograph supplied, features can be seen which may indicate the following function. The

group of timbers may have been remains of a small revetment, possibly running across a roughly N-S ditch cut or water course cut through alluvium. The structure resembles ad hoc revetments to features such as revetments for causeways built across early post-medieval ditches and moats recorded at several sites in north Southwark, such as at Abbots Lane.

The timbers found included sawn oak and elm planks used on end or edge such as Timbers [654] of elm and [655] of oak. Timber [653] was found to have been a pile of elm cut from a pit-sawn slab. Timber converted in this manner is known from the mid 15th century in the London region but is more common from the 16th century onward. This broad dating may overlap with or be slightly later than that ascribed of Phase 4b.

### **Key Woodwork Found in Trench A3**

The key woodwork found in this trench were two truncated stakes [667] and [668] together with deposit of waterlogged branches or possibly very disturbed wattle work. Deposits of waterlogged branch debris can often be found alongside the Thames today along the upper foreshores in low energy areas. Stake [667] was made from an oak pole split in half whilst stake [668] was made of a whole *Prunus* stem (possibly blackthorn). There is not enough evidence to be certain of the interpretation of this material which was found at a surprisingly low level of 0.87m OD. Currently this material is phased to the late 15th and early 16th century.

Later woodwork from a NW-SE drain revetment was also found and attributed to Phase 5 was not retained for further study.

### **Key Woodwork from Trench A5**

This trench provided the evidence of the earliest woodwork found during the excavation which included a layer of waterlogged branch wood debris, either a largely natural deposit or possibly the very disturbed remains of a fallen wattle fence, context [901]. This material was found at an OD level of c. -0.5m to + 0.5m. A rather machine damaged log end was also found emerging from the southern section, Timber [909]. This timber was rather crushed and abraded but bluntly pointed from having been cross cut with an axe of some type. Faint traces of small axe marks only 35mm wide but incomplete were visible, axe marks of this size are well known on woodwork of the late Bronze Age. As woodwork of this period has often been found at this level it was initially suggested that this log end may have been of late Bronze Age date. A C14 sample was taken to clarify this issue as the log was not of oak or beech it could not be tree-ring dated. The results of that assay indicate an early Roman date, which may imply the axe marks were marks from the corner of larger Roman axes (see main report).

Another significant timber was found near by that had a far more typically Roman character. Timber [907] went into the western section of the trench where it was cut off to lift for more detailed recording. It was a boxed heart oak beam c. 200 x 100mm with a clear halving joint cut in one face. An iron nail

was found driven into that joint showing that once a crossing timber was articulated with it at that point. These features are typical of Roman woodworking and it was suggested that the timber was probably of that date possibly once part of a revetment land-tie beam. The timber was cut from a fast grown oak tree and did not have enough annual rings for successful tree-ring dating so it was sampled for C14 dating. That assay provided a date range of 93 cal BC to 61 AD. This material must have lain close to the deeper gut of the known Roman 'Guys channel' down the east side of the two main north Southwark islands. Freshly cut oak timber is slightly heavier than fresh water and slowly sinks unless it has had time to partially dry out.

### **Key Woodwork from Trench B1**

This trench lay roughly in the centre of what had been the tidal mud flats just east of the main north Southwark islands and would probably have been one of the last areas of the site to have been occupied. The two timbers lifted from this trench were associated with quite late brickwork and culvert features. They comprised a sawn softwood plank with patterns of iron nails suggesting previous use, Timber [10]. The other was a much reused oak beam, Timber [17]. This beam had been hewn from a whole oak log to a rectangular section 155mm x 135mm and was 1.34m long to a broken end. Every face of the timber bore joints ranging from mortices and housings to a notched lap joint. The oak beam had clearly been used for at least two building carpentry purposes before reuse as found in the 18th to 19th-century construction. The use of notched lap joints is typical of early high medieval woodwork from the late 12th to late 13th centuries. As Southwark had many old timber framed buildings up to the mid 19th century which were gradually demolished and replaced with more modern buildings they served as a reservoir of cheap timber. So it is probable that this timber derives from one of those local buildings.

### **Key Woodwork from Trench B2**

This trench lay a little to the north of Trench B1 and contained major c. late 18th to 19th-century culvert structures and five upright squared timbers. Three of these timbers were lifted for detailed recording, Timbers [60], [66] and [67]. These were all found to have been well preserved boxed heart softwood (i.e. Coniferous) pile timbers converted by pit-sawing. Timber [66] was sampled for species ID and found to have been of *Pinus Sylvestris* (Scots Pine, but mainly imported from Scandinavia and the Baltic at this period).

Only two timbers were found in this trench within Phase 4b, earthfast post [69] and a horizontal beam set near by Timber [70]. The trench had to be hurriedly excavated when the timbers were exposed and the post extracted by machine. It had a flat hewn base showing that it was set in a posthole. The post was of oak and hewn to a rectangular cross section 140mm x 160mm. Such posts have been typically found in two main periods in London the late 12th-13th centuries for a range of buildings and in the late post-medieval period associated with auxiliary or workshop buildings. The timbers were found at around 2m OD, a level just reached by typical high spring tides in the 12th century in the region. However, this currently seems rather early for the occupation of this part of the site out on the

gradually reclaimed mud flat zone. Thus an origin in a post-medieval workshop type building is perhaps more likely.

### **Key Woodwork Found in Trench D1**

Moving NE, probably slightly nearer the eastern bank of what becomes the main 'Maze' inlet. The earliest wooden structure found in this trench was a short length of a NE-SW stake line in the SE corner of the trench that has been described as a 'wattle revetment' Structure [1349], stakes [1355] and [1353] etc. After cleaning off-site it became clear that the stakes were quite unusual being made from small softwood poles rather than native roundwood. The stakes were c. 38mm in diameter and peeled of their bark with simple axe hewn tips. Species ID samples were taken and identified as *Pinus Sylvestris* and possibly larch or spruce (see report by I Tyers, Appendix 16). Currently imported softwood poles are known from 16th-century and later contexts from the London region, but with the established Hansa trade links to the Baltic and Norway small batches of this imported material might be earlier if transported as part of a cargo.

Apparently on the east side of the stake line two small board fragments were found Timber [1359]. It is possible that the structure was originally a crude build of local left over timber and possibly local roundwood which was removed by decay and scouring before land-filling and the movement of the channel frontage to the NW (see below). This structure has been phased as part of Phase 4b the late 15th to 16th centuries, but on the grounds of the raw materials a 16th-century or slightly later date seems most likely.

Slightly later in the sequence three timbers were found emerging from the eastern section. Two were horizontal, an untrimmed willow or poplar log, Timber [1315], and an oak beam set on an E-W line, [1316], with a small stake set vertically between them. The later timber had traces of cream mortar adhering and a through mortice cut through what were the vertical faces. This sort of jointing is often found used in land-tie beams where it would have held a transverse lock bar. The lock bar being retained by a pair of anchor stakes. Thus, it is just possible that beam end [1316] was the truncated end of a west going land tie beam for a N-S revetment to the west such as are discussed below.

Possibly the largest group of worked timbers and small oak log piles found during the project were found in a stratigraphically later location along the western edge of this trench. They were clearly part of at least two phases of N-S channel revetments where the water lay to the west, Structures [390] and [1370]. They are both phased as part of the 17th-18th century Phase 6a and in practice some elements were not easy to separate out. Although the timber frontages were quite casually built structures they clearly revetted the eastern edge of a main N-S channel, presumably the Maze inlet. Both revetment [390] and [1370] which was centred c. 0.5m to the west, were essentially pile and plank revetments. However, in the base of structure [390] two superimposed morticed plate timbers were found [1325] and underneath it [1330] (see main report plans). It is possible that these morticed plates may have been active sill beams for what was a demolished timber framed channel wall with posts tenoned into the regular mortices. Should this have been the case the upper sill beam of

softwood [1325] is most likely to have been that actively used. Sill Timber [1330] of elm was less regular and contiguous and may just have been a foundation for the larger [1325] sill beam. Such arrangements for framed revetments of 17th-century date have been found on other London sites such as at the former City of London Boys School site.

The retaining piles driven to the west of the [1370] revetment line, c. 0.25 -0.5m apart were made of oak converted in a variety of ways. Some were whole logs with axe hewn tips, e.g. Timber [1374], whilst others were made of ¼ logs sawn out, e.g. Timber [1374]. The sheathing planking partially survived and included sawn pine plank [1372], other planks were of oak and pierced with relict treenail holes. Treenails were the carefully made, round oak pegs used in shipbuilding to fasten elements together, particularly carvel ship planking to framing.

‘Carvel’ shipbuilding was a system of shipbuilding, initially adopted from southern Europe around 1500. In this system sawn planking was usually treenail fastened to a heavy pre-erected framework and set edge to edge as in ‘caravelles’ like the Mary Rose. The earlier dominant system used in the Thames region was the ‘clinker’ building system in which the hulls of vessels were built using a shell of partially overlapping planks fastened at the overlap with rivets (‘rove nails’) or sometimes small treenails. Other nautical timber finds and a very small number of more complete wrecks, show that the local small boats, barges, and smaller coastal craft were still built in this older style until the 19th century. There was a third archaeologically known system of up-river barge building, known from the 16th century, but no timbers from these vessels appear to have been found at this site.

In revetment [390] similar pile uprights were used of oak and also some made by sawing minimally trimmed relatively small oak logs into half log piles, e.g. Timber [1311]. A few of the pile uprights were more regular box ¼’d timbers made largely by sawing such as Timber [1338]. Again the sheathing planking included reused carvel ship planking with relict treenails, such as oak examples, Timbers [391] and [392], and also sawn softwood planks, e.g. Timber [1301]. Occasional nails showed that these sheathing planks had been fastened sporadically to the uprights with iron nails though the pressure of land fill dumps to the east would have held them in place once it was dumped.

Pine sill beam timber [1325] was made of a box halved beam sawn out of a hewn imported baulk. It was found to have a race knife cut broad arrow mark (often used as a sign of naval timber) and may well have originally been timber destined for naval use. The morticed timber found below, Timber [1330], had clearly been made by sawing a flanged barge keel down its length by pit-sawing. This recutting bisected several treenail holes and one large oak treenail survived which was probably used to fasten the lower frames (‘floor timbers’) of the parent vessel in place. This is a rare find which sheds light on little known aspects of the building of local vessels in the post-medieval period. After re-sawing the timber was clearly reused as some form of morticed sill for building or framed revetment purposes.

Another morticed beam section timber of elm was also found apparently thrown in behind the revetment frontage, Timber [393]. This was very curious being found to be full of large marine borer



holes from the toredo ship worm and having a form showing that it to have been a vessel's keel resawn for reuse as a morticed plate timber for a framed structure, presumably a building. This time the vessel was clearly larger and would have been attacked by the toredo worm in warmer water to the south. When the timber was re-sawn it exposed the honey comb of borer holes and channels yet it was still reused in a timber frame. Then finally it was reused yet again casually behind the [390] revetment frontage. This stands as powerful evidence of stretching materials to great lengths. This must either have reflected the poverty of some properties in the region or the corruption of local carpenters. The preponderance of second hand nautical timbers reflects the importance of the local industry of ship breaking and repair just a short distance to the east which provided much local cheap timber. This was further extended by the supply of shipyard off cuts.

During the next phase of post-excavation work the best preserved and informative reused timbers will be key items for more study and detailed presentation

Apparently broadly contemporary and running in from the east, two bored log drains or pipes were exposed, Timbers [1340], and [1310]. A section of timber [1310] was lifted and found to be a typical bored elm log. It was c. 320mm in diameter and had a bore of 130mm. Clearly these timbers carried water, or 'waste' into the large N-S channel lined by revetments [390] and [1370].

### **Key Timbers Found in Trench D2**

The key timber structure found in this trench was about half of a rectangular plank-lined, tank type structure that was probably a tanning pit, Structure [373]. When examining the plank lining elements on-site it was clear that they were partially over lapping and held together with small iron rivets. The lining planks were carefully lifted on supporting boards for detailed recording off-site. Up to three courses of planking survived. When the planking was cleaned off-site it was immediately apparent that the pit-sawn elm boards were articulated sections of a post-medieval clinker built river barge hull. The planking was worn and the vessel had been repaired with small elm and oak 'tingles' (patches) held with small iron nails with tips turned over to prevent withdrawal. All the waterproofing material was of tarred animal hair which was sampled for species ID. A small pile corner post was found in side the feature with an axe hewn point, Timber [372]. This was made of waney boxed heart oak and had relict oak treenail holes and a notch cut in one edge showing that it was probably originally a frame timber from a clinker built vessel. The dimensions of 130mm x 100mm suggest that this may well have been one of the local London river barges.

Although elm timbers can not be tree-ring dated one of the tingles was made of cleft oak and had surviving sapwood. This was sampled and successfully matched with a tree-ring felling date of c. 1610-32 AD. This would fit with phasing to the later part of Phase 5b for the reuse of the parent vessel's timbers. As we have not yet found any relatively complete wrecks of vessels of this type and date this small collection of timbers is still important for what it can tell us about the building of Thames river craft in the 16th-17th centuries.

A distinctive boxed heart oak post was also found apparently inside the plank tank base which may have been an early medieval building or revetment post, Timber [366]. This had a rectangular cross section with a flaring flat base which would have been set below ground. One side had a deep groove most of its length that may once have held planking set on edge. This wall and revetment construction system is often called 'bulwark construction' and documented in London from the 11th to late 12th centuries AD. Perhaps the digging of the pit had disturbed an earlier feature? Bulwark revetments of 12th-century date were found at the south abutment of medieval London Bridge not far to the north. The timber had too few annual rings for tree-ring dating, and its origins may remain mysterious.

### **Key Timbers Found in Trench E1**

The earliest timbers found in this trench on stratigraphic grounds (Phase 4b) include several small piles and stakes in the SE corner of uncertain function. The group included a burnt elm roundwood stake, Timber [1478], and one of oak roundwood, [1476]. Also included was a stake hewn from a softwood plank with a recessed bolt hole, Timber [1468]. The last element might suggest a date in the late 17th century or later rather than the 15th and 16th century.

The woodwork attributed to the following Phases 5a and 5b includes several distinct structures which must have spanned a considerable period of time.

The woodwork attributed to the Phase 5b, of the 16th to 17th century in Trench E1 included several timber and roundwood groups which on structural grounds might be better broken up. In the NW corner the remains of a small revetment was exposed with a thin oak board on edge, Timber [1494], which was supported by oak roundwood stakes to the south, Timbers [1492] and [1493]. This implies the land lay to the NW and water to the south. The thin cleft oak board lacked sapwood but would appear to have been of 15th-century date (see I Tyers, Appendix 16). It is possible that this board was reused from a building but a date later than 16th century is perhaps unlikely.

What might make better structural sense as later are the timbers now labelled as part of Phase 5a. This includes a land-tie assembly comprising E-W land-tie beam [1415] and a lock bar timber [1418] with a pair of anchor stakes. Only the lock bar timber was lifted and was of a small section of oak taken from a larger baulk. The land-tie assembly would clearly have supported a N-S revetment which lay to the west. Few revetments less than 1m or so deep have been found fitted with such assemblies. By its very function this type of element has to be set within a hole in adjacent land and thus relates to higher, later surfaces. The evidence recorded does not provide a close date as such simple assemblies were used over a very long period of time. To the east of that group of timbers a roughly N-S line of later squared foundation piles was found including timbers [1458] and [1421] again these timbers must have relate to higher and later structures. They were not retained for detailed recording, so little more can be said but a dating to the late 16th century or rather later seems most likely.

Also possibly later, were the remains of the edge of a timber lined tank type feature, possibly a tanning pit. This small collection of oak piles and planks include square oak post [1483] and sawn oak plank, Timbers [1486] and [1484] etc, which seem to have been shipyard waste planks. By its nature this feature would also have been cut down from above.

Moving on to what has been phased as slightly later activity within the trench area Phase 5b, we have what may actually have been earlier than the above? About 2m to the south of the remains of the revetment including board [1494] was another revetment structure made with sheathing of fine wattlework which had slumped slightly to the south showing the land-fill was dumped on the north side, Structure [1445]. This implies a sequence of E-W revetment building working southward. The wattlework sheathing was supported on the south side by oak pole piles such as Timber [1476], [1453], and [1464]. In some cases they were fairly knotty and clearly top logs of young stems such as pile [1447]. These oak pole may well have been cut in local managed woodland which survives in SE London and includes unusually large areas of old oak coppice producing many small oak logs. The sheathing of this cheaply built revetment was made of three separate wattle panels or 'hurdles' [1454], [1455] and [1456] and was locally reinforced with a plank set on edge and nailed to a pile plank [1446]. The fine whole rods used were sampled and found to have been of a mixture of oak and willow with between 5-10 annual rings where sampled and 10-18mm in diameter (see I Tyers, Appendix 16). They were not split as most rods are in recent traditional hazel hurdles from southern England. This is typical of earlier wattlework. The drawings done of the wattlework and axe cut oak pole piles, in difficult conditions in the field are particularly clear. Further study at the next stage of post-excavation work should shed light on local woodland history and woodland crafts that were probably practised then within the limits of greater London.

Behind the wattle revetment several boards and planks were found laid on-face and may possibly have served as duckboards during the building of the revetment. One of these planks, Timber [1436], was found to originally have been a building wall cladding board of elm and was clearly marked with several taper burns from its building phase of use. These were made by rush lights or candles set too close to the wall and are commonly found in early standing buildings. Another loose timber of interest was a section of an oak boat locker lid or window shutter, Timber [1495].

### **Timbers Found in Trench E2**

In the two small trenches labelled Trench E2 a small amount of woodwork was found. In the southern trench two oak piles or stakes were found, Timber [769] was a small squared pile and Timber [778] a round oak log pile. In the northern trench two planks on edge were found that seem to have been part of a planked drain and one small boxed heart oak pile which was associated with them was lifted, this timber was 75mm square. Oak pile Timber [772] hewn from a morticed building timber also appears to derive from this trench.

### **Timbers Found in Trench E3**

Only two squared pile timbers were found in this trench in the NW corner, Timbers [1222] and [1223], but they were too decayed to lift for further recording.

### **Woodwork Found in Trench G**

In Trench G what was initially recorded as a circular wattle structure was later recognised as a demolished barrel lined well where the original staves had been removed. What remained were the roundwood hoops that once bound the staves together, oak staves were sometimes reused as fence pales as they were usually of strong durable cleft oak in post-medieval casks.

### **Key Woodwork Found in the Trenches In The NW Corner of the Site Trenches H1, H2, H3**

Moving right up to the NW corner of the site a small amount of woodwork was found in three trenches which must have been fairly close to the northernmost Southwark island in the Roman period. In Trench H1 a nobbly root mass was found [2209], which may have been a tree growing in situ. In Trench H2 a stake was found made from half a small oak log, Timber [1927]. This stake was found truncated at c. 0.61 OD and appears to be of Roman date. A fragment of box halved beam oak beam was lifted from Trench H3, Timber [1725] which is likely to be of late medieval or later date.

### **Notes on the General Significance of the Historic Waterlogged Woodwork Found**

This assemblage includes a small amount of Roman period woodwork but the vast bulk was very late medieval and of the 16th to 18th centuries. It is a medium to large sized assemblage of waterlogged woodwork by London standards. The level of survival varied but in several trenches such as Trenches D1, D2, and E1 a significant amount of material survived. The presence of revetments, tanning, pits and foundation assemblies shed some light on, the use and development of the low lying area, its extinct watercourses and expansion of the north Southwark historic core. This is of clear local significance.

Some of the woodwork found is also significant for what it tells us about various historic woodworking trades. It provides 'snap shots' of ship building and breaking, local barge construction, wattle hurdle making, aspects of timber conversion, building carpentry and regional woodland management and timber supply.

The assessing of the woodwork found in the newly excavated 'WA Trenches' is also likely to be useful for understanding the overall site development if not for wider purposes.

### **The Potential for Further Analysis of the Woodwork Assemblage**

Some of the more decayed and isolated elements of woodwork found have relatively little potential for useful detailed analysis but the better preserved structures such as the main revetments [390], [1370] and [1445] are clearly worthy of more analysis. Several groups of reused timbers are also information

rich and will repay further study, shedding light on areas still relatively little known such as; local barge building, the recycling of ship timbers for local buildings, and a small group of later medieval building timbers. The well recorded wattle hurdles of revetment [1445] also have the potential to shed light on the nature of local woodlands and woodland crafts in the c. 16th-century period. Some more liaison with the project stratigraphic team and other specialists in connection with the interpretation of some of the timber structures may also help to develop a more detailed understanding of the development of the site.

### **Method Statement Notes on a Contribution to the Proposed Analysis and Publication**

Having scanned all the records of the main phases of archaeological work at this London Bridge Station Improvement project the following estimates for the funded time needed to complete various aspects of the analysis/ publication project have been made. This is broken down as follows;

- 1) To review and complete the recording and sampling of the newly excavated woodwork from the W trench areas, where 79 pieces of historic woodwork have been found and 39 lifted for detailed recording.
- 2) To liaise and review the plans and other records related to the total of 79 new timbers found.
- 3) To provide a fully referenced analysis text and c. 2 draft figures covering Roman timbers found earlier on the BVC12 Thameslink site.
- 4) To provide a fully referenced summary analysis text with c. 5 explanatory draft figures for the 203 items of woodwork found in the first phase of the BVM12 site including further liaison with excavation supervisors.
- 5) To provide a fully referenced summary analysis text of the 79 new timbers excavated in Trenches WA1-3.
- 6) To assist with checking and editing draft and proof copies.

### **Acknowledgements**

Thanks are due to J. Butler and A Fairman of PCA for liaising over the records of this project, and other PCA staff for helping with the processing of the lifted woodwork.

### **Select bibliography**

Brunning, R., 1996. *Waterlogged Wood*. English heritage Guidelines 2nd edition

Divers, D., 2002. 'The post-medieval waterfront development at Adlards Wharf, Bermondsey, London'. *Post-medieval Archaeology* 36, 39-117.

Goodburn, D., 1991. 'New light on early ship and boatbuilding in the London area', in G. Good, R. Jones & M. Ponsford (eds.), *Waterfront archaeology, proceedings of the third international conference, Bristol, 1988*. CBA Res Rep 74, 105-11.

Marsden, P., 1996. *Ships of the port of London twelfth to seventeenth centuries AD*. English Heritage, London.

Spence, C. (ed.), 1990. *Archaeological Site Manual*. Museum of London 2nd edition.

## APPENDIX 16: TREE RING SPOT DATES AND WOOD IDENTIFICATION

Ian Tyers

Seven samples from oak timbers excavated from the London Bridge Station Thameslink, Southwark (site code BVM12, NGR c. TQ 3302 8012) were submitted for dendrochronological assessment and analysis, a further 30 samples were submitted for wood identification, and 10 elements of a wattle structure were submitted for wood identification, ring counts and diameter records. Two of the oak dendrochronological timbers were successfully dated. The result indicates these timbers were of 15th- and 17th-century origin.

### Methodology

The timbers were supplied as cross-sections. They were assessed for the wood type, the number of rings they contained, and whether their sequences of ring widths could be reliably resolved. For dendrochronological analysis samples usually need to be oak (*Quercus* spp.), to contain 50 or more annual rings, and the sequence needs to be free of aberrant anatomical features such as those caused by physical damage to the tree whilst it was still alive. Standard dendrochronological analysis methods (see e.g. English Heritage 1998) were applied to the suitable samples. The sequence of ring widths in these samples were revealed by preparing a surface equivalent to the original horizontal plane of the parent tree with a variety of bladed tools. The width of each successive annual growth ring was revealed by this preparation method. The complete sequence of the annual growth rings in these samples were then measured to an accuracy of 0.01mm using a micro-computer based travelling stage. The sequences of ring widths were then plotted onto semi-log graph paper to enable visual comparisons to be made between the sequences and reference data. In addition cross-correlation algorithms (e.g. Baillie & Pilcher 1973) were employed to search for positions where the ring sequences were highly correlated. Highly correlated positions were checked using the graphs and where these were satisfactory, these locations were used to identify the calendar dates of the measured series.

The *t*-values reported below were derived from the original CROS algorithm (Baillie & Pilcher 1973). A *t*-value of 3.5 or over is usually indicative of a good match, although this is with the proviso that high *t*-values at the same relative or absolute position needs to have been obtained from a range of independent sequences, and that these positions were supported by satisfactory visual matching.

The tree-ring analysis initially dates the rings present in the timber. The interpretation of these dates relies upon the nature of the final rings in the sequence. Oak timber contains 2 types of wood, heartwood and sapwood, the latter is on the outside of the tree and thus contains the most recent growth rings, this material is softer and is not always preserved under archaeological conditions. If the sample ends in the heartwood of the original tree, a *terminus post quem* (*tpq*) date for the felling of the tree is indicated by the date of the last ring plus the addition of the minimum expected number of

sapwood rings which are missing. This *tpq* may be many decades prior to the actual date that a tree was felled, particularly where poor preservation or other loss of outer heartwood has occurred. Where some of the outer sapwood or the heartwood/sapwood boundary survives on the sample, a date range for the felling of a tree can be calculated by using the maximum and minimum number of sapwood rings likely to have been present. For this material the sapwood estimates used are a minimum of 10 and maximum of 46 annual rings, where these figures indicate the 95% confidence limits of the range.

Identifications of wood type are based on the taking of microscopic thin sections of each timber in three planes (radial, transverse and tangential sections). The comparison of these sections with reference slides, or by identification keys, enables secure identification to be made.

Archaeological wood may have problems of degradation during burial, or during their storage prior to identification, this may lead to the loss of one of more critical features that prevent any identification being made.

Hand cut thin sections were obtained from each of these samples. These sections were placed on glass slides and examined at between 40x and 1000x magnification. Comparison with permanent reference slides confirmed the identifications given below. The temporary slides & samples were then discarded.

## **Results**

The submitted material included 7 oak (*Quercus* spp.) dendrochronological samples. Five of these contained measurable tree-ring sequences, and were measured successfully (Table 1). Sequences from 2 of these cross-matched strongly with tree-ring data from London and south-east England (Tables 2 & 3). One of the dated timbers retained some sapwood but none were complete to bark-edge. Assuming typical quantities of sapwood were originally present on these timbers the results indicate that sample 1494 is either of very late 14th- or more likely 15th-century date whilst sample 367, a boat tingle, is from the first half of the 17th century (Figure 1). The undated material is characterised by the presence of bands of slow growth interspersed with fast growth, possibly indicating they were derived from managed woodlands.

The wood identifications include native hardwoods, and imported softwoods (Table 4), the wattle samples contain 2 timber types and are fairly uniform in size (Table 5)

## **Acknowledgements**

My thanks to Jon Butler for providing site details and for making the administrative arrangements.



## Bibliography

Baillie, M. G. L. & Pilcher, J. R., 1973. A simple crossdating program for tree-ring research, *Tree Ring Bulletin*, 33, 7-14.

Bridge, M. C., 1998. *Tree-ring analysis of timbers from the Home Farm Complex, Newdigate, Surrey*, Anc Mon Lab Rep, 37/98.

English Heritage, 1998. *Dendrochronology: guidelines on producing and interpreting dendrochronological dates*, English Heritage.

Miles, D., 1998. *The tree-ring dating of Wenham Manor Barn, Rogate, West Sussex*, Anc Mon Lab Rep, 62/98.

Tyers, I., 1992 Trig Lane: New Dendrochronological Work in *Timber building Techniques in London c.900-1400: An archaeological study of waterfront installations and related material* (G Milne), LAMAS Special Paper, 15, 64-5.

Tyers, I., 2001. *Dendrochronological spot-dates of samples from Abbey Road, Barking, London* (AYR99), ARCUS Rep, 575d.

Tyers, I., 2007a. *Tree-ring spot-dates of archaeological samples: Caroone House, 14 Farringdon Street, City of London (sitecode FAS02)*, Dendro Co Rep, 48.

Tyers, I., 2007b. *Tree-ring spot-dates of archaeological samples: Mondial House, 90 Upper Thames Street, City of London (sitecode UPM05)*, Dendro Co Rep, 110.

Tyers, I., 2008. *South-West Portico Roof and Bell Tower, Peterborough Cathedral, Cambridgeshire: Scientific Dating Report - Dendrochronological Analysis of Oak Timbers*, EH Res Dept Rep Ser, 75-2008.

Tyers, I., Andrews, D. & Stenning, D., 2003. Tree-ring dates from Small Aisled Halls in Essex: List 137, *Vernacular Architect*, 34, 101-2.

Tyers, I. & Hall, C., 1997. *Dendrochronological spot dates for 103 timbers from No 1 Poultry, City of London, Victoria Wharf, Tower Hamlets, 179 Borough High St, Southwark, Horsefair, Kingston, Somerset House, Westminster, Temple Place, Westminster, and Royal Opera House, Westminster*, ARCUS Rep, 302.

Figure 1: Bar diagram showing the dating positions of the 2 dated oak tree-ring samples from London Bridge Station (BVM12). Interpretations using a 10-46 ring sapwood estimate are also shown. Oak heartwood (white bars), sapwood (hatched bar).

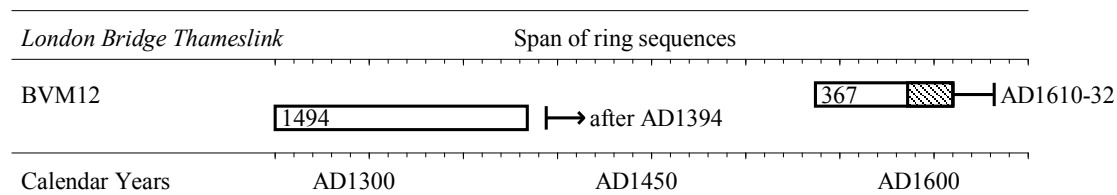


Table 1: Details of the 7 oak (*Quercus* spp.) samples from London Bridge Station (BVM12). Interpretations are given using a 10-46 ring sapwood estimate. +sB complete to spring felled bark surface. NB Sample 1432 contained a sequence of narrow growth bands and this sample was not analysable.

Context	Rings	Sap rings	Date of measured sequence	Interpreted result
367	74	24	AD1537-AD1610	AD1610-32
389	151	-	not dated	-
1338	47	12	not dated	-
1367	52	15+sB	not dated	-
1432	~65	-	not analysed	-
1493	~10	-	not analysed	-
1494	135	-	AD1250-AD1384	after AD1394

Table 2: Showing example *t* values (Baillie & Pilcher 1973) between the sequence from sample 367 from London Bridge Station (BVM12), and 6 independent site series.

	<b>367</b> 1537-1610
London, Barking Abbey Rd AYR99 barrels (Tyers 2001)	6.54
London, City Caroone House FAS02 (Tyers 2007a)	5.84
London, Tower Hamlets Victoria Wharf VIT96 (Tyers & Hall 1997)	5.54
Surrey, Newdigate Home Farm (Bridge 1998)	7.06
West Sussex, Pendean Farm Midhurst at Singleton (author unpubl)	6.45
West Sussex, Wenham Manor Barn Rogate (Miles 1998)	5.70

Table 3: Showing example *t* values (Baillie & Pilcher 1973) between the sequence from sample 1494 from London Bridge Station (BVM12), and 6 independent site series.

	<b>1494</b> 1250-1384
Cambridgeshire, Peterborough Cathedral Tower (Tyers 2008)	6.09
Essex, Blackmore Church (Bridge pers comm)	5.69
Essex, Normans Hall Wakes Colne (Tyers <i>et al</i> 2003)	5.34
London, City Mondial House UPM05 (Tyers 2007b)	7.29
London, City Trig Lane TL74 (Tyers 1992)	6.43
London, Southwark China Wharf (author unpubl.)	5.74

Table 4: Wood identifications London Bridge Station (BVM12). The following samples were not suitable for tree-ring analysis but required wood identification.

cf comparable to

cf *Abies* sp is fir type, it is not always possible to reliably separate juvenile timbers from the *Picea* or *Larix* types from their microscopic wood anatomy. This wood type was widely used in both the Roman and the post-medieval period and was imported from central Europe

*Pinus sylvestris* is Scots pine. This wood type was widely used in the medieval and post-medieval period and (although native in the north of Scotland) was usually imported from northern Europe

*Picea/Larix* is spruce and larch type, it is not possible to reliably separate these types from their microscopic wood anatomy. This wood type was widely used in the post-medieval period and was imported from northern Europe

cf Pomoideae is native fruitwood, e.g. apple or pear types, but hawthorn is perhaps most likely. It is not possible to reliably separate these types from their microscopic wood anatomy

cf *Prunus* spp is native fruitwood, e.g. cherry or plum types, but blackthorn and damson is perhaps most likely. It is not possible to reliably separate these types from their microscopic wood anatomy

*Quercus* spp is native oak. It is not possible to reliably separate the species from their microscopic wood anatomy

Rosaceae is either of the 2 native fruitwood groups. It is not possible to reliably separate juvenile examples of these types from their microscopic wood anatomy

Salicaceae is native willow/poplar. It is not possible to reliably separate these types from their microscopic wood anatomy

*Ulmus* spp is native elm. It is not possible to reliably separate the species from their microscopic wood anatomy

Context	Identification	English Name
6	<i>Pinus sylvestris</i>	pine
15	a cf <i>Abies</i> sp	fir
	b <i>Pinus sylvestris</i>	pine
66	<i>Pinus sylvestris</i>	pine
353	<i>Ulmus</i> spp	elm
358	a cf Pomoideae	hawthorn/fruit tree type
	b cf Pomoideae	hawthorn/fruit tree type
	c cf Pomoideae	hawthorn/fruit tree type
367	<i>Ulmus</i> spp	elm
368	<i>Ulmus</i> spp	elm
668	cf <i>Prunus</i> spp	blackthorn/damson etc
678	a cf <i>Prunus</i> spp	blackthorn/damson etc
	b cf <i>Prunus</i> spp	blackthorn/damson etc
	c cf <i>Prunus</i> spp	blackthorn/damson etc
	d unidentified	hollow, bark only
775	Rosaceae type	juvenile fruit type
1301	<i>Pinus sylvestris</i>	pine

1315	Salicaceae	willow/poplar
1325	<i>Pinus sylvestris</i>	pine
1326	cf <i>Abies</i> sp	fir
1340	<i>Ulmus</i> spp	elm
1351	Salicaceae	willow/poplar
1353	<i>Picea/Larix/Abies</i>	juvenile spruce/larch/fir
1355	<i>Pinus sylvestris</i>	pine
1358	<i>Pinus sylvestris</i>	pine
1372	<i>Pinus sylvestris</i>	pine
1436	<i>Ulmus</i> spp	elm
1462	<i>Ulmus</i> spp	elm
1471	cf <i>Abies</i> sp	fir
2209	cf Pomoideae	hawthorn/fruit tree type

Table 5: Wattle 1445 roundwood age/size records London Bridge Station (BVM12). Key as for Table 4.

sub-sample	Identification	ring count	diameter (mm)
a	<i>Quercus</i> spp	6 late summer cut	15
b	<i>Quercus</i> spp	5 late summer cut	15
c	<i>Quercus</i> spp	4 (not roundwood)	18
d	Salicaceae	6	17
e	Salicaceae	7	13
f	Salicaceae	10	16
g	Salicaceae	8	15
h	Salicaceae	5	10
i	Salicaceae	9	14
j	Salicaceae	10	18

## APPENDIX 17: ASSESSMENT OF WOOD CHARCOAL

Sheila Boardman

### Introduction

Thirty-two soil samples from the 2012 excavations were examined for wood charcoal (Hunter 2013), of which twelve samples were assessed in more detail. The assessed samples came from deposits ranging in age from possibly AD 1300-1500 until the 19th century. They included a possible floor layer, an *in situ* burnt layer, dumps and pit fills, a charcoal layer, industrial waste layers, a fill of a channel, and a possible fill of a revetment bank. A summary of the samples, the periods investigated and recommendations for further work can be found in Table 1.

Table 1: Summary of samples assessed and recommendations for further work.

Period/Date(s)	Phase	Deposits	Samples assessed	For further work
AD 1300-1500		Dump	1	0
Late Med		Pit fills	2	2 (full)
Med/early post-med		Channel fill	1	1 (rapid)
Post-med 16th century		Rubbish pit	1	1 (full)
Post-med 17th century		Charcoal layer	1	1 (rapid)
		Industrial pit fill	1	0
Post-med		Floor/burnt deposit	1	0
		Industrial waste layers	2	2 (rapid)
18th/19th centuries		Layer/revetment bank	1	0
		In situ burnt layer	1	0
<b>SAMPLE TOTALS</b>			12	6

### Methods

The samples were processed at PCA, as described in Hunter (2013). The wood charcoal fragments examined during the assessment were mostly from the (dry-sieved) greater than 4 and 2-4mm flots. Where available, around 25 to 35 dry charcoal fragments were examined per sample. Three of the assessed samples came from waterlogged deposits. Here, charcoal fragments were selected from the > 1 mm samples fractions. Due to time constraints, the majority of charcoal fragments were only examined at low magnifications (x10 – x40), so the tentative identifications will require verification

before publication of the results outlined below. Identifications took place using standard reference books and keys (including Schweingruber 1990; Hather 2000; Gale & Cutler 2000).

## Results

The assessment results are summarised in Table 2. The following taxa were identified:

*Taxus baccata* - yew

Cytisus/Fabaceae - broom/legume wood

*Prunus* type – blackthorn/cherry type

Pomoideae – sub-group of Rosaceae family which includes *Malus* (crab-apple), *Pyrus* (pear), *Crataegus* (hawthorn) and *Sorbus* (rowan/whitebeam/service)

*Ulmus* – elm

*Quercus* - oak

*Fagus sylvatica* - beech

*Betula* - birch

*Alnus glutinosa* – alder

*Corylus avellana* – hazel

*Carpinus* type – hornbeam type

Salix/Populus – willow/poplar

*Acer campestre* – field maple

*Fraxinus excelsior* – European ash

In Table 2, the numbers of fragments per taxa group for each sample have been roughly quantified using asterisks, as outlined below. The right hand column incorporates codes for the potential for further work on each sample. This has been adapted from Carruthers (2011; see Hunter 2013) and it is also described below.

## Quantity codes

\* 1-5 fragments

\*\* 6-10 fragments

\*\*\* 11-50

## Charcoal potential codes

The potential of the samples for further wood charcoal investigations has been coded as follows.

A - High potential on archaeobotanical grounds, i.e. rare or interesting taxa and range of material, or exceptional preservation; or high potential on archaeological grounds due to scarcity of information from this type of material and/or deposit or period.

B - Good potential due to the quantity and range of material present and its reasonable preservation; i.e. the assemblage can provide a useful amount of information.

C - Some identifiable plant material but in low concentrations or poorly preserved.

D - No identifiable material or so little that this has already fully identified/recorded (for example, when all the wood charcoal present is from a single taxon such as oak [*Quercus*]).

The dominant tree taxa present in the samples appear to be oak, beech and ash. Oak and ash are represented by heartwood, possible sapwood and roundwood fragments. Beech timber and roundwood are present. Roundwood was also noted for other taxa including Fabaceae/Cytisus, hazel and Pomoideae.

### **Discussion and Recommendations**

Using wood charcoal data it may be possible to address questions relating to the following research areas:

- Preferred fuel woods in use at the site in different periods

- Preferred fuel wood for particular industrial or domestic activities

- Exploitation of local environment and its possible character

- Patterns of importation of fuel woods

- Changes in fuel wood preferences over time

### **Comparison with other sites**

Comparative data is available from a number of Thameslink sites (e.g. BVG10, BVX09, BVW10, BVQ09, BVB10), from additional sites excavated by MoLAS/MOLA, and from other published reports from London. Historically, there have been few wood charcoal investigations on urban sites from these period.

### **Wood Charcoal: Recommended Analyses and Tasks**

#### **Tasks**

1. Assessment data to be checked, so this can be included in the wood charcoal report.

2. Recommended that three samples are fully analysed (marked A/B and B in Table 2), and a further four samples (marked B-C, Table 2) are rapidly analysed.

3. Final report to include data from 12 samples.

## Bibliography

Gale, R. & Cutler, D., 2000. *Plants in Archaeology: Identification manual of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*. Westbury and Kew.

Hather, J. G., 2000. *The Identification of Northern European Woods: A Guide for Archaeologists and Conservators*. London: Archetype Publications.

Hunter, K., 2013. *The Assessment of Plant Macrofossils from Bulk Samples from London Bridge Thameslink Improvement Works (BVM12), London Borough of Southwark*. OA archive report. October 2013.

Schweingruber, F. H., 1990. *Microscopic wood anatomy*. 3rd Edition. Birmensdorf: Swiss Federal Institute for Forest, Snow and Landscape Research.



Site	Trench/Area	Sample No	Context	Phase	Dating Decision	Feature Type	Charcoal fragment size	sample volL	<i>Taxus baccata</i>	<i>Fabaceae</i>	<i>Prunus</i> type	<i>Pomoideae</i>	<i>Ulmus</i>	<i>Quercus</i>	<i>Fagus sylvatica</i>	<i>Betula</i>	<i>Alnus glutinosa</i>	<i>Corylus avellana</i>	<i>Alnus/Corylus</i>	<i>Carpinus</i> type	<i>Salix/Populus</i>	<i>Acer campestre</i>	<i>Fraxinus excelsior</i>	Indet.	Comments	Charcoal potential
BVM12	G	38	2215		AD 1300-1500	Dump layer with fish bones	>2 mm	?						***sh	*				cf. *					*	Waterlogged sample. Circa 50-60 identifiable charcoal Fs. Largely oak.	C
BVM12	C	17	218		Late Med	Fill of pit [219]	>2 mm	7				*r		***rs(h)	*	*		*r					*h	*	Charcoal rich. Oak & mixed roundwood fragments.	B
BVM12	C	18	220		Late Med	Fill of pit [220]	>2 mm	8				*	*h	***hrs	*	*		**r					**shr	*	Charcoal rich. Mostly oak & ash.	B
BVM12	E1	34	1434		Med/early post Med	Fill of channel	>2 mm	?						**h	*			*r		cf. *			*	**r	Waterlogged sample. Moderately charcoal rich. 70-100 identifiable Fs.	B-C
BVM12	A3	19	595		Post Med 16th C	Fill of Rubbish pit [596]	>2 mm	10						***shr	*	**		*r			**	*	**th		Very rich sample. Some charcoal fragments greater than 5 cm in size, inc. all main species (oak, willow/poplar, birch, ash)	A-B
BVM12	E2	23	725		1600's	Charcoal layer	>2 mm	10	*	*				**					*	*			*		Not charcoal rich (c. 70F). Oak - all with v dense rings (from single piece) but few tyloses. Unusual range of woody taxa.	B-C
BVM12	A3	12	475		Post Med 17th C	Fill of pit [477] - industrial backfill?	>2 mm	7						***rs				*	*						Flot prod. mostly clinker. Only around 20F charcoal, almost all < 4mm in size. All identified.	D
BVM12	F (south)	25	858		Post Med	Floor surface/burnt deposit?	>2 mm	7						**h(s)	**r	*							**r(h?)	*	Oak with some ash. Charcoal sometimes sticky/gummy. 50-70F in all.	C
BVM12	F (south)	26	865		Post Med	Industrial wate layer	>2 mm	18						**h(sr)	**		*	*							c. 200F in total. Oak dominated.	B-C
BVM12	F (south)	27	866		Post Med	Industrial wate layer	>2 mm	?						***hrs	***	*				*					Charcoal rich. Mixed beech/oak.	B-C
BVM12	D1	35	1303		Mid 18th - early 19th C	Layer-revetment bank	>2 mm	?						**h					*					*	Waterlogged sample. Up to 50 identifiable frags of charcoal. Mostly v fragmentary & largely oak. Coal & clinker.	C
BVM12	A3	6	177		18th/19th C	In situ burnt layer	>2 mm	8			*	*	*	**r		*									Very little. All identified.	D

#### KEY

h - heartwood  
s - sapwood  
r - roundwood

\* 0 - 5 frags  
\*\* 6 - 10 frags  
\*\*\* 11- 50 frags

Footnotes: Highlighted samples - for full analysis;

Table 2: Charcoal Results from BVM12

## **APPENDIX 18: PLANT MACROFOSSILS ASSESSMENT**

### **Kath Hunter**

During archaeological investigations at London Bridge Station on the south side of the Thames, 32 deposits were sampled. The provisional dating of these samples ranges from 16th to 19th century. The features sampled included possible industrial spreads, cess pit fills and a 19th-century pot filled with metal working slag and food waste. The plant remains were assessed from each of these samples. The range of species present and the preservation varied greatly across the site: from very well preserved fruits to samples containing only a few potentially identifiable charcoal fragments. The results of this assessment, together with the volumes of soil taken and processed, are given in Table 1.

Samples were also assessed from a monolith sample taken during the excavation and a borehole taken through the floodplain sequence (Table 2).

### **Aims and Objectives**

The aim of this assessment is to characterise the quantity and quality of plant remains preserved in deposits in order to assess the value of the material to answer site-based and regional research questions. To do this, the following categories of information are considered:

- The quantity of the material preserved
- The quality and type of preservation
- The range of species represented
- Indicators of human activity such as domestic and agricultural practice
- Indicators of dietary or medicinal plants
- Indicators of the local environment

### **Methodology**

#### **Bulk samples**

Samples were processed at PCA by one of two methods. For samples not considered to be waterlogged the entire sample was processed by flotation using a siraf-style tank and meshes of 300µm (flot) and 1mm (residue). Both flots and residues were dried and the residues sorted by eye. For samples considered to be waterlogged (i.e. to contain anaerobically preserved material)

or to be composed of cress, sub-samples of 0.5L or 5L were wet sieved over a 1mm and 300µm sieve stack (flot and residue). Both fractions were retained wet and the larger fractions were sorted by eye. The flots and residues as well as extracted seeds and fish bone were subsequently stored at OA South and the wet material stored at below 5°C. Unprocessed sediment was retained for possible future work. Not all processing records were available or complete at the time of writing and in some cases the volume of processed sediment is not known. Where the volume is known it is recorded in Table 1.

#### Borehole/monolith samples

Sample 37 is a monolith sample taken from deposits behind a revetment at the edge of the eyot. Three sub-samples were taken from organic deposits noted at varying depth within the sample (See Table 2). Three sub-samples from Borehole C1, which sampled the floodplain sequence, were also selected for assessment. Each sub-sample was sieved using a bucket flotation technique with the flot and residue being retained on 250µm mesh. Both flot and residue have been kept wet and stored below 5°C. The volumes for each sub-sample measured by water displacement are recorded in Table 2.

A portion of each sample was scanned by the author using low powered microscope at magnification of between x10 and x20 (Leica EZ4D) at OAS. The presence, relative abundance and type of preservation of plant remains were recorded along with the occurrence of insect, molluscs bone and shell. The frequency of charcoal and wood fragments was also noted and the frequency of wood and charcoal fragments above <2mm in all dimensions was indicated.

Where delicate or individual specimens of particular interest were found they were placed in a glass tube (in water if waterlogged) and returned to the flot or residue in order to protect them and to enable them to be found easily if needed at a future analysis stage. Where identified the nomenclature for the plant remains follows Stace (2010). Please note that the term seed might include achene, mericarp etc. The identification of the plant macrofossils was carried out in comparison with modern reference material and standard reference texts (Beijerinck 1947; Schoch *et al.* 1988; Berggren 1981; Cappers *et al.* 2006).

During the scanning process the frequency of the different types of charred/waterlogged plant remains were recorded using the following key:

\* 1-5 items

\*\* 6-10

\*\*\* 11-50

\*\*\*\* 50-100+

For wood and charcoal the value inside the brackets indicates the frequency of fragments above 2mm in all dimensions, whilst the value outside is less than 2mm in all dimensions e.g. (\*\*\*)\*\*.

## Results

### ***Bulk samples (Table 1)***

Identifiable plant remains were present in most samples, with examples of charred waterlogged and mineralised remains. Five samples contained remains sufficiently well preserved and representative of species that have the potential to provide information about the past environment as well as providing evidence of dietary and possibly medical elements.

Two post-medieval cess pit fills (samples 3, context [56] and sample 28, context [869]) contain the remains of a variety of fruits as well as seeds which may have been consumed to help with digestive problems. Both psyllium (*Plantago* cf. *ovata*) and flax (*Linum* sp.) can be used as laxatives, and fennel (*Foeniculum vulgare*) may be used to settle the stomach. Further work will be required to confirm these identifications. Two 19th-century deposits contain elements that suggest they are derived from food processing waste rather than cess. Walnut (*Juglans regia*), hazelnut (*Corylus avellana*) and possible brazil nut (*Bertholletia excelsa*) shell fragments mixed with fruit stones were identified from a culvert fill (sample 31, context [388]) and large fruit stones and fish bones from a pot fill (context [842]) from a vessel within cess pit or soakaway [843]. Both assemblages also contained possible crustacean shell fragments.

A possibly late 18th-century layer (sample 35, context [1303]) contains coriander (*Coriandrum sativum*) with possible lentil (cf. *Lens culinaris*), both potential food plants. As with many of the deposits from the Thameslink project small numbers of grape seeds (*Vitis vinifera*) and in particular fig (*Ficus carica*) seeds are present in deposits which otherwise produced very poorly preserved plant remains. It would appear that both the waterlogged and mineralised seeds of these types might be intrusive or residual in many of the deposits. Therefore their presence in samples without other identifiable remains are excluded from the full analysis stage but the presence of the species may be recorded in the general taxa table completed for the whole project to indicate the spread of these species across the sites.

Three samples (sample 12 context [475]; sample 15 context [459] and sample 18 context [220]) contain individual seeds of potentially imported food plants. Further identification work is required

to confirm the identifications for these seeds and if they prove to be correct they will be included in the full report. Full analysis is not required for these samples.

A late medieval pit fill (sample 17 context [218]) contained a small amount of charred cereal, which again can be added to the general taxon table without any further analysis. Two samples (sample 34 context [1434] and sample 38 context [2215]) contain wild taxa, which provide some indication of local environments with food species that would be useful to add to the general taxon table.

### Conclusions/Recommendations

The results of this scan indicate that six samples are worthy of fully recording and reporting, and an additional five samples should be subject to a detailed scan to provide a basic record of taxa present. The selected samples are listed below.

Samples recommended for further work

Trench/ area	Sample No	Context	Dating Decision	Feature Type	Mesh size Flot/µm	sample vol/L	Full analysis/sc an record
A3	15	459	Early post- med.	Layer of possible industrial waste	300	24	full analysis
B2	3	56	Post- med (C19th pot spot date)	Cess pit fill	300	21	full analysis
D1	31	388	C19th	Silted up fill of culvert[383]	300	20	full analysis
D1	35	1303	?late 18 <sup>th</sup> century	"Layer-revetment bank"	300	unknown	full analysis
F (south)	28	869	Post- med 19th?	Primary fill of cess pit/soakaway [843].	300	?5	full analysis
F (south)		842	c. 1850	Fill of pot in cess pit/soakaway [843]	300	unknown	full analysis
A3	12	475	Post- med C17th	Fill of pit [477] industrial backfill?	300	7	scan record
C	17	218	late med	Fill of pit[219]	300	8	scan record
C	18	220	late med	Fill of pit[220]	300	8	scan record
E1	34	1434	Med/ early	Fill of channel	300	unknown	scan record

			post-med				
G	38	2215	Medieval	Dump layer with fish bones	300	unknown	scan record

### ***Borehole/Monolith samples: preliminary results (Table 2)***

Whilst all of the samples assessed contained waterlogged plant remains very few were identifiable plant macrofossils. The few seeds present are mainly species associated with open water or water margin environments and as such provide little potential for interpreting the deposits further than this. Therefore no further work is recommended at this point, but the plant remains should be included in any discussion of the environments identified in the borehole samples once the results of the dating programme are known.

### **Bibliography**

- Beijerinck, W., 1947. *Zaden Atlas der Nederlandsche Flora*. Wageningen, Biol. Stat Wijster 30.
- Berggren, G., 1981. *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions, Part 2, Cyperaceae* Berlings.
- Berggren, G., 1981. *Atlas of seeds and small fruits of Northwest-European plant species with morphological descriptions, Part 3, Salicaceae - Cruciferae*, Berlings.
- Cappers, R. T. J., Bekker R. M., and Jans J. E. A., 2006. *Digitale Zandenatlas Van Nederland* Groningen University.
- Schoch, W. H., Pawlik, B., and Schweingruber, F. H., 1988 *Botanical macro-remains*, Haupt.
- Stace, C., 2010. *New Flora of the British Isles*, third edition, Cambridge.

							Charred			Mineralised					Waterlogged						Bone					Shell			Other				
Sample No	Context	Trench/ area	Dating Decision	Feature Type	Mesh size Flot/µm	sample vol/L	Grain	Legume	Charc	Cist /frags	fruit/nut	seed	wood	insect	seed	leaf / stem	wood	fruit /nut	roots	insect	fish	mammal S	Mammal L	Bird	indet	marine	other	egg shell		Comments	Plant remain analysis Potential	Charcoal potential	
1	130	A1		deposit containing clay tobacco pipe wasters evidence of burning.	300	circa 12			(*) *				*				*		*	*										Waterlogged-fig ( <i>Ficus carica</i> ),elder ( <i>Sambucus nigra</i> ),blackberry type ( <i>Rubus</i> sp.) insect puparia.Abundant clinker,glassy slag,coal.	D	Poor	
2	31	B2	post med (18th)	black industrial fill	300	18			(*) *							**	*	*		*										Waterlogged- grape ( <i>Vitis vinifera</i> ), insect puparia.Coal, clinker	D	Poor	
3	56	B2	Post med	Cess pit fill	300	21					***	*		***		***		**		**	*									Waterlogged-blackberry type ( <i>Rubus</i> sp.), Possible strawberry ( <i>Fragaria</i> sp.),possible cherry type ( <i>Prunus</i> sp.),insect puparia, worm egg cases and animal hair. Coal, Clinker. Residue- Mineralised frequent fly puparia, fig, currant,? psyllium ( <i>Plantago</i> cf. <i>ovata</i> ) fruit exocarp fragments,possible fennel(cf. <i>Foeniculum vulgare</i> ) fish bone, Waterlogged-blackberry ,fig ( <i>Ficus carica</i> )	A/B	Poor	
5	175	A3	18/19th	feature lined with cbm and peg tile.	300	7			(**)									*												Waterlogged- Grape ( <i>Vitis vinifera</i> )	D	Fair	
6	177	A3	18/19th	insitu burnt layer	300	8			(**)														*									D	Fair
7	423	A3	post med	occupation layer	300	7			(*)						**	*	*	*		*										Waterlogged- elder ( <i>Sambucus nigra</i> ),indet. Seed fragments. Coal, clinker, slag, metal spheres. Animal hair.	D	Poor	
8	422	A3	post med	mortar/ industrial waste	300	18			*						*	*		***			*									Mineralised concretions. Waterlogged- elder ( <i>Sambucus nigra</i> ), fig ( <i>Ficus carica</i> ), sedge ( <i>Carex</i> sp.),blackberry type ( <i>Rubus</i> sp.). Plastic,?man-made fibres,hair.	D	Poor	

9	426	A3	post med	mortar/ industrial waste	300	18											*		*														Waterlogged- fig ( <i>ficus carica</i> ),elder ( <i>Sambucus nigra</i> ),insect puparia. Frequent clinker and metal working spheres, slag, plastic.	D	Poor	
12	475	A3	post med C17th	fill of pit[477] industrial backfill?	300	7	*		(****)***						*	*		*		*					*									Waterlogged-blackberry type ( <i>Rubus</i> sp.)Possible squash type (cf. <i>Cucurbita</i> sp.),Charred- barley, charcoal includes roundwood . Abundant clinker,coal	C/B	Good
13	480	A3	post med	furnace sweepings	300	24			*								*																	Waterlogged-blackberry type ( <i>Rubus</i> sp.), fig ( <i>Ficus carica</i> ), hazelnut shell ( <i>Corylus avellana</i> )Abundant clinker,slag.	D	Poor
14	489	A3	later med/ early post med	?bottom"fill of construction cut for timber partition"/ "fill of gully in workshop"	300	8			(**)							*	*	**						*										Poorly preserved ?charcoal.Waterlogged-blackberry type ( <i>Rubus</i> sp.), fig ( <i>Ficus carica</i> ),Dicotyledonous leaf fragments.Abundant clinker and frequent coal.	D	Fair
15	459	A3	early post med	layer of possible industrial waste	300	24											**																	Waterlogged-blackberry type ( <i>Rubus</i> sp.), fig ( <i>Ficus carica</i> ), Possible squash type (cf. <i>Cucurbita</i> sp.) indet seeds, Abundant clinker,slag.	C?B	Poor
16	581	A2	16th ?	Fill of channel/ditch[559]	300	1 bucket			(***)***							**	**	(**)	****	**	*	*												elder ( <i>Sambucus nigra</i> ), knotgrass ( <i>Polygonum arviculare</i> ),fool's parsley ( <i>Aethusa cynapium</i> ),Bristly oxtongue ( <i>Helminthotheca echoides</i> ), buttercup ( <i>Ranunculus repens/acris/bulbosus</i> ) common nettle ( <i>Urtica dioica</i> )	B/C	Poor
17	218	C	late med	Fill of pit[219]	300	8	*		(****) **							**	****	(*)	**		*													Charred- barley and wheat. Waterlogged-elder ( <i>Sambucus nigra</i> ), sedge ( <i>Carex</i> sp.), euphorbia type ( <i>Euphorbia</i> sp.) campion type ( <i>Silene</i> sp.), Goosefoot type ( <i>Chenopodium</i> sp.)Caryophyllaceae, Laminaceae, Cyperaceae.	C/B	Good







38	2215	G		"Dump layer with fish bones"	300				(**) **					***		(****) ****	***			*	*					***	**	****	Waterlogged-fig ( <i>Ficus carica</i> ),elder ( <i>Sambucus nigra</i> ), blackberry type ( <i>Rubus</i> sp.),campion ( <i>Silene</i> sp.),buttercup type ( <i>Ranunculus</i> sp.),Apiaceae, Asteraceae.Residue-abundant egg shell fragments,mirine and ?fresh water molluca,small mammal bone, fish,wood,seeds inc.possible wood/water avens( cf. <i>Geum urbanum/rivale</i> ),slag, mortar,	A/B	Fair
	842			fill of pot	300								*		****		**								*		Waterlogged- plum stones ( <i>Prunus domestica</i> ), various sized prunus stones ( <i>Prunus</i> sp.), apple/pear ( <i>Malus/Pyrus</i> sp.) currant ( <i>Ribessp.</i> ) frequent metal slag,marine crustatian shell, large fish bones.	A	Poor		

Table 1: Plant Macrofossils Results from Bulk Samples at London Bridge Station

Borehole	Depth	Sample No	Context	Trench/ area	Dating Decision	Feature Type	Mesh size Flot/µm	sample vol/ml	Charred			Mineralised					Waterlogged						Bone				Shell			Other					
									Grain	Legume	Charc	Cist /frags	fruit/nut	seed	wood	insect	seed	leaf / stem	wood	fruit /nut	roots	insect	fish	mammal S	Mammal L	Bird	indet	marine	other	egg shell			Comments	analysis Potential	Charcoal/ wood potential
	15-20cm	37	1847			monolith sample from behind revetment	250µm	125ml									*	**	(*)**		****	*										Waterlogged- water crows-foot.( <i>Ranunculus</i> subgenus <i>batracium</i> )celery-leaved buttercup( <i>Ranunculus sceleratus</i> ) blackberry ( <i>Rubus</i> sp.)	C/D	poor	
	39-43cm	37	1842			monolith sample from behind revetment	250µm	175			*						*	**	**	*	****	*										Waterlogged- sedge ( <i>Carex</i> sp.),mint ( <i>Mentha</i> sp.),cf <i>Prunus</i> stone	C/D	poor	
	43-48cm	37	1842			monolith sample from behind revetment	250µm	175			(*)						*	***	(*)**		****	*										Waterlogged- indet seeds, goosefoot type ( <i>Chenopodium</i> sp.),mint ( <i>Mentha</i> sp.)	C/D	poor	
C1	4.9-5.0m					borehole	250µm	300			(*)						*	***	(*)		****	*										Waterlogged- small nettle ( <i>Urtica urens</i> )	C/D	poor	
																																Waterlogged-water plantain ( <i>Allisima</i> sp.), henbane ( <i>Hyoscyamus niger</i> ) ; indet,water crows-foot.( <i>Ranunculus</i> subgenus <i>batracium</i> ) ,common nettle ( <i>Urtica dioica</i> ) blackberry ( <i>Rubus</i> sp.), Hemlock (cf. <i>Conium maculata</i> ), Caryophyllaceae,	C/D	poor	
C1	5.0-5.1m					borehole	250µm	100			(*)						**	***	(*)		****	*												C/D	poor

[illegible]

## APPENDIX 19: SHELL ASSESSMENT

Rebecca Nicholson

Small numbers of marine shells were recovered from the residues of bulk samples processed at Pre-Construct Archaeology (Table 1). A full record is available in archive. Generally, samples included a range of shellfish types, with oysters (*Ostrea edulis*) the most frequent, followed by mussels (*Mytilus* sp.), common periwinkles (*Littorina littorea*) and cockles (*Cerastoderma* sp.) as well as rare examples of a tiny clam (not further identified) and smooth periwinkles (*Littorina littoralis*). With the probable exception of the clam and smooth periwinkles, these shells probably derive from domestic rubbish, and this suggestion is supported by the fact that a significant proportion of oyster valves exhibit opening notches. However, several of the periwinkles in sample 3 were tiny, suggesting a possible origin in seaweed, perhaps used to pack the edible shellfish, or fish, for market. The small clam and smooth periwinkle could also have come attached to seaweed. The oyster valves were of varied size and condition, and some had evidence of parasitic infestation, particularly from the burrowing polychaete *Polydora hoplura*. Sample 19 included 60 oyster valves (32 left, 28 right) of variable size, few of which were intact enough to measure. This collection of shells included many examples of shellfish growing on other oyster valves, suggesting unmanaged, crowded, beds or the use of oyster valves as cultch. Some shells were covered with barnacles.

Given the relatively small numbers of shells in each sample, their variable condition and date of the contexts (late medieval – late post-medieval) no further work is warranted and the shells can be discarded.

Context	Sample	Clam	Cockle (valve)	Common periwinkle	Mussel	Oyster (valve)	Smooth periwinkle	Total
31	2					8		8
56	3			23	7	5		35
58	16					1		1
130	1				1	6		7
175	5		1		1			2
218	17		1	1	6	3	1	12
220	18				3	5		8
388	31	2	1	25	8	1		37
422	8					46		46
426	9					4		4
459	15		3		2	19		24
475	12					8		8

480	13					1		1
489	14					1		1
595	19		9	3	43	60		115
817	24					2		2
858	25					4		4
865	26					1		1
866	27					5		5
869	28		1	1	2	2		6
874	30		4		14	10		28
1403	33			1		4		5
1434	34					1		1
2215	38		3		16	19		38
<b>Total</b>		<b>2</b>	<b>23</b>	<b>54</b>	<b>103</b>	<b>216</b>	<b>1</b>	<b>399</b>

Table 1: Number of identified shells from the processed soil samples

## APPENDIX 20: GEOARCHAEOLOGICAL ASSESSMENT

**Carl Champness, with Mairead Rutherford, Kath Hunter, Nigel Cameron, John Whittaker and Elizabeth Stafford**

### Summary

As part of the excavations at London Bridge Station, an auger survey of 68 augerholes were undertaken across eighteen excavation trenches to search for archaeological remains that survive at depths greater than reached by the trenching. The survey was undertaken across the buried landscape of Southwark where a series of eyot, foreshore and channel sequences survive underneath the foundations of the station. The augering was also designed to recover samples suitable for palaeoenvironmental assessment and dating in order to help establish a model of landscape and sedimentary development for the site.

The assessment identified a series of Bronze Age channel and alluvial deposits that represent the former channels of the River Neckinger (a branch of the main Thames channel). These channels were exclusively freshwater and protected from the tidal incursions prior to the arrival of the tidal head at London Bridge. Evidence of an open wet meadow environment and cereal cultivation was recorded within the channel pollen assemblages. The channels appear to have silted-up and migrated by the middle Bronze Age, with the accumulation of a thin compacted fen peat over the floodplain. The recording of tidal conditions over the site is represented by the accumulation of the overlying estuarine silts, with the development of tidal mudflats and salt marsh from the late 2nd century BC.

Evidence of Roman rubbish dumps and gravel deposits were recorded within the survey around 5m below ground level (-0.75m OD) potentially representing an attempt of foreshore reclamation. This coincides with a concentration of worked wood and gravel deposits identified within the auger survey along the edge of the Roman channel (known as Guy's Channel). This was further investigated by the excavation of Trench A5, which was targeted on the wood and reclamation deposits identified within the auger survey. A late 2nd to 3rd-century AD timber tie-pack potentially associated with a possible river side revetment/dock was identified within the trench at -0.55m OD above the reclamation surface. A small concentration of Roman pottery, CBM and an iron nail was also recovered from the underlying organic deposit, which indicated an open landscape with meadows and pasture.

The inundation of the Roman reclamation surface by estuarine silts appears to reflect the collapse of the Roman drainage systems and waterfronts in the late/post Roman periods. Renewed tidal inundation at the site was recorded in the overlying silty clays until the late medieval period. Evidence of woodland regeneration, wet meadows and salt-marsh environments were identified within the environmental evidence. A series of late medieval 15th-16th-century wattle and timber channel revetments were identified within Trenches A1, D1 and E1 at +1.21m OD associated with reclamation and levelling deposits, representing increasing management of the foreshore environment. In places

these deposits were overlain by the deposition of further estuarine silts, indicating further marine flooding over some areas of the foreshore during this period.

More widespread reclamation of the foreshore is recorded from the early 17th century onwards with levelling deposits and the construction of various riverside/drainage ditch revetments during this period. A series of post-medieval pits, wells and floor surfaces were found within the trenches associated with the urbanisation of areas of the foreshore. Various riverside industries appear to have utilised these managed watercourses with the construction of wooden tanks and drains. These channels were later culverted during the Victorian period to facilitate the construction of London Bridge Station and the railway.

## **Introduction**

As part of the improvement works at London Bridge Station an auger survey was undertaken in the base of each of the eighteen excavation trenches to investigate the underlying foreshore and channel sequences. A series of 68 augerholes were undertaken as part of the investigation in order to establish a model of floodplain/foreshore development to aid in the interpretation of the archaeological evidence and to search for wooden remains like boats, trackways or revetments that may survive at depths beyond the levels reached by the trenching.

This report outlines the results of the auger survey, palaeoenvironmental assessment and programme of dating. It presents a model of floodplain/foreshore development in which to understand and contextualise the archaeology revealed during the Improvement Works at London Bridge Station. This develops and refines the work previous undertaken at the site along the Western Approaches as part of Thameslink Assessment 9 (Taylor & Champness 2013).

## **Topography and Geology**

The British Geology Survey mapping of the area indicates the site lies within the alluvial floodplain/foreshore of the Thames, east of an outcrop of Kempton Park gravels which forms the bridge head to London Bridge and overlaps a similar outcrop of gravels and sands at Horseleydown (BGS sheet 256 1:50,000). This ties in with the extensive archaeological and geoarchaeological investigations undertaken within the area which have revealed a sequence of alluvial deposits, overlying a series of natural gravel islands separated by a complex network of buried channels (Sidell *et al.* 2002).

The site lies on the southern floodplain of the river Thames, at the confluence of three former watercourses that separate and dissect a series of floodplain gravel islands (eyots) from the Southwark mainland (Figure 1). Previous archaeological investigations within the area of Southwark



suggests that from the prehistoric to the medieval period this area comprised low-lying marsh fen interspersed with braided channels of the River Neckinger creating a series of low gravel and sand islands (eyots) (Densem and Doige 1997; Gibbard 1992; Sidell *et al* 2000). Generally the islands reached elevations of +1m or +2m OD (1.5m to 2.5m below modern ground level) surrounded by alluvium and peat deposits between -1.0m to -2.0m OD (between 2.5m and 6m below modern ground level).

The original Thames river was shallower, slower and wider than its modern counterpart and flowed through braided channels which surrounded the low-lying gravel eyots. Archaeological excavations and geotechnical work have established that there were two principal gravel eyots within the immediate area, covering c. 16 hectares (Knight 2003). These eyots have been called the 'south' and 'north' islands. The Thameslink Improvement Works site is located within the eastern edge of the north eyot, which is variably also known as the 'Bridgehead Island' (Knight 2003) or 'Northern Island'. The site is located on the east of the eyot within the former intertidal zone. The main channel sequence in the area is known as Guy's Channel (named after Guy's Hospital) where a Roman boat was discovered in the 1950s.

These eyots have remained dry during the post-glacial period (Holocene) and have been the focus for human activity from the prehistoric period onwards. During the Roman period Southwark was the main crossing point of the Thames and within the hinterland of Roman *Londinium*, established on the northern banks in c. AD 50. Urban settlement spread south from what was possibly the only crossing of the Thames, located in the vicinity of London Bridge Station. A major Roman road ran from the bridge crossing along the eyots, connecting *Londinium* with the channel ports.

### **Geoarchaeological background**

Very little archaeological work has been undertaken at London Bridge Station, which has remained largely undisturbed since its construction between 1836 and 1849. Previous excavations undertaken at the station as part of the Jubilee Line Extension site (Drummond-Murray and Thompson 2002) have contributed to our knowledge of the topography of the eastern part of the north island. This has been revised in a recent monograph (Cowan *et al.* 2009) which has effectively synthesised previous unpublished excavations undertaken by the Museum of London between 1973 and 1991. The excavations reveal that the eastern edge of the island comprised low-lying mudflats, which would have been submerged at high tides. Evidence for the dumping of gravel and household rubbish to raise the contemporary ground level and combat flooding was also recorded on the floodplain, along with a deep alluvial sequence that may indicate the previous course of Guy's Channel.

The floodplain alluvial sequence has been shown to represent episodes of riverine and estuarine inundation caused by rising sea-level (marine transgressions) since the end of the last glaciation. The accumulations of the alluvial clays represent increased overbank flooding in response to this general

rise. The intercalated peats were deposited during periods of reduced mean sea-levels (marine regressions) and corresponding lower river and estuarine levels, which allowed fen and marsh deposits to develop across the floodplain/foreshore. The peat deposits in particular can be tied in through dating with similar sequence elsewhere within the Thames estuary related to fluctuations in the rate of sea-level rise during the prehistoric and Roman periods (Devoy 1975; Tyers 1988).

More recent work has been aimed at constructing regional models for estuary development (Long 1995; Long *et al.* 2000; Stafford & Goodburn 2013; Stafford and Bates 2013) and individual valley sequence, like in the case of the Lea Valley (Corcoran *et al.* 2011; Powell 2012), which begins to address the range of factors responsible for sequence accumulation. These studies focus on detecting contrasting zones, where the archaeological significance depends upon the position of the wetland-dryland interface, or identifying between channels, peatlands and siltlands. Such areas are considered to be the foci of human activity and a key to identifying areas of high archaeological potential.

## **Research Aims**

The specific assessment aims relevant to the geoarchaeology are listed below for convenience and form part of the overall research strategy for the project:

- the immediate post-glacial topography and environment;
- palaeoenvironmental change from the prehistoric to the medieval periods;
- the potential for prehistoric utilisation of higher areas adjacent to the edge of Guy's Channel: its date range and stratigraphic context;
- migration of the tidal head and apparent changes in sea-level relative to land in the Roman period;
- utilisation of the channel edge during the Roman period, including evidence for waterfront structures, land preparation (e.g. drainage) and land reclamation;
- the impact of apparent sea-level changes on the form, function and location of Roman waterfront structures;
- initial medieval development and land use.

## **Methodology**

A total of 68 augerholes were undertaken as part of the targeted excavations at London Bridge Station (Figure 1). Eighteen 5m x 3m excavations (Trenches A1-3, A5, B1-3, C1, D1-2, E1-2, F, G and H1-3) were undertaken within the central area of the station running between Stainer Street and

Weston Street. These excavations were taken down to an average depth of 4m in order to record and characterise any archaeological remains that survived between the Victorian foundations of the station and would be disturbed by construction. The investigations continued in the base of the trenches using augerholes to sample the full sequence to Pleistocene gravels and assess the underlying foreshore sequence for signs of archaeological remains and palaeoenvironmental evidence.

The augerholes were retrieved using an electric power auger that was drilled from the base of each trench (Plate 1). Between 2 and 6 augerholes were attempted in each trench in order to investigate the deeper foreshore sequence. The number of augerholes varied between trenches depending on ground conditions and access issues, related to available space within individual trenches. A continuous representative sequence of 1m by 0.12m sleeved core samples was retrieved from each trench to the top of the Pleistocene gravels.

The majority of the augerhole samples were rapidly logged on site to provide feedback to the excavations and to identify key sequences worthy of further investigation at depths beyond the Scheme's base-levels (Plate 2). One representative sleeved core sequences were retained from each excavation area with additional cores being kept where archaeological remains were identified within the samples.

The retained cores were studied in greater detail and assessed for their palaeoenvironmental and dating potential. A range of palaeoenvironmental evidence that includes, pollen, waterlogged plant remains, snails, ostracods, foramifera and diatoms were sent to the relevant specialist for further assessment. A range of sub-samples were also processed for their dating potential and if suitable material was present sent off for radiocarbon dating. The selection of sequences and sub-samples was selected in order to best address the research aims of the project.

The sedimentary sequence was recorded on site in accordance with English Heritage guidelines for geoarchaeology recording and environmental sampling (EH 2007; 2011). The sediments were described according to OA standard methodologies based on Jones *et al.* (1999), which included a description of colour (to be identified using the Munsell colour system on fresh sediment), compaction, texture, sorting, structure, inclusions (including abundance, shape and material). Comment were also made on the nature of observable contacts/boundaries (e.g. abrupt and irregular, diffuse etc). The sediments were recorded using a total station according to depth below ground level (bgl) and Ordnance Datum (m OD).

A watching brief was also maintained on the geotechnical investigations undertaken as part of the Scheme, key locations between trenches were prioritised for monitoring. Based on the monitoring of geotechnical boreholes (A4.1-4.12) between Trenches A4-5 (Plate 3), an additional Trench A5 was excavated in order to investigate a concentration of potential worked wood identified in A4.7. The wood was buried at 4.8m bgl (-0.55m OD) in depth located near to a possible channel edge

environment. This trench was fully cleaned and recorded following the discovery of worked Roman timbers and foreshore reclamation deposits (Plate 4).

## **Results**

### **Stratigraphic summary**

The geoarchaeological recording of auger samples allowed detailed examination of the lithology of the foreshore deposits which were then correlated into interpretative stratigraphic units. These units represent the main sedimentary environments that have been identified in the new phase of work. These units have been used to develop a sequence of environmental change for the site, in order to help interpret the changing foreshore landscape.

The results of the auger survey have been used to update the existing site deposit model presented within the previous geoarchaeological assessment (Taylor & Champness 2013 TAA9). The stratigraphic correlations presented in this model have been revisited in the light of the more detailed geoarchaeological recording and better spatial coverage of the area. In addition, the number of stratigraphic units has been expanded to include new sedimentary environments identified across the site. A series of interpretative cross-sections (Figures 4-5) have been produced with more detailed lithological data in order to illustrate the complexity of the sediment sequences and topographic features that exist across within the area.

### **Floodplain sequence**

Based on the results of the boreholes survey the following stratigraphic units have been identified:

- Sandy gravels
- Late Pleistocene/Early Holocene sands
- Freshwater fluvial sands
- Prehistoric peat
- Roman reclamation and channel deposits
- Post Roman Estuarine silts
- Late medieval reclamation and channel deposits
- Post-medieval reclamation and channel deposits

The survey revealed a sequence of broadly laterally equivalent deposits where firm assignment to particular stratigraphic units was sometimes particularly challenging within such a fluvial active environment with multiple channels and foreshore environments present. These units were correlated based on sediment types, inclusions, elevations and descriptions. Only a broad model is presented in this assessment report which simplifies some of the sedimentary complexity encountered across the sequences, in order to aid in assessing the archaeological and palaeoenvironmental potential of the foreshore sequence.

It was not always possible to distinguish the boundaries between certain phases of alluvium and channel deposits. Spatial coverage across the site was reasonably good but some gaps currently exist within the dataset and only a few sequences have provided dateable material. This model will must likely be revised once more dating is available to help refine the floodplain stratigraphy.

### **Sandy gravel**

The sandy gravel unit was reached in the majority of all augerholes taken at the site and consists of mixed deposits of fine to coarse well-sorted semi-rounded to rounded pebble gravel. The gravels were not always recovered during sampling as their loose and waterlogged nature often hindered sample recovery. These deposits were located between 7.50m and 5.0m in depth (-3.0m and -1.75m OD) across the site (Figure 2). On the basis of previous studies of the Thames terraces (Gibbard 1994) these gravels can be correlated with the Shepperton Gravel formation.

These gravels represent material deposited through glacial outwash streams by rivers swollen by spring and summer melting during the last glaciation (Devensian cold stage). These deposits were formed within braided channel systems that deposited sands and gravels as eyots between a series of shifting high-energy channels. This helped to create the palaeotopography of the site and was a major influence on sedimentation patterns throughout the post glacial period (Holocene).

### **Late Pleistocene/Early Holocene sands**

Directly overlying the gravels was loose light yellow fine sands between 6m and 5.30m bgl (-2.70m and -0.5m OD) sometimes with fine bedding present. The unit drops initially and then rises up to the north of the site, starting on the foreshore and then dipping in the base of a channel and gradually rising to form the edge of the eyot (Figure 3). These deposits were minerogenic in nature, with signs of weathering and no evidence of any organic preservation.

The high-energy and weathered nature of these deposits would indicate deposition within a fluvial environment that was possibly later subject to sub-aerial processes. These deposits are currently undated but based on their stratigraphic position and in comparison with other sequences along the

Thames, it can be assumed that they potentially accumulated between the Late Pleistocene and early Holocene. These deposits reflect a reduction in river energy at the end of last glaciation when glacial ice was retreating northwards and there was a transition to more stable anastomosing channel conditions. These deposits may also represent polymorphic deposits formed by both windblown and fluvial process that would have helped form the eyots.

The deposits represent the early Holocene land surface which formed the palaeotopography of Southwark with its networks of eyots and associated channels. Prehistoric artefacts in the form of flint scatters and other forms of prehistoric activity have often been found on its surface (Sidell *et al.* 1997). The mapping of these deposits across the station has helped to interpret the sequence of sedimentary and environmental change represented at the site.

### **Freshwater fluvial sands**

A moderately deep sequence of fine loose to soft brownish grey structureless clayey and silty sands were identified between 5.30m and 4.60m bgl (-2.70m to -0.50m OD). These deposits are the same as those that produced two worked Bronze Age stakes along the Western Approach (TAA9) that might represent the remains of wattle fragments associated with fish traps. Inter-bedded sands and sandy clays were recorded within the unit and would indicate periods of varying river flow. A general increase in the sand content up the profile may also indicate shifting channel activity across this area.

These deposits represent fluvial deposition within part of the Neckinger channel sequence which appears to have laterally migrated across the floodplain. The sandy clay deposits potentially represent channel edge environments compared to the more sandy deposits that may reflect areas of greater channel flow. Any archaeological material within these deposits is likely to have undergone a degree of modification and transportation.

### **Prehistoric Peat**

A laterally extensive thin peat deposit was identified overlying the floodplain deposits between 5.70m and 4.40m bgl (-1.70m and 0m OD) represented within the augerholes from Trenches A1-3, B1-3 and C1. The deposits have been compacted by the overlying sediments and structures above. Fragments of wood and rare plant remains were noted to be preserved within these deposits. Preservation of plant material was generally found to be quite poor but did indicate limited potential for dating and pollen.

These deposits represent the development of fen and alder carr deposits over the early prehistoric floodplain sequence. Deeper and thicker peat deposits have been previously identified across the station between 0m and -2.7m OD (MOLA 2011). At St Michael's school, in Bermondsey, pollen from

similar peat deposits indicate an alder dominated environment with oak and hazel on the higher ground. The ostracods assemblage indicates a continuing freshwater environment (Halsey 2010). At St Christopher's House, Southwark Street, Bronze Age platforms dated between 1500 and 1800 BC were identified, highlighting the archaeological potential of these deposits.

Evidence of increasing wetness and the beginnings of minerogenic accumulation of organic silty clay is evident overlying the peat surfaces. These deposits represent a deepening of floodplain water-levels and the beginnings of estuarine inundation over the site.

### **Roman reclamation and channel deposits**

Man-made rubbish dumps and gravel deposits were identified between 5.30m and 4.80m bgl (-1.0m and -0.50m OD) within Trenches A1-3, A5 and H3. These deposits comprised a complex and disturbed sequence of alluvial deposits that were in places sealed with a concentration of pebble and cobble gravel deposits forming a potential reclamation surface. Frequent Roman building rubbish deposits were identified previously within the Western Approach (TAA9) borehole survey at similar elevations.

These deposits produced a moderate amount of Roman material including a few fragments of pottery, CBM, and an iron nail. The deposits were generally between 0.15-0.25m in thickness and represented clear dumps that had been used for ground consolidation and ground raising activities.

The Roman channel deposits were identified within A4.12, and represented by a series of well-bedded silty clay deposits with occasional gravel, chalk and CBM inclusions. Charcoal and wood remains were also more common within these deposits. Based on the geotechnical borehole and augerhole evidence Guy's Channel appears to flow between Trenches A4 and A5, with Trench A5 representing the northern limits of the channel in the late 2nd/3rd century AD.

### **Post-Roman estuarine silts**

Directly overlying the Roman reclamation deposit was a thick sequence of soft mid grey structureless silty clay deposited between 4.5m to 3.2m bgl (0m and +1.35m OD). These deposits also contained rare charcoal inclusions. These deposits represent a phase of alluviation over the Roman reclamation surface indicating a renewed phase of estuarine flooding. These deposits were formed within potential mudflat to salt-marsh environments with estuarine sedimentation occurring during high tides around the edges of tidal creeks. The diatom assemblage from the early medieval features dug into this surface also indicate brackish conditions.

### **Late medieval reclamation and channel deposits**

A series of rubbish dumps and redeposited sandy clay alluvial deposits were identified from a depth of 3.60m bgl (+0.60m OD) extending up into the base of the excavation areas. These deposits contain a large frequency of poorly sorted gravel, brick, oyster shell, chalk and pottery inclusions. The sharpness of the contact between the lower alluvium and the reclamation deposits would indicate a disconformity between the two deposits.

A series of 15th-century late medieval channel sequences were identified within Trenches A1-2, E1-3, and D1 associated with wattle and timber river revetments. These channel deposits comprised pale blueish grey silty sands and clayey silt deposits with coarse inclusions of gravel, snails and chalk. The channels were sealed by post-medieval channel and Victorian infilling deposits.

### **Post-Medieval reclamation and channel deposits**

These deposits represent the main phase of ground raising activity recorded across the site associated with the widespread reclamation of the floodplain during the post-medieval period. During the historical period numerous drainage ditches, pits and later wells were dug through these deposits and filled with water-lain silts. The reclamation deposits comprised dark brown mixed organic silty and sandy clay deposits with frequent oyster shell, chalk, wood, pot and gravel inclusions. Two main phases of reclamation deposits were identified dating to the mid/late 16th century and late 16th/17th century.

A series of early post-medieval channel deposits were identified within Trenches A1-3, B1-3, D1 and E1. The channel fills comprised light whitish grey sandy and silty clay again with frequent gravel, chalk and shell inclusions. It was not always possible to distinguish between the late medieval and early post-medieval channels fills.

### **Summary of archaeological remains revealed in the augerholes**

A series of Roman, late medieval and post-medieval channel sequences and associated reclamation deposits were identified within the natural foreshore sequence. No evidence of any prehistoric archaeology was identified in the sequence compared to those identified along Western Approach (TAA9). The earliest archaeology recorded was a late 2nd to 3rd-century AD waterfront revetment/landing post identified in the base of Trench A5. Evidence of late 2nd to 3rd-century AD reclamation dumps were also identified around the edges of Guy's Channel which contained Roman pot, tile and worked wood. These deposits were sealed by late Roman and post-Roman estuarine silts.

A series of 15th-16th-century revetments and reclamation deposits were also identified within a number of trenches including Trenches A1, D1 and E1 overlying the post-Roman estuarine silts.



These were either of wattle or post and plank construction, and represent an attempt to manage the course of the river. Further post-medieval river revetments were also recorded in the trenches associated with more widespread reclamation from the late 16th-17th century. These waterways appear to have been transformed into more managed channels, with associated drainage ditches as a result of increasing urbanisation of the area.

The borehole survey results for each excavation trench are discussed in more detail below:

#### **Trenches A1-5 (A1.1-8, A2.1-2, A3.1-4, and A4.1-12) Figure 5**

Eight augerholes were completed across Trenches A1-A3 and a further 12 geotechnical boreholes were monitored to the north between Trenches A4 and A5. Following the discovery of worked wood within a number of the geotechnical boreholes (A4.1-A4.7; Plate 4) at the same level as the potential Roman gravel dumps, the wood and gravel concentration were further investigated by the excavation of additional Trench A5, which was dug to a depth of 5.12m bgl (-0.90m OD). The trench produced a scatter of worked wood, Roman finds and a possible large timber revetment tie-back [909] located just above the reclamation surface (Plate 5).

The Pleistocene gravels were identified within Trench A2 at a depth of 5.50m bgl (-1.6m OD) and dipped down towards the Roman channel sequence to the north within A4.12m and A4.7 to over 7m bgl (-2.66m OD). The gravels were overlain by loose mid grey silty sands with inter-bedded clay bands. These bedded sands were sealed by a loose organic poorly sorted sandy gravel at 5.30m-4.90m bgl (-0.96m – -0.56m OD), which contained rare CBM and chalk. A piece of Samian ware was also recovered from augerhole A2.1 at a depth of 5.58m bgl (-1.24m OD) near to the base of the gravel deposits.

A sequence through Guy's Channel was potentially identified within borehole A4.12, where inter-bedded silty and sandy clay deposits were recorded overlying Pleistocene pale sands. A much greater concentration of gravel, charcoal and chalk inclusions were recorded throughout these more disturbed deposits than was present at the same elevations within Trenches A1-A3. Equally a loose greyish brown clayey sand with frequent wood, stone, chalk and snail inclusions was recorded between 5.80m-5.50m bgl (-1.55m – -1.25m OD) where previously gravel dumps had been recorded from the surrounding trenches.

#### **Trenches B1-B3 (B1.1-5, B2.1-2.2 and B3.1-3.5)**

Seven augerholes were completed across Trenches B1-3. The gravels were encountered at a depth of 7.42m (-3.09m OD) in B2.1 and 6.25m bgl (-1.77m OD) in B3.1. The base of the gravels was not reached within Trench B1 due to a series of obstructions that were encountered at a depth of 0.5m bgl.

Overlying the Pleistocene gravels within B2.1 was a series of laminated mid grey sands. A series of well bedded pale grey sandy and silty clay channel deposits were identified between 7.42m to 4.27m bgl (-3.09m to +0.06m OD). These deposits contained occasional gravel and chalk inclusions. These channel deposits were overlain by a gravel dump deposits between 4.27m-3.97m bgl (+0.06m to +0.36m OD) that contained frequent sub-rounded gravel, shell material and chalk. Wood fragments and coarse inclusion including CBM were identified above the gravel deposits, contained within a dark brown grey sandy clay with chalk, and shell inclusions. No dating evidence was obtained from the sequence and this would be a good target for further dating. These deposits were overlain by a series of silt clay estuarine silts and post-medieval reclamation/channel infill deposits.

The gravels were overlain by light brownish yellow medium sand within B3.1. Loose grey clayey sand channel deposits were identified between 6.25m to 4.37m bgl (-1.77m and +0.11m OD). These deposits were sealed by a dark brown silty peat between 4.37m-4.3m bgl (+0.11m – +0.18m OD) that is currently undated. These deposits were overlain by sandy clay deposits and late medieval reclamation deposits and post-medieval channel infill deposits.

#### **Trench C1 (C1.1-1.3)**

Three augerholes were completed in the base of Trench C1, which was excavated to a depth of 3.33m bgl (+0.84m OD). The gravels were encountered at a depth of 7.48m bgl (-3.31m OD) overlain by light yellowish grey fluvial sand deposits. These sands were sealed by an organic silty peat deposits between 5.70-4.90m bgl (-1.53m – -0.73m OD) which was dated to the middle Bronze Age, 1404-1207 cal BC (3034±32 BP SUERC-49868 (GU32376)). The peat was overlain by light brownish grey overbank estuarine silts that were sealed by late medieval reclamation deposits. Early 11th to 13th-century pottery was recovered from the base of the trench from the upper natural alluvial deposits.

The sedimentary sequence from Trench C1 is very similar to the general floodplain/foreshore sequence that was recorded within Trenches ST1-6 along Western Approach (TAA9). A similar sequence of fluvial sand deposits were found overlying the gravels, sealed by prehistoric peats and overlain by overbank post-Roman estuarine silts. No evidence of any Roman gravel deposits were identified within this trench.

#### **Trenches D1-2 (D1.1-D1.4)**

Four auger samples were taken from Trench D1. A series of river side revetments including a late medieval wattle revetment and two post-medieval revetments were recorded within D1. Unfortunately no augerholes were taken at the base of Trench D1 due to concerns over ground water flooding and safety issues.

The Pleistocene gravels deposits were recorded within the base of Trench D2 at 7.10m bgl (-2.80m OD). The gravels were overlain by firm to loose light yellow weathered sands. Overlying these

deposits were grey coarse and medium fluvial sands. A series of light whitish grey silty clay channel deposits were encountered at depths between 6m to 4.55m (-1.7m and -0.25m OD). These channel deposits were sealed by a spongy silty peat that was identified between 4.55m to 4.37m bgl (-0.25m to -0.07m OD), which is at a much higher elevation than the peats recorded along the foreshore. The thin peat was overlain by various structureless silty clay deposits sealed by late medieval dump deposits that were recorded in the base of the trench.

#### **Trenches E1-3 (E1.1-1.4, E2.1-2.4, and E3.1-4)**

A sequence of channel deposits was recorded within Trenches E1-3, a total of 12 augerholes were completed across these excavations. A series of wooden revetments and channel sequences were identified within Trench E1, the earliest was a late medieval wattle revetted channel running from east to west, followed by at least two post-medieval revetments. A similar sequence of deposits were identified within Trench E2, unfortunately Trench E3 had been truncated by a Victorian brick-built culvert.

The Pleistocene gravels were recorded at the base of the sequence at a depth of approx. 6.59m bgl (-2.04m OD) within E1.4. The gravels were overlain by a thin sequence of loose pale grey medium sands. The basal channel deposits were identified between 5.99m and 4.14m bgl (-1.44m and +0.41m OD), these were inter-bedded gleyed silty clay and clayey sands, potentially reflecting seasonal or tidal variations in channel flow. Occasional fragments of wood, shell and wattle like materials were the only coarse materials recorded within these deposits. This in turn was overlain by a series of structureless silty clay deposits between 4.14m and 3.64m bgl (+0.41m and +0m OD) at the base of the trench with frequent poorly sorted brick, tile and shell inclusions. No peat deposits were recorded within the medieval and post-medieval channel fills.

The Pleistocene gravels were encountered at a depth of 7.34m bgl (-2.99m OD) within E2.2. The gravels were overlain by a series of laminated light grey silty sands deposits. A series of inter-bedded channel deposits of pale blue silty sand and clayey silt deposits with occasional chalk and gravel inclusions were recorded between 6.47m to 3.68m bgl (-2.12m to +0.67m OD). A fragment of wood or compressed organics were recorded between 4.23m to 4.17m bgl (+0.12m to -0.18m OD) within the channel fills. These deposits were sealed by post-medieval channel and Victorian infilling deposits.

The gravels were encountered at a depth of 6.97m bgl (-2.15m OD) in E3.3. The gravels were overlain by a series of inter-bedded pale grey silty sands and clayey sand channel deposits between 6.97m to 4.95m bgl (-2.15m to -0.13m OD). No peat or organic deposits were recorded within the channel sequence. The sequence was overlain by late medieval reclamation deposits and the remains of wooden channel edge revetments. These deposits and features had been truncated by a Victorian culvert and circular shaft.

#### **Trenches F and G (F1-3 and G-1.1-1.5)**

Three auger samples were completed within Trench F and five within Trench G. These trenches were located near to the middle of the foreshore sequence, Trench F occupying a central foreshore location and Trench G was located towards the north-eastern edge of the site.

The Pleistocene gravels were identified within Trench F at a depth of c. 6.59m bgl (-2.25m OD) within F1.2, consistent with the general foreshore sequence. The sequences were very similar between sampling locations. The gravels were overlain by light to mid grey silts and sands with occasional inter-bedded yellowish sand lenses. These deposits were overlain by a peaty clay deposit between 4.29m and 4.15m bgl (+0.05m and +0.19m OD) and inter-bedded minerogenic silty clay deposits. This sequence was sealed by a series of late medieval ground raising deposits, pits and ditches. Successive phases of post-medieval dumps, industrial deposits and features were also encountered within the trenches.

The Pleistocene gravels were found to rise up in Trench G, which was located further to the north of the site. The gravels were recorded at a depth of 6.29m bgl (-1.89m OD) within augerhole G1.4. The gravels were found to be a mix of well bedded gravelly sands and sandy gravel deposits, some poorly sorted and angular in nature, potentially representing slope deposits close to an eyot edge. These gravels were overlain by grey minerogenic silty clay deposits with occasional CBM and charcoal inclusions. No Bronze Age fluvial deposits or peats were identified within this sequence.

#### **Trenches H1-3 (H1.1-1.5 and H3.1-3.4)**

A shallowing sequence of foreshore deposits were identified within Trenches H1-3, as the Pleistocene gravel and sand deposits were found to rise up sharply to form the edge of an eyot towards the northern limits of the site. Five augerholes were undertaken in Trench H1 and four within Trench H3. No augerholes were undertaken within Trench H2 as the base of the sands was encountered within the base of the trench. Instead of any augerholes, a series of two monolith samples (Monolith samples 39 upper and 39 lower) were taken from the sequence at the base of the trench.

The Pleistocene gravels were identified within Trench H3 at a depth of 6.06m bgl (-1.92m OD), the gravels were not successfully recovered in Trench H1, but the Pleistocene sands were identified at a depth of 6.29mbgl (-2.28m OD) and were identified at 3.90m bgl (+0.05m OD) within Trench H2. The gravels and sands were overlain by a sequence of well-bedded brownish minerogenic sands and clayey sands. What appeared to be Roman dump deposits were encountered within H3.2 between 5.4m-5.52m bgl (-1.26m – -1.38m OD) and produced some Samian ware. Similar deposits were identified at the same elevation within Trench H1 but these were less well defined. These deposits were overlain by a series of brownish grey silty clay deposits that were sealed by post-medieval dumped deposits that were encountered at the base of the trenches.

A landsurface deposit [1927] was identified at 3.63m bgl (+0.37m OD) in the base of Trench H2 underlying the medieval estuarine silts. This was a yellowish brown sand deposit representing the

pre-inundation surface of the eyot edge. The recovery of Roman pottery would indicate that this landsurface deposits was forming or had been disturbed during this period.

### **Environmental Summary**

Following the deposition of the basal fluvial gravels and sands under cold climate (Devensian) river conditions, the drier and raised areas of the floodplain including the eyots of Southwark would have been subject to weathering and encroachment of vegetation during the onset of warming during the Holocene. The sands would have formed the topography of the early Holocene, with the beginnings of soil formation processes on its surfaces.

The overlying fluvial sands represent the freshwater Thames sequence that appears to have been associated with increased alluviation on the Thames floodplain, possibly as a result of increased erosion from widespread woodland clearance during the Bronze Age along the Thames valley. Evidence of occasional drying-out of the floodplain, perhaps seasonally or during periods of drought, is found within the environmental evidence. An open tree-less environment is indicated dominated by grasses, aquatics and sedges, suggesting the presence of a wet meadow environment on the floodplain during this period. Evidence of cereal cultivation potential on the higher drier ground of the eyot is also suggested within the pollen record.

The encroachment of peat during the mid-late Bronze Age over the floodplain may reflect a phase of reduced river-levels in the Thames as a result of a decrease in rate of sea-level rise. Large expanses of peat beds are recorded on the foreshore, at the eyot margins and in relict channels at this time. Previously, the peat horizons in this area have been correlated with 'Tilbury IV', following Devoy's Thames/Tilbury model of sedimentation. However, extrapolation of the model to specific sites is often too simplistic and does not take into account the influence of local factors like sediment compaction, topography and hydrology. The accumulation of the peat is taken to reflect the development of alder/fen carr on the floodplain, with oak and hazel woodland growing on the higher ground. Increasing wetness and the beginnings of tidal inundation is recorded within the transition to the overlying organic silty clay.

The pollen, diatom and ostracod evidence indicates the prehistoric Thames channel was exclusively freshwater with no indications of any marine or brackish conditions. This may indicate that this sequence pre-dated the tidal incursions within this area of Southwark or that it was protected by the local topography perhaps by the formation of a shingle spits or bars. The first brackish/marine inclusions are recorded within the sequence after the accumulation of the Bronze peat, suggesting a date of around 1,000 BC for the first tidal incursions. The deposits of estuarine silty clays would indicate tidal conditions present during the Iron Age onwards, with the replacement of carr and fen deposits with tidal mudflats and salt marsh. This phase corresponds with the construction of the 1st-century AD wooden revetment previously recorded along Western Approach (Taylor and Champness 2013 TAA9).

The dumping of late 2nd- and 3rd-century AD rubbish material and gravel deposits on the floodplain recorded in Trenches A1-3, A5 and H3 may potentially represent a period of reduced sea-level rise and decrease in the tidal range. The construction of a late 2nd to 3rd-century revetment along the edge of Guy's Channel associated with the reclamation deposits may indicate an attempt to manage these waterways, making it easier to navigate and aid in unloading boats/barges. It is not currently clear whether these deposits raised the ground above all high tides during the year, but it would have made the channel edges and foreshore more accessible during low tides. The plant and pollen evidence indicate a drying-out of the potential reclamation surface and the presence of semi-terrestrial conditions.

Tidal conditions return to the site after the Roman period possible following the collapse of the drainage systems and decline of the Roman waterfronts and foreshore management. Renewed tidal incursions are recorded over the Roman dump deposits indicating a possible return to tidal mudflats and salt marsh conditions. The exact timing of the inundation can not accurately be established due to the difficulties in dating minerogenic alluvial sediment that lack any *in situ* organic preservation. However, based on the fact that these deposits are sandwiched between the Roman dumps and late medieval features/dumps we can suggest the accumulation of estuarine clays occurred between the late Roman to Saxon periods.

The dumping of late medieval rubbish deposits and re-deposited alluvium and chalk reflect a phase of foreshore reclamation and channel management. It is not clear whether this was piecemeal or part of a wider organised programme of floodplain reclamation in the area. Evidence of late 15th -16th-century medieval wattle and timber river revetments were identified within Trenches A, D1 and E2, indicating an attempt to control estuarine flooding and manage the waterways. Evidence of ground raising deposits across the floodplain suggest that there was a concerted effort to try to reclaim the foreshore environment during this period.

Evidence for a series of successive later post-medieval river revetments were identified within Trenches A1-3, E1, and D1. This reflects the more widespread reclamation and urbanisation of the foreshore from the late 16th to 17th century onwards.

### **Dating the floodplain sequence**

Seven samples were sent for radiocarbon dating in order to help develop a chronological framework to the foreshore and channel sequences represented at the site. Wherever possible timber structures, waterlogged plant remains from *in situ* plant species were dated, or in their absence root systems from the base of buried alluvial landsurfaces.

A series of four dates were taken from Trench A5 (represented by borehole A4.7) from where the potential Roman river revetment that was identified at the edge of Guy's Channel. The timber used for the revetment tie-back produced an early to mid Roman date of 86-249 cal AD ((1833±29 SUERC-49611 (GU32189)) consistent with its interpretation. An overlying compacted organic deposit at 4.81-

4.82m bgl dated to 93 cal BC-61 cal AD (2014±29 SUERC-49604 (GU32185)) supporting the presence of Roman finds. Various seeds from the organic reclamation deposits which produced Roman pottery and tile, dated from the late Roman period between 252-403 cal AD (SUERC-49607 (GU32188)). Roots from the underlying alluvial surface dates from the early Bronze Age at 1748-1541 cal BC (3376±29 BP SUERC-49603 (GU32184)). This is consistent with the model of floodplain sedimentary development established within Assessment 9.

Root material from a buried alluvial surface underlying the potential Roman channel deposits within A4.12 produced an early Bronze Age date of 1748-1508 cal BC (3361 ± 29 BP SUERC-49605 (GU32186)). One radiocarbon date was also obtained from an organic peat deposits overlying the fluvial sands within Trench C, which produced a mid Bronze Age date of 1404-1207 cal BC (3034±32 BP SUERC-49868 (GU32376)).

Dating of wood from near to a late post-medieval channel revetment within Beymondsey Car park was less successful and produced an unexpected Iron Age date of 796-544 cal BC (2534±29 BP SUERC-49611 (GU32189)).

Sample No	Depth	Material	Lab code	C14 age BP	13c (% □)	Calibration	Period
TRC1	5.10-5.20m	Waterlogged seeds - various	SUERC-49868 (GU32376)	3034 ± 32	- 25.0% □	1404-1207 cal BC (95.4%).	Middle Bronze Age
A4.7	4.81-4.82	Wood	SUERC-49604 (GU32185)	2014 ± 29	- 27.1% □	93 cal BC-61 cal AD (95.4%)	Late Iron Age- Early Roman
A4.7	5.14-5.15m	Fruit Stone frags: Prunus sp.	SUERC-49607 (GU32188)	1712 ± 29	-26.0 ‰	252-403 cal AD (95.4%)	Mid-late Roman
A4.7	5.50-5.51m	Wood roots – Alnus/Corylus	SUERC-49603 (GU32184)	3376 ± 29	- 28.1% □	1748-1608 cal BC (94.1%) 1570-1561 cal BC (0.8%) 1546-1541 cal BC (0.4%)	Early Bronze Age
A4.12	5.61-5.62m	Wood (root): Alnus/Corylus	SUERC-49605 (GU32186)	3361 ± 29	-29.5 ‰	1740-1605 cal BC (87.3%) 1508-1536 cal BC (8.1%)	Early Bronze Age
TR 5 Worked wood 909	-	Wood : Corylus	SUERC-49606 (GU32187)	1833 ± 29	-28.1 ‰	86-109 cal AD (4.0%) 120-249 cal AD (91.4%)	Early to Mid Roman
37	42-43cm	Wood : Alnus/Corylus	SUERC-49611 (GU32189)	2534 ± 29	-28.2 ‰	796-732 cal BC (35.2%) 691-661 cal BC (18%) 651-544 cal BC (42.3%)	Iron Age

Table 1: Radiocarbon dating summary

All dates are cited in the text at two sigma level (95.4% confidence). The dates are given as calibrated BC/AD dates with actual radiocarbon measurements given in brackets.

## Pollen

Mairead Rutherford

Forty sub-samples were submitted for palynological assessment. These sub-samples were taken from five different trench locations: seven sub-samples were taken from Trench H2 (monolith sample 39), six sub-samples from Trench C1 (C1); ten sub-samples from Trench A5 (BH A4.7), eleven sub-samples from Trench E1 (TR E1) and six sub-samples from Trench A.4 (A4.12). The sample preparation and assessment procedures followed standard protocols.

The results of the pollen assessment are shown within Tables 2-4, and discussed in more detail below:

### *Trench H2, sample 39*

Seven pollen samples were assessed from Trench H2. Only the two upper sub-samples 3.70m-3.71m and 3.74m-3.75m bgl (+0.3m-0.29m OD and +0.26m-0.25m OD) yielded reasonable palynomorph assemblages. The preservation of pollen from these depths is of mixed quality, with many grains broken, crumpled or concealed. The remaining five sub-samples proved largely barren of pollen. In both of the productive sub-samples, trees are represented by relatively common occurrences of pollen of alder (*Alnus*) and hazel-type (*Corylus avellana*-type) with fewer records for oak (*Quercus*) and pine (*Pinus*). Pollen of grasses (Poaceae) and sedges (Cyperaceae) is dominant among the herb pollen flora in both sub-samples. At 3.70m-3.71m bgl (+0.30m-0.29m OD) pollen of the goosefoot family (Chenopodiaceae, inclusive of plants from a variety of habitats, such as fat hen and sea purslane) is present, in addition to pollen of the broad-leaved dock (*Rumex obtusifolius*), mugworts (*Artemisia*), carrot family (Apiaceae, another large group including plants such as cow parsley and sweet cicely), the cabbage family (Brassicaceae, a large group including plants such as garlic mustard and cuckoo flowers), cinquefoils (*Potentilla*) and dandelion-type (*Taraxacum*-type). A single Cereal-type pollen grain is identified at 3.70m-3.71m bgl (+0.3m-0.29m OD), but there is a chance that the grain may represent pollen of a wild grass, for example, *Glyceria* spp., as the dimensions of some wild and cultivated grass varieties overlap (Andersen, 1979; Tweddle *et al.* 2005; Joly *et al.* 2007). Occurrences of pollen of ribwort plantain (*Plantago lanceolata*), bedstraw family (Rubiaceae) and pink family (Caryophyllaceae) are recorded at 3.74m-3.75m bgl (+0.26m-0.25m OD).

Pollen from aquatic plants is recorded at both depths and includes grains of the lesser bulrush (*Typha angustifolia*). *Sphagnum* moss spores are present in both sub-samples. The freshwater alga, *Botryococcus*, is present at 3.70m-3.71m bgl (+0.3m-0.29m OD). Fern spores are commonly recorded from the sub-samples at both 3.70m-3.71m and 3.74m-3.75m bgl (+0.3m-0.29m OD and



+0.26m-0.25m OD); the plentiful occurrence of spores of bracken (*Pteridium*) is particularly striking at 3.74m-3.75m bgl (+0.26m-0.25m OD). There is some slight evidence for reworking of sediments of Carboniferous age at 3.74m-3.75m bgl (+0.26m-0.25m OD). An example of a long ranging but extant dinoflagellate cyst, *Spiniferites* spp., is present at 3.70m-3.71m bgl (+0.3m-0.29m OD) and may be reworked or possibly *in-situ*. Microcharcoal is present in both sub-samples.

#### *Trench C1*

Six sub-samples were assessed. Pollen is present in five of the six sub-samples, but the deepest sub-sample at 5.90m-6.0m bgl (-1.73- -1.83m OD) proved barren of palynomorphs. Although pollen is present in the remaining five sub-samples, the quantity counted is quite low and pollen preservation is mixed to poor. The pollen assemblages present in the sub-samples are largely similar to each other. Tree and shrub pollen is recorded with alder, hazel-type and oak being the most common but also with occurrences of pine, birch (*Betula*), elm (*Ulmus*), willow (*Salix*), rare lime (*Tilia*) and ivy (*Hedera*). Pollen of grasses, sedges, dandelion-types and of the goosefoot family, are the most consistently recorded herbs. Single occurrences only of pollen of aquatic plants, lesser bulrush and bulrush (*Typha latifolia*) are present at 4.20-4.10m bgl (-0.03m- +0.07m OD); only the former is recorded at 4.90-5.0m bgl (-0.73- -0.83m OD) and the freshwater alga, *Pediastrum*, is present at 4.70-4.80m bgl (-0.53m- -0.63 OD) and 4.90-5.0m bgl (-0.73- -0.83m OD). Fern spores including polypody (*Polypodium vulgare*) and monolete ferns (Pteropsida) are relatively commonly recorded. Dinoflagellate cysts, including *Operculidinium centrocarpum*, which is an extant species, are present at 4.7-4.8m bgl (-0.53m- -0.63 OD) and 4.9-5.0m bgl (-0.73- -0.83m OD). A partial foram test lining is recorded at 4.9-5.0m. A single grain of the pollen *Classopollis classoides* is present at 4.90-5.0m bgl (-0.73- -0.83m OD). This taxon became extinct during the mid-Cretaceous, so must be reworked from sediments of that age or older.

#### *Trench A5 (A4.7)*

Pollen was rare or absent in all but two sub-samples. A single depth, at 4.94-4.95m bgl (-0.72m- -0.73m OD), yielded a count of 79 pollen grains (trees, shrubs and herbs) and fern spores, and a smaller but possibly still useful count was achieved at 4.33-4.34m bgl (-0.11- -0.12m OD). The pollen was well preserved at 4.94-4.95m but less so at 4.33-4.34m bgl (-0.11- -0.12m OD). The pollen assemblages in both sub-samples comprise tree pollen, including pollen of alder, oak, hazel-type, pine, birch, and elm. The herb pollen community is dominated by grasses and sedges. A relative diversity of herb pollen is recorded at the deeper depth, 4.94-4.95m bgl (-0.72m- -0.73m OD) and includes pollen of knotgrass (*Polygonum aviculare*), common knapweed (*Centaurea nigra*), mugwort (*Artemisia*), ribwort plantain, sea plantain (*Plantago maritima*), cereal-type pollen, pollen of the carrot family and pollen of the goosefoot family. Interestingly, no evidence for the existence of freshwater environments was found at this depth. At 4.33-4.44m bgl (-0.11- -0.12m OD), the assemblage is distinguished by lower counts for herb pollen, and the presence of just a single example of the aquatic

pollen of the lesser bulrush as well as a single *Sphagnum* moss spore. Several dinoflagellates are recorded at this depth, all of which may be reworked or may be *in-situ*. A single foram test lining was also present at this depth (again, this could be reworked or may be *in-situ*). Microcharcoal is commonly recorded at both depths, with counts of up to or greater than 100 particles present.

#### *Trench E (TR E)*

Pollen was present in three of the sub-samples assessed 5.08-5.09m, 5.23-5.24m and 5.38-5.39m bgl (-0.53- -0.54m, -0.68- -0.69m and -0.83- -0.84m OD) but only in reasonable quantities at 5.23-5.24m (-0.68- -0.69m OD), at which depth 79 pollen grains (trees, shrubs and herbs) and fern spores were counted. The pollen preservation is generally mixed to poor, with up to 30% of the pollen crumpled, concealed or broken. The assemblage comprises approximately 70% herb pollen, dominated by pollen of the cabbage family, Brassicaceae (a large group including plants such as garlic mustard and cuckoo flowers), grasses and pollen of the goosefoot family. Sedges and cereal-type pollen are the next most abundant pollen types recorded. Pollen of docks/sorrels, dandelion-types and buttercup family (Ranunculaceae) are also present. Tree pollen represents up to 20% of the pollen grains counted at this depth and includes alder, oak, hazel-type and lime. A single pollen grain from the aquatic plant, lesser bulrush, is present. Ferns are represented by bracken and monolete fern spores. Several fungal spores are recorded. Microcharcoal counts exceed 100 particles. There is evidence for pre-Quaternary reworking, with recovery of a single grain of the spore *Cicatricosisporites* spp., commonly recorded from sediments of Cretaceous age.

Significantly, the sparser pollen assemblage at 5.08-5.09m bgl (-0.53- -0.54m OD) contained a couple of cereal-type pollen grains as well as a specimen of cornflower (*Centaurea cyanus*), a plant that traditionally naturalised in cornfields (Stace, 2010). The even sparser assemblage at 5.38-5.39m bgl (-0.83- -0.84m OD) contained three grains of cereal-type pollen.

#### *Borehole A4.12*

Pollen was present in all the sub-samples assessed but only the three sub-samples, 3.40-3.41m, 4.20-4.21m and 5-5.01m bgl (+0.82- +0.81m, +0.02- +0.01 and -0.78- -0.79m OD) contained marginally productive to good pollen assemblages. Of the productive samples, the deepest one at 5-5.01m bgl (-0.78- -0.79m OD), provides the most abundant and best preserved pollen. The assemblage contains roughly equal amounts of tree/shrub pollen and herb pollen. Alder and hazel-type pollen dominates the tree/shrub component with occurrences also of birch, pine, elder (*Sambucus*), hornbeam (*Carpinus*) and beech (*Fagus*). Within the herb community, grasses are the most significant pollen type recorded, with appearances also of sedges, ribwort plantain, pollen of the carrot family (a large group including plants such as cow parsley and sweet cicely), dandelion-types and pollen of the daisy family (Asteraceae, including for example, golden-rod, samphires, fleabanes). Aquatic pollen is present, including that of both bulrush and lesser bulrush, as well as a grain of pondweed (*Potamogeton*).

A poorer assemblage is present at 4.20-4.21m bgl (+0.02- +0.01m OD) and, similar to the results described above for 5-5.01m bgl (-0.78- -0.79m OD), this sample contains roughly equal proportions of tree/shrub to herb pollen. Relatively high counts for pollen of the goosefoot family distinguish this assemblage from the deeper one described above. The uppermost sub-sample assessed at 3.40-3.41m bgl (+0.82- +0.81m) also yields a relatively sparse pollen assemblage but is really interesting as it shows low counts for tree and shrub pollen and high counts for herbs, in particular for pollen of the cabbage family (Brassicaceae, a large group including plants such as garlic mustard and cuckoo flowers) and pollen of the goosefoot family, grasses, cereal-types (if not wild grasses) and ribwort plantain. The algal type *Botryococcus* is recorded as well as *Sphagnum* moss spores.

### Interpretation:

#### *Trench H2, sample 39*

The pollen data tentative suggests the presence of a variety of palaeoenvironments. Possible woodlands, dominated by alder-carr, may have existed in damper areas. Hazel-type, oak and pine may have grown on drier soils. The variety of herb taxa is suggestive of open areas, for example, meadow/pasture land, and possible low-scale cultivated habitats. Grasses dominate the herb pollen assemblage with herbs such as ribwort plantain and docks/sorrels indicative of probable wet meadows and pastures (Behre 1981). Weak evidence for potential arable cultivation is based on the occurrence of possible cereal-type pollen (if not a wild grass of wet grass or water, such as *Glyceria* spp. (Andersen 1979)), at 3.70m-3.71m bgl (+0.3m–0.29m OD). The abundance of spores of bracken at 3.74m-3.75m bgl (+0.26m-0.25m OD) is curious and may suggest disturbed habitats or possibly relate to cultural activities (Moran 2004). A peak in occurrence of bracken spores, found in sediments from the Thames estuary, was attributed to a possible local source area, although the spores are also capable of floating (Waller and Grant 2012). Grime *et al.* (1988) refers to bracken as being recorded from the margins of soligeneous mires. Pollen of aquatic plants, such as lesser bulrush, which may inhabit reed-swamps, slow rivers, or ditches (Stace 2010) are present in the assemblage in low numbers. Although possibly derived from a variety of environments, records for pollen of the goosefoot family may suggest potential saltmarsh environments. A single dinoflagellate cyst, if *in-situ*, would suggest a marine influence on the palaeoenvironment. The variety of potential palaeoenvironments may be consistent with an "eyot edge environment".

#### *Trench C1*

This series of sub-samples is thought to represent the early medieval to Saxon foreshore sequence. The pollen counts are generally too low to permit interpretation, apart perhaps from the sub-samples at 4.4-4.5m and 4.7-4.8m bgl (-0.23- -0.33m and -0.53- -0.63m OD), where counts of 55 and 78 grains (including tree, shrub and herb pollen and fern spores) were achieved, respectively. This tentative interpretation is therefore based on the low counts from these two sub-samples. Alder is the

most common tree pollen type recorded and suggests wet woodland conditions. The pollen data suggest a possible drier woodland environment also existed, comprising oak, pine, birch, elm, hazel-type and lime. There is also evidence for open areas, with up to 45% of taxa counted at 4.7-4.8m bgl (-0.53- -0.63m OD) representing pollen of herbs; this value appears to drop to 35% at 4.4-4.5m bgl (-0.23- -0.33m). The herb pollen is dominated by grasses and sedges, followed in abundance (perhaps significantly) by pollen of the goosefoot family. Pollen of weeds associated with pastures/wet meadows is also present, including examples of ribwort plantain and meadowseet (*Filipendula*). The occurrence of some freshwater habitats may be inferred from the presence of the algal type *Pediastrum*. The dinoflagellate cyst, *Operculodinium centrocarpum*, is recorded at 4.7-4.8m bgl (-0.53- -0.63m OD) and if *in-situ*, may suggest a possible marine influence on the palaeoenvironment. The relative abundance of pollen of the goosefoot family, (up to 5%), may suggest localised saltmarsh palaeoenvironments, which would be consistent with a floodplain setting (although pollen from the goosefoot family may derive from a variety of environments).

#### *Trench A5 (A4.7)*

Initial pollen data suggest that the deeper sub-sample, at 4.94-4.95m bgl (-0.72- -0.73m OD), may possibly reflect a slightly more open landscape, with up to 60% of the assemblage comprising herb taxa. At 4.33-4.34m bgl (-0.11- -0.12m OD), the herb pollen comprises less than 40% of the total pollen count. Within the lower, richer assemblage, at 4.94-4.95m bgl (-0.72- -0.73m OD), pollen of ribwort plantain is relatively common, along with grains of mugwort, common knapweed and knotgrass, which may suggest meadow/pasture land (Behre 1981). Cereal-type pollen (if not pollen of a wild grass, such as *Glyceria* spp. (Andersen 1979)) may suggest possible arable activities or potentially on-site processing of cereal. Pollen of sea plantain and of the goosefoot family, may provide evidence of possible saltmarsh palaeoenvironments (Long *et al.* 1998). Dinocysts and foram test linings, found at 4.33-4.34m bgl (-0.11- -0.12m OD), if *in-situ*, would support a palaeoenvironmental setting adjacent to saline influences. Two radiocarbon dates are available; at 4.81-4.82m bgl (-0.59- -0.60m OD), an early Romano-British date, 93 cal BC – 61 cal AD (2014 ± 29 BP; SUERC-49604 (GU 32185) is based on a fragment of wood and at 5.14-5.15m bgl (-0.92- -0.93m OD), a Romano-British (slightly younger) date, 252-403 cal AD (1712 ± 29 BP; SUERC-49607 (GU 32188), is based on fragments of a *Prunus* stone.

#### *Trench E (TR E)*

The very limited pollen data suggest an open, possibly cultivated landscape. Pollen of the cabbage family includes varieties frequently found in waste places, on rough or cultivated ground or in coastal locations (Stace 2010). The potential recovery of relatively common cereal-type grains, (assuming these are not pollen grains of large grasses, as both cereal-type pollen and some wild grass varieties, such as *Glyceria* spp., share similar dimensions (Andersen 1979)), and association with weeds of cultivation such as cornflower (*Centaurea cyanus*), (Behre 1981) suggests this pollen assemblage may be consistent with a medieval age assignment, as suggested from the archaeological fieldwork.

#### Trench A4.12

The assessed productive pollen sub-samples show a possible transition from a partially wooded, partially open palaeoenvironment to one that is largely open. Pollen from the deepest of these sub-samples, at 5-5.01m bgl (-0.78- -0.79m OD), suggests alder woodland was present, presumably occupying damper areas while mixed woodland comprising mostly hazel-type, oak and birch may have been growing on drier soils. Within the same sub-sample, pollen of grasses dominates the herb assemblage, which also includes pollen of ribwort plantain and docks/sorrels. This assemblage may be indicative of wet meadow/pasture palaeoenvironments (Behre 1981). A similar pollen assemblage is present in the sub-sample at 4.20-4.21m bgl (+0.02- +0.01m OD) but at 3.40-3.41m bgl (+0.82- +0.81m OD), the herb pollen, in particular pollen of the cabbage family (a large group including plants such as garlic mustard and cuckoo flowers but also including coastal plants such as sea rocket and scurvy-grass) dominates the assemblage. These plants grow in a wide variety of habitats including waste places, rough and cultivated ground, hedges and roadsides and in coastal locations (Stace 2010). The relative abundance of pollen of the goosefoot family, just under 10% of the total land pollen counted (trees, shrubs, herbs and fern spores), at both 4.20-4.21m bgl (+0.02- +0.01m OD) and 3.40-3.41m bgl (+0.82- +0.81m OD), may suggest localised saltmarsh palaeoenvironments, although pollen from the goosefoot family may derive from a variety of environments, for example, waste and cultivated ground as well as occurring near the sea (Stace 2010). The presence of foraminiferal test linings and dinoflagellate cysts, in the two deeper sub-samples, if *in-situ*, would support a proximal marine setting.

Sample		39	39	39	39	39	39	39	TR C	TR C	TR C	TR C	TR C	TR C
Trench		H2	H2	H2	H2	H2	H2	H2	C1	C1	C1	C1	C1	C1
Preservation		Mixed	Mixed	-	-	-	-	-	Poor	Mixed	Mixed	Mixed	Mixed	-
Potential		Possible	Possible	No	No	No	No	No	No	Possible	Possible	Possible	No	No
Depth (m)		0.17-0.18	0.21-0.22	0.24-0.25	0.31-0.32	0.34-0.35	0.39-0.40	0.48-0.49	4.10-4.20	4.40-4.50	4.70-4.80	4.90-5.00	5.10-5.20	5.90-6.00
Trees/Shrubs														
<i>Alnus</i>	Alder	7	10						1	10	13	6	6	
<i>Betula</i>	Birch			1						1	5			
<i>Pinus</i>	Pine	2	2						1	2		1	1	
<i>Corylus avellana</i> - type	Hazel-type	6	6						2	7	4	6	1	
<i>Tilia</i>	Lime									1		1		
<i>Quercus</i>	Oak	1	5							6	8	3	3	
<i>Salix</i>	Willow									1	2			
<i>Ulmus</i>	Elm									2	2			
<i>Hedera</i>	Ivy										1			
Crops														
Cereal-type	Cereals	1												
Herbs														
Apiaceae	Carrot family: includes cow parsley and sweet cicely	1								1			1	
<i>Artemisia</i>	Mugwort	1												
Asteraceae	Daisy family: includes ragworts and fleabanes									1	1			
Brassicaceae	Cabbage family: includes garlic mustard and cuckoo flowers	1							2		1	3	1	
Caryophyllaceae	Pink family		1						1			1	1	
Chenopodiaceae	Goosefoot family	2	2						1	3	4	2		
<i>Centaurea nigra</i>	Common Knapweed									1				
Cyperaceae	Sedges	4	7						2	1	6	2	2	
<i>Filipendula</i>	Meadowsweet	1									2	1	1	
Poaceae	Grasses	12	8						1	8	17	7	8	
<i>Plantago lanceolata</i>	Ribwort plantain		1								1	3	1	
<i>Potentilla</i> -type	Cinquefoil-type	1												
<i>Rumex obtusifolius</i>	Broad-leaved dock	1									1			
Rubiaceae	Bedstraw family		1										1	
<i>Taraxacum</i> -type	Dandelion-type	4	1		2					2	3	1		

	Indeterminate herbs	3	2							2		1		
	<b>Total land pollen</b>	<b>48</b>	<b>46</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>49</b>	<b>71</b>	<b>38</b>	<b>27</b>	<b>0</b>
	Number of traverses	10	10	10	10	10	10	10	10	10	10	10	10	10
<i>Lycopodium</i>	Exotic	23	28	43	32	30	24	19	18	28	30	21	21	36
<b>Ferns</b>														
<i>Polypodium</i>	Polypodies	2	1							1	3		1	
<i>Pteridium</i>	Bracken	10	38						1	2	1	3	1	
<i>Pteropsida</i>	Monolete ferns	4	15						3	3	3	8	2	
	<b>Total land pollen and spores</b>	<b>64</b>	<b>100</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>55</b>	<b>78</b>	<b>49</b>	<b>31</b>	<b>0</b>
<b>Aquatics</b>														
<i>Alisma</i>	Water-plantains		1											
<i>Typha latifolia</i>	Bulrush								1			1		
<i>Typha angustifolia</i>	Lesser Bulrush	5	3						1					
<b>Mosses</b>														
<i>Sphagnum</i>	Bog moss spores	1	1											
<b>Algae</b>														
<i>Pediastrum</i>	Freshwater colonial alga										1	1		
<i>Botryococcus</i>	Freshwater colonial alga	1												
<b>Microscopic charcoal</b>		40	20						15	28	55	20	26	
<b>Non-pollen palynomorphs</b>									1		1	3	6	
<b>Foram test linings</b>												1		
<b>Dinoflagellate cysts</b> (?Reworked)		1							1		2	2		
<b>Cretaceous pollen</b> (Reworked)												1		
<b>Carboniferous pollen</b> (Reworked)			1											
Broken grains		16	8							2	4	3	1	
Concealed grains		10	19							9	4	3	8	
Crumpled grains		6	5							3	3	9	6	

**Table 2: Raw Pollen Counts for London Bridge Station**

Sample		BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	BH 4.7	TR E1	TR E1	TR E1	TR E1	TR E1
<b>Trench</b>		A5	A5	A5	A5	A5	A5	A5	A5	A5	A5	E1	E1	E1	E1	E1
<b>Preservation</b>		Mixed	Poor	Mixed	Mixed	Poor	Poor	Good	Mixed	-	-	-	-	-	Mixed	Mixed
<b>Potential</b>		No	No	No	Possible	No	No	Possible	No	No	No	No	No	No	No	Possible
<b>Depth (m)</b>		2.63-	3.23-	3.51-	4.33-4.34	4.45-	4.80-	4.94-	5.10-	5.40-	5.60-	4.05-	4.58-	4.83-	5.08-	5.23 -

		2.64	3.24	3.52		4.46	4.81	4.95	5.11	5.41	5.61	4.06	4.59	4.84	5.09	5.24
<b>Trees/Shrubs</b>																
<i>Alnus</i>	Alder	2	4	1	7		1	13	2						1	3
<i>Betula</i>	Birch				1		1	1							1	
<i>Pinus</i>	Pine	2	1	1	4			2							2	1
<i>Fraxinus</i>	Ash															1
<i>Corylus avellana</i> - type	Hazel-type	6	4	1	9		1	2							5	
<i>Tilia</i>	Lime															2
<i>Quercus</i>	Oak	2			4	1	2	4						1	2	4
<i>Ulmus</i>	Elm				1											
<i>Calluna</i>	Heather														1	
<b>Crops</b>																
Cereal-type	Cereals	1						1							2	4
<b>Herbs</b>																
Apiaceae	Carrot family: includes cow parsley and sweet cicely							3								1
Artemisia	Mugwort family							1								
Asteraceae	Daisy family: includes ragworts and fleabanes			1	2			1							1	
Brassicaceae	Cabbage family: includes garlic mustard and cuckoo flowers		2	2	2										3	20
Chenopodiaceae	Goosefoot family	5		4	2			1								7
<i>Centaurea cyanus</i>	Cornflower														1	
<i>Centaurea nigra</i>	Common Knapweed							1								
Cyperaceae	Sedges				3			6							2	4
<i>Filipendula</i>	Meadowsweet	1			1			1								
Poaceae	Grasses	4		1	10	1	1	22	2						5	12
<i>Polygonum aviculare</i>	Knotgrass				2			1								
<i>Polygonum persicaria</i>	Redshank														1	
<i>Plantago lanceolata</i>	Ribwort plantain	1						3							1	
<i>Plantago maritima</i>	Sea plantain							1								
Ranunculaceae	Buttercup family							2							1	1
Rumex-type	Docks/Sorrels							1							1	1
<i>Taraxacum</i> -type	Dandelion-type	4	6		1			3								
	Indeterminate herbs	3			1	2		2								2
	<b>Total land pollen</b>	<b>31</b>	<b>17</b>	<b>11</b>	<b>50</b>	<b>4</b>	<b>6</b>	<b>72</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>30</b>	<b>69</b>



	Number of traverses	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
<i>Lycopodium</i>	Exotic	98	16	17	14	6	50	24	12	40	101	50	57	77	22	31
<b>Ferns</b>																
<i>Polypodium</i>	Polypodies	1	1	2		1			1							
<i>Pteridium</i>	Bracken	1	1	2	10	1	1	5							2	3
<i>Pteropsida</i>	Monolete ferns	7	2	4	3	1		2						1	4	7
	<b>Total land pollen and spores</b>	<b>40</b>	<b>21</b>	<b>19</b>	<b>63</b>	<b>7</b>	<b>7</b>	<b>79</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>36</b>	<b>79</b>
<b>Aquatics</b>																
<i>Typha angustifolia</i>	Lesser Bulrush				1											1
<i>Typha latifolia</i>	Bulrush															
<i>Potamogeton</i>	Pondweed														1	
<b>Mosses</b>																
<i>Sphagnum</i>	Bog moss spores	1		1	1											
<b>Algae</b>																
<i>Pediastrum</i>	Freshwater colonial alga															
<i>Botryococcus</i>	Freshwater colonial alga		1													
<b>Microscopic charcoal</b>		abt	abt	abt	abt	abt	2	abt	50	1					1	20
<b>Non-pollen palynomorphs</b>			16	1	4	3		8							3	8
<b>Foram test linings</b>					2											
<b>Dinoflagellate cysts</b> (?Reworked)			1		3					2						
<b>Reworked pollen</b>		1	1			1									1	1
Broken grains			6	2	5			5	2		1				1	
Concealed grains		2	6	3	6		1	6	2						3	
Crumpled grains		9	8	3	4			2							7	

**Table 3: Raw Pollen Counts for London Bridge Station**

Sample		TR E1	TR E1	T E12	TR E1	TR E1	TR E1	A4.12	A4.12	A4.12	A4.12	A4.12	A4.12
<b>Trench</b>		E1	E1	E1	E1	E1	E1	A4	A4	A4	A4	A4	A4
<b>Preservation</b>		Poor	Poor	-	Poor	Poor	-	Mixed	Mixed	Good	Mixed	-	Mixed
<b>Potential</b>		No	No	No	No	No	No	Possible	Possible	Yes	No	No	No
<b>Depth (m)</b>		5.38-5.39	5.49-5.50	5.58-5.59	5.98-5.99	6.28-6.29	6.43-6.44	3.40-3.41	4.20-4.21	5.00-5.01	5.35-5.36	5.70-5.71	5.90-5.91
<b>Trees/Shrubs</b>													
<i>Alnus</i>	Alder							1	8	15	2	1	2
<i>Betula</i>	Birch								1	3			2
<i>Pinus</i>	Pine	1			5			1	6	1		1	2

<i>Sambucus</i>	Elder								6	2			
<i>Corylus avellana</i> - type	Hazel-type								6	17			1
<i>Tilia</i>	Lime								1				
<i>Quercus</i>	Oak							1	5	10	1		3
<i>Salix</i>	Willow								1				
<i>Ulmus</i>	Elm								1				1
<i>Carpinus</i>	Hornbeam									2			
<i>Fagus</i>	Beech									1			
<i>Hedera</i>	Ivy									1			
<i>Calluna</i>	Heather	1								1			
<b>Crops</b>													
Cereal-type	Cereals	3						1					
<b>Herbs</b>													
Apiaceae	Carrot family: includes cow parsley and sweet cicely									3			
Asteraceae	Daisy family: includes ragworts and fleabanes								1	4		1	1
Brassicaceae	Cabbage family: includes garlic mustard and cuckoo flowers		1					20	1				
Caryophyllaceae	Pink family								1				
Chenopodiaceae	Goosefoot family				1			6	6		2		1
<i>Centaurea nigra</i>	Common Knapweed								2		2		
Cyperaceae	Sedges							4	3	4	5		2
<i>Filipendula</i>	Meadowsweet												1
Poaceae	Grasses	3						5	10	27	5		4
<i>Plantago lanceolata</i>	Ribwort plantain							2		2			
<i>Rumex</i> -type	Docks/Sorrels									1			
<i>Taraxacum</i> -type	Dandelion-type							4	3	5	1		3
	Indeterminate herbs	2						3	3	1			
	<b>Total land pollen</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>48</b>	<b>59</b>	<b>100</b>	<b>18</b>	<b>3</b>	<b>23</b>
	Number of traverses	10	10	10	10	10	10	10	10	10	10	10	10
<i>Lycopodium</i>	Exotic	38	53	110	75	75	74	80	26	21	55	46	36
<b>Ferns</b>													
<i>Polypodium</i>	Polypodies	1									1		
<i>Pteropsida</i>	Monolete ferns	1	1					11	6	6			3
<i>Pteridium</i>	Bracken							3	3	2			1
	<b>Total land pollen and spores</b>	<b>12</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>62</b>	<b>68</b>	<b>108</b>	<b>19</b>	<b>3</b>	<b>27</b>
<b>Aquatics</b>													
<i>Typha angustifolia</i>	Lesser Bulrush									1			

<i>Typha latifolia</i>	Bulrush							1	1	1		1
<i>Potamogeton</i>	Pondweed								1			
<b>Mosses</b>												
<i>Sphagnum</i>	Bog moss spores						4	1				
<b>Algae</b>												
<i>Botryococcus</i>	Freshwater colonial alga						1					
<b>Microscopic charcoal</b>		4					abt	44	25	23	1	11
<b>Non-pollen palynomorphs</b>							2	8	13	2		2
<b>Foram test linings</b>								1				
<b>Dinoflagellate cysts</b> (? Reworked)		1			2	5	1	2	3		6	1
<b>Reworked pollen</b>						1	1	2	1		2	2
Broken grains					4	2		9	2	1	1	
Concealed grains					1			8	5	1	2	1
Crumpled grains					2			7	7	5	2	3

**Table 4: Raw pollen counts from London Bridge Station**

Note: “abt” = counts of greater than 100 microscopic charcoal particles

## Plant remains

Kath Hunter

Preservation of waterlogged plant remains was observed to be poor within many of the processed sub-samples. Seven of the best samples were assessed for waterlogged plant remains as an indication of waterlogged potential from the augerhole samples. The results of the assessment are shown in Table 5 and discussed below:

Three sub-samples were taken from organic deposits noted at varying depth from Eyot edge sequence from Trench H2 (See Table 5). Four sub-samples were also taken from Trench C1, which sampled the foreshore and peat sequence, were also selected for assessment. Each sub-sample was sieved using a bucket flotation technique with the flot and residue being retained on 250µm mesh. Both flot and residue have been kept wet and stored below 5°C. The volumes for each sub-sample measured by water displacement are recorded in Table 5. These samples were processed using standard flotation methods and scanned for waterlogged and charred plant remains.

Whilst all of the samples assessed contained waterlogged plant remains very few were identifiable plant macrofossils. The few seeds present are mainly species associated with open water or water margin environments and as such provide little potential for interpreting the deposits further than this.

The Bronze Age peat was found to contain a poorly preserved assemblage of waterlogged aquatic plants of Water crowfoot type (*Ranunculus* sect *Batrachium*), and dryland species of mint type (*Mentha* sp.) and Apiaceae. The larvae cases of sedge or rail flies (Caddis fly) were also identified.

Borehole	Depth	Sample No	Context	Trench/ area	Dating Decision	Feature Type	Mesh size Flot/μm	sample vol/ml	Grain	Legume	Charc	Cist /frags	fruit/nut	seed	wood	insect	seed	leaf / stem	wood	fruit /nut	roots	insect	fish	mammal S	Mammal L	Bird	indet	marine	other	egg shell		Comments	Plant remain analysis Potential	Charcoal/ wood potential
C1	15-20cm	37	1847			monolith sample from behind revetment	250μm	125ml						*			**	(*)			****	*										Waterlogged- water crows-foot.( <i>Ranunculus</i> subgenus <i>batracium</i> )celery-leaved buttercup( <i>Ranunculus sceleratus</i> ) blackberry ( <i>Rubus</i> sp.)	C/D	poor
	39-43cm	37	1842			monolith sample from behind revetment	250μm	175			*			*			**	**	*		****	*										Waterlogged- sedge ( <i>Carex</i> sp.),mint ( <i>Mentha</i> sp.),cf <i>Prunus</i> stone	C/D	poor
	43-48cm	37	1842			monolith sample from behind revetment	250μm	175			(*)			*			***	(*)**			****	*										Waterlogged- indet seeds, goosefoot type ( <i>Chenopodium</i> sp.),mint ( <i>Mentha</i> sp.)	C/D	poor
	4.9-5.0m					borehole	250μm	300			(*)			*			***	(*)			****	*										Waterlogged- small nettle ( <i>Urtica urens</i> )	C/D	poor
	5.0-5.1m					borehole	250μm	100			(*)			**			***	*(*)			****	*										Waterlogged-water plantain ( <i>Allisima</i> sp.), henbane ( <i>Hyoscyamus niger</i> ) , indet,water crows-foot.( <i>Ranunculus</i> subgenus <i>batracium</i> ) ,common nettle ( <i>Urtica dioica</i> ) blackberry ( <i>Rubus</i> sp.), Hemlock (cf. <i>Conium maculata</i> ), Caryophyllaceae,	C/D	poor
C1	5.1-5.2m					borehole	250μm	150			*			*			**	***	***		***	*										Waterlogged- indet seeds, water crows-foot.( <i>Ranunculus</i> subgenus <i>batracium</i> ) ,,tasteless/small water-pepper ( <i>Persicaria mitis/minor</i> ), small nettle ( <i>Urtica urens</i> ), dock ( <i>Rumex</i> sp.) within perianth,cinquefoil type (cf. <i>potentilla</i> sp.)	C/D	poor

Table 5: Plant Remains

## Diatoms

Nigel Cameron

Forty sub-samples were taken through the foreshore sequence from the augerholes from Trenches A4-5. Diatom preparation followed standard techniques (Battarbee *et al.* 2001). The results of the diatom assessment are shown in Tables 6-8 and discussed in more detail below:

### A4.12 (samples D1-D6)

Diatoms are present in all six samples assessed from this sequence taken from between 5.90m and 3.40m depth. Diatom concentrations (Table 7) vary from high to extremely low, and the quality of diatom valve preservation ranges from very poor to moderately good. There is also a wide range of species diversity (a single fragment to moderately high diversity). Three samples (D3, D4 and D6) have moderate or good potential for percentage diatom counting. The top sample (D1) has only low potential for diatom analysis, and two samples (D2 and D5) have no further potential for diatom counting.

In sample D2 the type of diatom assemblage is unknown. In the other five samples evaluated from A4.12 the diatom assemblages represent estuarine, brackish water conditions. Examples of mesohalobous and halophilous, estuarine taxa include *Cyclotella striata*, *Navicula digitoradiata* var. *minima*, *Nitzschia sigma*, *Nitzschia navicularis*, *Navicula minisculus*, *Rhoicosphaenia curvata* and *Nitzschia levidensis*. With the exception of D5 these assemblages also include allochthonous marine, coastal taxa (polyhalobous group) such as *Cymatosira belgica*, *Paralia sulcata*, *Podosira stelligera* and *Rhaphoneis minutissima*. Freshwater, oligohalobous indifferent diatoms are present, particularly in samples D3 to D6. Many of the more common freshwater taxa have wide salinity tolerance, and these include *Fragilaria pinnata* and *Opephora martyii*. The epiphyte *Cocconeis placentula* is common in samples D3 and D4.

The diatom assemblages of samples D1 and D3-D6 therefore represent tidal, estuarine environments; and therefore above 5.61m bgl are consistent with the radiocarbon age and known salinity history of the Thames. The estuarine diatom assemblages of (D5 and D6) are therefore likely to post date the early-middle Bronze Age, the period when the Thames in central London became tidal.

### Trench H2 <39> Lower (samples D7-D9) & Upper (samples D10-D13)

Seven samples from the upper and lower parts of the eyot edge <39> sequence were assessed for diatoms. A very poorly preserved diatom assemblage is present in sample D11. The assemblage contains a benthic brackish water species, *Nitzschia navicularis*, and a freshwater/terrestrial aerophilous species, *Pinnularia major*. Diatoms are absent from the other six samples assessed from the eyot edge sequence. There is no further potential for diatom analysis of any of the samples.

The absence or poor preservation of diatom remains in this sequence, and in some other samples assessed from the BVM12 site, can be attributed to taphonomic processes (Flower 1993; Ryves *et al.* 2001). This may be the result of diatom silica dissolution and breakage caused by factors such as extremes of sediment alkalinity or acidity, the under-saturation of sediment pore water with dissolved silica, cycles of prolonged drying and rehydration, or physical damage to diatom valves from abrasion or wave action.

#### *Trench 5 borehole A4.7 (Samples D14-D23)*

Diatoms are present in nine of the ten samples assessed from the BH4.7 Roman river front sequence. The diatom assemblages are relatively well preserved, with good potential for percentage counting in the top sample (D1) and sample D20. Diatoms are absent from the basal sample (D23). In seven samples (D15-D19, D21, D22) the diatom assemblages are very poorly preserved and there is no further potential for percentage diatom counting. However, the diatom assemblages of these samples are nevertheless informative and reflect estuarine conditions. In two of the diatomaceous samples (D17 and D18), diatoms are represented only by the fragmentary remains of indeterminate valves. In the remaining seven diatomaceous samples the diatom assemblages represent estuarine, brackish water conditions and are consistent with the radiocarbon ages and known salinity history of the main channel of the River Thames. For example the estuarine planktonic taxa *Cyclotella striata* and *Actinocyclus normanii* are common or abundant in four samples. Allochthonous marine diatoms (*Rhaphoneis minutissima*, *Rhaphoneis sp.* and *Paralia sulcata*) are present in D14 and D20). The freshwater epiphyte *Cocconeis placentula* is also present in D20 and a number of oligohalobous indifferent taxa with broad environmental ranges were also recorded in the sequence, e.g. *Fragilaria brevistriata*, *Fragilaria pinnata* and *Denticula tenuis*.

#### *Trench C1 (Samples D24-D29)*

Diatoms are present in all six of the samples assessed from the Early medieval/Saxon floodplain TRC sequence. Three samples (D25-D27) have good, or some potential for percentage diatom counting. There is low potential for further diatom analysis of D28, and no further potential for diatom analysis of D24 and D29 where diatom numbers are extremely low and the quality of preservation is very poor. All six samples show evidence for tidal, estuarine influence. The planktonic estuarine species *Cyclotella striata* is abundant, common or present in all six samples. Allochthonous polyhalobous diatoms such as *Cymatosira belgica*, *Rhaphoneis minutissima* and *Thalassionema nitzschiodes* are present in the top three samples. Other brackish water diatoms present in the TRC sequence include *Navicula salinarum*, *Nitzschia navicularis*, *Actinocyclus normanii*, *Cyclotella meneghiniana* and *Navicula menisculus*. Freshwater taxa that are present in the sequence include the non-planktonic diatoms *Amphora pediculus*, *Cocconeis disculus* and *Cocconeis placentula*. Also present or common in some samples are oligohalobous indifferent *Fragilaria* taxa with broad environmental tolerances; these include *Fragilaria brevistriata*, *Fragilaria pinnata* and *Fragilaria construens*.

#### *Trench E1 (Samples D30-D40)*

Eleven samples were assessed from BH2 Trench E1, ranging from 6.43m to 4.05m bgl depth (-1.88m to +0.50m OD) (see Table 6 for sample depths. N.B. the location of sample D37). Diatoms are absent from the three basal samples (D38-D40), sample D36, and from the top two samples D30 and D31. Diatoms are very poorly preserved in samples D37 and D32; and the number of diatoms and species diversity is also very low in these samples. There is no further potential for diatom analysis of these eight samples. However, in the two poorly preserved samples that are diatomaceous (D32 and D37), the diatom assemblages are informative and reflect estuarine, brackish water conditions with *Cyclotella striata* probably present in both. Three relatively well preserved diatom assemblages are present in D33, D34 and D35. All three samples have good potential for percentage diatom counting. The diatoms of these three samples are dominated by brackish water, estuarine taxa including *Cyclotella striata*, with fewer benthic mesohalobous diatoms such as *Nitzschia sigma* and *Navicula salinarum*. A range of allochthonous, polyhalobous taxa are present in D33 and D34; these coastal diatoms include *Cymatosira belgica*, *Paralia sulcata*, *Rhaphoneis ampiceros*, *Rhaphoneis minutissima* and *Trachyneis aspera*. Halophiles in D33-D35 include *Navicula menisculus* and *Rhoicosphaenia curvata*. Oligohalobous indifferent diatoms in these samples include *Cocconeis disculus*, *Cocconeis placentula* and the aerophilous species *Pinnularia major*. The latter may originate from soil washed into the channel.

## Interpretation

Diatoms are present in all six samples from the Roman channel sequence A4.12. Estuarine conditions are represented in five of the diatom assemblages. However, as a result of very poor diatom preservation, it is not possible to evaluate the environment represented by sample D2. Three of the samples from A4.12 have good to moderate potential for further, percentage, diatom analysis.

Seven samples from the eyot edge <39> sequence were assessed for diatoms. A very poorly preserved mesohalobous and oligohalobous indifferent, aerophilous diatom assemblage is present in sample D11. Diatoms are absent from the remaining six samples assessed from the eyot edge sequence. There is no further potential for diatom analysis of any of the samples from this sequence.

Diatoms are present in nine of the ten samples assessed from the BH4.7 Roman river front sequence. The diatom assemblages are relatively well preserved, with good potential for percentage counting in the two samples. Diatoms are absent from the basal sample in BH4.7. In seven samples the diatom assemblages are very poorly preserved, with no further potential for percentage diatom counting. However, like the two better preserved diatom assemblages, the diatoms present in these seven samples also reflect estuarine conditions.

Diatom Sample Number	Sample/Borehole/Context	Top Sample Depth (m or cm)	Lower Sample Depth (m or cm)	Notes
D1	A4.12	3.40	3.41	Roman Channel Seq



D2	A4.12	4.20	4.21	“
D3	A4.12	5.00	5.01	“
D4	A4.12	5.35	5.36	“
D5	A4.12	5.70	5.71	“
D6	A4.12	5.90	5.91	“
D7	<39>Lower( 1925)	24	25	Eyot edge
D8	<39>Lower( 1925)	34	35	“
D9	<39>Lower( 1925)	39	40	“
D10	<39>Upper( 1924)	17	18	“
D11	<39>Upper( 1924)	21	22	“
D12	<39>Upper( 1925)	31	32	“
D13	<39>Upper( 1925)	48	49	“
D14	BH4.7	2.61	2.62	Roman river front
D15	BH4.7	3.24	3.25	“
D16	BH4.7	3.50	3.51	“
D17	BH4.7	4.32	4.33	“
D18	BH4.7	4.43	4.44	“
D19	BH4.7	4.81	4.82	“
D20	BH4.7	4.96	4.97	“
D21	BH4.7	5.09	5.10	“
D22	BH4.7	5.39	5.40	“
D23	BH4.7	5.61	5.62	“
D24	TRC	4.10	4.20	Early Med/Saxon floodplain
D25	TRC	4.40	4.50	Early Med/Saxon floodplain
D26	TRC	4.70	4.80	Early Med/Saxon floodplain
D27	TRC	4.90	5.00	Early Med/Saxon floodplain
D28	TRC	5.10	5.20	Early Med/Saxon floodplain
D29	TRC	5.90	6.00	Early Med/Saxon floodplain
D30	TRE1	4.05	4.06	Late Med/Early Post Med Channel (BH2)
D31	TRE1	4.58	4.59	Late Med/Early Post Med Channel (BH2)
D32	TRE1	4.83	4.84	Late Med/Early Post Med Channel (BH2)
D33	TRE1	5.08	5.09	Late Med/Early Post Med Channel (BH2)
D34	TRE1	5.23	5.24	Late Med/Early Post Med Channel (BH2)
D35	TRE1	5.38	5.39	Late Med/Early Post Med Channel (BH2)
D36	TRE1	5.58	5.59	Late Med/Early Post Med

				Channel (BH2)
D37	TRE1 (label TRC)	5.49 (label 5.40)	5.50 (label 5.50)	Late Med/Early Post Med Channel (BH2)
D38	TRE1	5.98	5.99	Late Med/Early Post Med Channel (BH2)
D39	TRE1	6.28	6.29	Late Med/Early Post Med Channel (BH2)
D40	TRE1	6.43	6.44	Late Med/Early Post Med Channel (BH2)

Table 6: Borehole samples selected for diatom evaluation from London Bridge Station (BVM12).

Diatom Sample No.	Diatoms	Diatom Numbers	Quality of Preservation	Diversity	Assemblage type	Potential for % count
D1	+	v low	v poor	low	bk est mar fw	some/low
D2	+	ex low	ex poor	fragment	unknown	none
D3	+	high	mod to poor	mod high	bk est (fw mar)	good
D4	+	mod	poor to mod	mod	bk est (fw mar)	mod
D5	+	ex low	ex poor	v low	bk est (fw)	none
D6	+	mod high	mod to poor	mod high	bk est fw mar	mod good
D7	-	-	-	-	-	none
D8	-	-	-	-	-	none
D9	-	-	-	-	-	none
D10	-	-	-	-	-	none
D11	+	v low	ex poor	ex low	fw aero bk	none
D12	-	-	-	-	-	none
D13	-	-	-	-	-	none
D14	+	mod	poor	low	bk est (fw)	mod good
D15	+	v low	ex poor	ex low	bk est (fw)	none
D16	+	ex low	ex poor	ex low	bk est	none
D17	+	ex low	ex poor	fragment	unknown	none
D18	+	ex low	ex poor	fragment	unknown	none
D19	+	ex low	ex poor	v low	bk est	none
D20	+	mod high	poor to mod	mod	bk est mar fw	good
D21	+	ex low	ex poor	v low	bk est	none
D22	+	ex low	ex poor	v low	bk est	none
D23	-	-	-	-	-	none
D24	+	ex low	ex poor	v low	cf. bk benthic	none
D25	+	low	poor	v low	bk est	some
D26	+	mod high	mod to poor	mod	bk est fw (mar)	good
D27	+	mod	mod to poor	mod	bk est fw (mar)	good
D28	+	low	poor	low to mod	bk est fw	low
D29	+	ex low	ex poor	v low	bk est (fw)	none
D30	-	-	-	-	-	none
D31	-	-	-	-	-	none
D32	+	ex low	ex poor	v low	bk est fw	none
D33	+	high	mod	mod high	bk est (fw mar)	good
D34	+	mod	poor	mod	bk est (fw mar)	good
D35	+	mod high	poor to mod	mod high	bk est (fw mar aero)	good
D36	-	-	-	-	-	none

D37	+	ex low	ex poor	one sp.	bk est	none
D38	-	-	-	-	-	none
D39	-	-	-	-	-	none
D40	-	-	-	-	-	none

Table 7: Summary of diatom evaluation results for London Bridge Station (BVM12), (+ present; - absent; mod moderate; ex extremely; bk brackish; mar marine; fw freshwater; aero aerophilous; hal halophilous)

Diatom Taxon/Laboratory Sample	D1	D2	D3	D4	D5	D6	D11	D14	D15	D16	D17	D18	D19	D20	D21	D22	D24	D25	D26	D27	D28	D29	D32	D33	D34	D35	D37
<b>Polyhalobous</b>																											
Coscinodiscus sp.																		1									
Cymatosira belgica			1			1														1				1			
Paralia sulcata	1					1								1										1	1		
Podosira stelligera	1																										
Rhaphoneis amphiceros																									1		
Rhaphoneis minutissima				1		2								1						1				1			
Rhaphoneis sp.								1																			
Rhaphoneis surirella																			1								
Thalassionema nitzschiodes																				1							
Trachyneis aspera																								1			
<b>Polyhalobous to Mesohalobous</b>																											
Actinoptychus undulatus																				1					1		
Cocconeis scutellum																		1									
<b>Mesohalobous</b>																											
Campylodiscus echeneis															cf												
Cyclotella striata	3		3	3	1	3		3	3	cf			2	3		1		3	3	3	3	2	1	3	3	3	cf
Navicula digitoradiata var. minima						1																					
Navicula salinarum																				1				1			
Nitzschia navicularis	1					1	1	1		1				1	1		cf	1									
Nitzschia sigma			1																					1			
<b>Mesohalobous to Halophilous</b>																											
Actinocyclus normanii								2						2					1		1			1	1		
Cyclotella meneghiniana																			1								
Nitzschia levidensis				1																							
<b>Oligohalobous Halophilous</b>																											
Navicula menisculus			2	1		1														1				1	1	1	
Navicula mutica			1											1					1								
<b>Oligohalobous Halophilous to Indif</b>																											
Melosira varians														1										1			
Rhoicosphaenia curvata						2															1			2		2	
<b>Oligohalobous Indifferent</b>																											
Achnanthes clevei			1	1																				1			
Achnanthes minutissima				1										1						1							
Achnanthes lanceolata				1																						1	

Amphora libyca																			1								
Amphora ovalis																				1							
Amphora pediculus																			2	2						1	
Cocconeis disculus	1			1	1									1					1	1			1	1	1	1	
Cocconeis pediculus																					1			1		1	
Cocconeis placentula & var.				2	2		1			1				2					2					2	1	1	
Cyclotella kuetzingiana																			1								
Cymatopleura elliptica				1																							
Cymbella sinuata						1																					
Denticula tenuis										1				1													
Diatoma vulgare																								1			
Ellerbeckia arenaria							1																				
Fragilaria brevistriata						1			1					1					2			1					
Fragilaria construens																			1							1	
Fragilaria pinnata				1	1		2							1					1	2		1		1			
Gomphonema angustatum					1																1						
Hantzschia amphioxys																										1	
Meridion circulare																			1								
Navicula elginensis																										1	
Navicula hungarica																									1		
Navicula pupula					1																						
Navicula tripunctata				1																				1			
Nitzschia amphibia																			1								
Nitzschia terrestris																										1	
Opephora martyii				2	1		2											1	1					1	2	2	
Pinnularia major								1																			
Synedra ulna				1			1	1											1			1			1	1	
<b>Unknown Salinity Group</b>																											
Amphora sp.													cf					1									
Chrysophyte cysts	1							1		1												1					
Cocconeis sp.					1																						
Cyclotella sp.																			1								
Cymbella sp.	1																		1	1	1						
Diploneis sp.																		1	1	1		1					
Fragilaria sp.									1																		
Gomphonema sp.				1										1							1						
Gyrosigma sp.								1										1	1	1					1		
Indeterminate centric sp.	1					1	1	1		1		1	1		1		1					1	1				

Inderminate pennate sp.		1							1																		
Navicula sp.				1																1					1	1	
Neidium sp.																					1						
Pinnularia sp.							1														1						
Stauroneis sp.																											
Surirella sp.	1			1				1	cf					1						1					1	1	
Synedra sp.		cf																									
Unknown diatom fragment									1	1					1	1											
Unknown naviculaceae																	1										

Table 8: Raw diatom counts from London Bridge Station

## Ostracods and Foraminifera

John Whittaker

Twenty samples were assessed for the presence of microfauna – ostracods, foraminifera and other organic remains – to ascertain the detailed ecology of the changing foreshore environment. The results of the assessment are shown in Tables 9-11 and each sequence is discussed in more detail below:

### *Trench H2*

The trench was sited near the edge of a former eyot in the then braided Thames. The results of the microfaunal analysis are shown in Table 9. No ostracods were found, neither was there anything calcareous whatsoever. The occurrence of rhizoliths and iron tubes (formed around plant rootlets) in three of the sub-samples indicates a very marginal, almost semi-terrestrial sedimentary environment which also probably suffered subsequent weathering. Small pieces of charcoal were found in all the sub-samples and bone (probably fish) in the uppermost one, all evidence of human occupation.

### *Trench E1*

The results of the microfaunal analysis of the channel sediments within the interval 4.66 down to 6.16m bgl (+0.11m to -1.61m OD) of the borehole are shown in Table 10. The sequence is made up of silty sand with, sandwiched between it, some very interesting highly fossiliferous shelly silty clays. The silty sand at the base of the borehole at 6.06-6.16m (-1.51m- -1.61m OD) is unfortunately almost completely barren, and in the absence of any evidence to the contrary, seems to represent freshwater river alluvium, possibly of quite a high-energy channel. Then follows a very stony and shelly deposit at 5.28-5.48m bgl (-0.73m- -0.93m OD) followed by shelly silty clays up to 5.08m. These shelly deposits contain abundant molluscs as well as a microfauna that includes both freshwater and brackish ostracod species and some foraminifera. The freshwater ostracod species of this interval are common but can all tolerate low salinity. The brackish ostracods, on the other hand are of low diversity and much rarer. The foraminifera (which do not live in freshwater) are species of tidal flats and low saltmarsh, but are here very small - so we now seem to have tidal access, albeit at its very limits. Its facies also seems to indicate that the channel, for some reason, had become slow flowing and vegetated. As shown in the "Organic remains" (uppermost table of Table 10). What also may be of interest is the stony nature of the initial aspect of this facies at 5.38-5.48m bgl (-0.83m- -0.93m OD) – this could indicate the abandonment of a man-made structure, such as a revetment that caused the channel not only to change course but also to gain tidal access.

At 4.98-5.08m bgl (-0.43m- -0.53m OD), the silty sands begin again and in them there is at first, a transitional fauna between the rich shelly beds below and non-fossiliferous deposits above, which seem to indicate a return to a higher energy, wholly freshwater environment. In what was and

subsequently became a high energy tidal channel, what changes in the local geography or what human activity had taken place that gave rise to the ecologically distinct shelly silty clays, which in turn are the only tidal part of the sequence at this site?

#### *Trench A3, (A3.4)*

The present sequence in Borehole 4 from Trench A3 covers the interval 4.25m down to 5.30m bgl (-0.03- -1.08m OD), the results of the microfaunal analysis being shown in Table 11. For the most part it comprises very organic silty clays and appears to be wholly freshwater, apart from ostracod evidence from 4.95- 5.05m bgl (-0.73- -0.83m OD) that it attained a single short-lived and tenuous brackish tidal connection. For the sequence as a whole, from the freshwater ostracods and other “Organic remains” there is also some evidence of changing water quality, which might be supported by other specialists when their reports are completed. With regards to the ostracods, the most interesting are the lowest two sub-samples from 5.15m down to 5.30m (-0.93- -1.08m OD) which contain large numbers of *Cypria ophtalmica* which can survive in the most polluted of environments – significantly it is not found elsewhere in this borehole, or in Trench E1. Meisch (2000) reports that it is remarkably tolerant of a wide range of environments – in fact all types of continental aquatic sites including those with high organic pollution. It lives in permanent, temporary, stagnant or flowing waters. High populations have often been noted in pools with abundant leaf litter (usually decaying) and even in acidic bogs with a pH of <5. It is a true “slum ostracod”. With it occurs *Candona candida*, and nowhere else in Trench A3 (BH4). This species also lives in a wide range of aquatic environments, including ditches, swamps, and peaty waters with acidic conditions (pH <5).

In the Pleistocene it is considered to be a cool/cold indicator, from its occurrence in cold-climate deposits and association with other “northern” forms, although it is a member of the present-day British fauna. Both of these species may indicate colder conditions, especially winters, when these deposits were formed. Alternatively, it could just indicate that the lowest part of this sequence was very polluted. Above the tidal contact at 4.95m-5.05m bgl (-0.73- -0.83m OD) is evidence of a cleaner but still, vegetated channel. This is attested by the occurrence of *charophyte oogonia* which require clean pure water (this is the only part of the borehole in which they have been found). Above this again, in the uppermost two sub-samples (between 4.25m and 4.55m bgl (-0.03m - -0.33m OD)), there is but a very limited ostracod fauna. What there is, however, in the sediment is of significance – much brick/stone/cement, charcoal (although this does occur throughout), and most notably, shell and fish and amphibian bone fragments. This seems, again, to represent a very polluted channel as well as a dumping ground.



## ORGANIC REMAINS

	SAMPLE 39 UPPER			SAMPLE 39 LOWER	
Depth (below ground level)	10-15cm	30-35cm	40-45cm	25-30cm	35-40cm
plant debris	x	x	x	x	x
charcoal	x	x	x	x	x
rhizoliths/iron tubes (plant rootlets)	x			x	x
bone fragments	x				
Sediment	silty clay	silty sand			
Ecology	Very marginal channel subject to drying out; weathered				

Organic remains are recorded on a presence (x)/absence basis.

Table 9: Ostracods assessment Trench H2

## ORGANIC REMAINS

Depth (below ground level)	4.68-4.78m	4.78-4.88m	4.88-4.98m	4.98-5.08m	5.08-5.18m	5.18-5.28m	5.28-5.38m	5.38-5.48m	6.06-6.16m
plant debris + seeds	x	x	x	x	x	x	x	x	x
charcoal	x	x	x	x	x	x	x	x	
molluscs (pond snails, <i>Pisidium</i> , etc)		f	f	x	x	x	x	x	
<i>Bithynia</i> opercula				x	x	x	x	x	
shell and fish/amphibian bone fragments				x	x	x	x	x	
freshwater ostracods				x	x	x	x	x	
brackish ostracods					x	x	x	x	
brackish foraminifera					x	x	x	x	
insect remains					x	x	x	x	

earthworm granules						x	x	x	
brick/stone/cement etc.								x	
Sediment	silty sand				shelly silty clay			shelly stony silty sand	silty sand
Ecology	Freshwater river channel alluvium				Channel becoming slow flowing and vegetated; now also tidal			Freshwater river channel alluvium	

## FRESHWATER OSTRACODS

Depth (below ground level)	4.68-4.78m	4.78-4.88m	4.88-4.98m	4.98-5.08m	5.08-5.18m	5.18-5.28m	5.28-5.38m	5.38-5.48m	6.06-6.16m
<i>Candona neglecta</i>				x	xxx	xxx	xx	x	
<i>Ilyocypris bradyi/gibba</i>				x	xx	xx	x	x	
<i>Limnocythere inopinata</i>					x	x			
<i>Darwinula stevensoni</i>					x				
<i>Pseudocandona rostrata</i>					x	o	x	o	
<i>Herpetocypris reptans</i>					o	x	x		
<i>Candona candida</i>					o				

## BRACKISH OSTRACODS

Depth (below ground level)	4.68-4.78m	4.78-4.88m	4.88-4.98m	4.98-5.08m	5.08-5.18m	5.18-5.28m	5.28-5.38m	5.38-5.48m	6.06-6.16m
<i>Leptocythere porcellanea</i>					xx	x	x		
<i>Leptocythere lacertosa</i>					x		o	x	
<i>Leptocythere castanea</i>						o			

## BRACKISH FORAMINIFERA

Depth (below ground level)	4.68-4.78m	4.78-4.88m	4.88-4.98m	4.98-5.08m	5.08-5.18m	5.18-5.28m	5.28-5.38m	5.38-5.48m	6.06-6.16m
<i>Ammonia</i> sp. (brackish)					x		x		
<i>Haynesina germanica</i>					x	x	o	x	
millioids					x	x			

<i>Elphidium williamsoni</i>						x		
------------------------------	--	--	--	--	--	---	--	--

Organic remains are recorded on a presence (x)/absence basis. f - indicates fragmentary molluscs only.

Foraminifera and ostracods are recorded: o – one specimen; x – present (several specimens); xx – common; xxx – abundant/superabundant.

Brackish ostracods of tidal flats

Calcareous foraminifera of low-mid saltmarsh and tidal flats

Table 10 Ostracods assessment Trench E1

## ORGANIC REMAINS

Depth (below ground level)	4.25-4.35m	4.45-4.55m	4.65-4.75m	4.95-5.05m	5.15-5.25m	5.25-5.30m
brick/stone/cement, etc.	x	x				x
plant debris	x	x	x	x	x	x
charcoal	x	x	x	x	x	x
shell and fish/amphibian bone fragments	x	x			x	x
freshwater ostracods	x	x	x	x	x	x
freshwater bryozoan statoblasts		x	x	x	x	x
insect remains		x	x	x	x	x
<i>Bithynia opercula</i>			x	x	x	x
charophyte oogonia			x			
cladoceran ephippia				x	x	x
brackish ostracods				x		
molluscs (pond snails, bivalves, etc)					x	x
<i>Sediment</i>	<i>Pebbly sand</i>	<i>Organic silty clay</i>				

<i>Ecology</i>	<i>Polluted channel with dumping</i>	<i>Cleaner vegetated channel</i>	<i>Channel with some tidal contact</i>	<i>Polluted vegetated channel</i>

## FRESHWATER OSTRACODS

Depth (below ground level)	4.25-4.35m	4.45-4.55m	4.65-4.75m	4.95-5.05m	5.15-5.25m	5.25-5.30m
----------------------------	------------	------------	------------	------------	------------	------------

<i>Candona neglecta</i>	x	x	x	x	xx	x
<i>Cyclocypris laevis/ovum</i>		o	x	x	o	
<i>Limnocythere inopinata</i>			o			
<i>Pseudocandona rostrata</i>				x	x	o
<i>Darwinula stevensoni</i>				o		
<i>Cryptocandona vavrai</i>				o		
<i>Cypria ophthalmica</i>					xx	xx
<i>Candona candida</i>					x	x
<i>Ilyocypris bradyi</i>					o	o

## BRACKISH OSTRACODS

Depth (below ground level)	4.25-4.35m	4.45-4.55m	4.65-4.75m	4.95-5.05m	5.15-5.25m	5.25-5.30m
<i>Leptocythere porcellanea</i>				x		

Organic remains are recorded on a presence (x)/absence basis.

Ostracods are recorded: o – one specimen; x – present (several specimens); xx – common.

### Brackish ostracods of tidal flats

Table 11: Ostracods assessment Trench A3, Borehole 4

## **Snails**

*Elizabeth Stafford*

Ten samples were selected for the assessment of snails (molluscs) from the channel sequences identified within Trenches E and A3. Preservation of natural deposited shell material was generally sparse across the site. The samples selected were the same samples processed for ostracods and foraminifera and ranged in volume from 70g to 180g. The samples derive from channel deposits thought to date to the medieval/post-medieval period. On the broadest level the assessment aimed to determine the presence/absence of identifiable shell and provide preliminary data on taxonomic content.

### *Methodology*

The samples were submitted as whole processed dry residues (see report on ostracods and foraminifera). The residues were dry sieved to 0.5mm and scanned under a low power binocular microscope at magnifications of x10-x40.

Estimates were made on overall abundance of identifiable individuals, as well as key taxa which were recorded on a sliding scale (e.g. + 1-3, ++ 4-12, +++ 13-25, ++++ 26-50, +++++ >50). Identifications were checked against a modern reference collection. Nomenclature follows Kerney (1999) and habitat information follows Ellis (1926) Evans (1972), Kerney (1999) and Boycott (1936). For freshwater molluscs groups defined by habitat preferences consist of the following:

- **Flowing water species:** require a clean stream with a current
- **Ditch species:** require clean slowly moving water often with abundant aquatic plants
- **Catholic species:** tolerate a wide range of conditions except the worst slums
- **Slum species:** those able to live in water subject to stagnation, drying up and large temperature variations

### *Trench E*

Overall shell was moderately abundant in the samples from Trench E1 (4.98-5.48m BGL) considering the small volume of sediment processed, with some samples producing >100 identifiable individuals (Table 12). The condition of the shell was generally good and the

preservation of intact shells of fragile specimens eg. *Lymnaea peregra* suggests minimal mechanical damage.

In terms of taxonomic composition the samples from Trench E1 were very similar. The flots were wholly dominated by freshwater species, particularly the flowing water species *Bithynia tentaculata* (mud bithynia or faucet snail) and *Valvata piscinalis* (common valve snail). *Theodoxus fluviatilis* (river nerite) was also present in three of the samples. The remainder of the assemblages comprised catholic freshwater species, predominantly *Lymanaea* sp., the majority probably *L. peregra* (wandering snail); with occasional *Gyraulus crista*, *Gyraulus* cf *acronicus* (nautilus ramshorn) and *Bathyomphalus contortus* (twisted ramshorn) Slum species were only occasionally present comprising a single specimen of *Anisus leucostoma* (white-lipped ramshorn) and few *Lymnaea truncatula* (dwarf pond snail). In terms of terrestrial species only a single specimen of the open country species *Vallonia costata* (grass snail) and three of the shade-demanding species *Discus rotundatus* (rounded snail) were noted.

### *Trench A3*

Preservation was poorer in the samples from Trench A3 BH4 with only one sample producing a small amount of shell (5.15-5.25m bgl, Table 13).

### *Interpretation*

The results of the assessment from Trench E1 were quite similar to the channel sequences on the southbank of the Thames identified at the Thameslink Blackfriars site (TAA8), dated to the Saxon and medieval period. The abundance of well preserved flowing water species suggests a relatively insitu autochthonous assemblage. The environment of deposition was probably in-channel, with clean water, some aquatic vegetation, and a slow moving current. Common species such as *B. tentaculata* and *V. piscinalis* frequent bodies of slow moving well-oxygenated water in lowland rivers, canals and drainage ditches and favour muddy substrates with dense aquatic plants; they are rare in small closed features such as ponds. *B. tentaculata* is often found in profusion amongst common water moss *Fontinalis antipyretica* and *G. crista* on the leaves of *Potamogeton* and other water plants (Ellis 1926, 83-129). *V. piscinalis* can form an important part of the diet of fish (Kerney 1999, 29). The very low numbers of slum and terrestrial species suggests there was no seasonal drying up or desiccation. The consistency of the taxa together with lack of mechanical damage does not point to higher energy flood events. Although some species such as *L. peregra* and *Theodoxus fluviatilis* can tolerate slightly brackish water (Ellis 1926, 111; Kerney, 24), there were no mollusc species clearly indicative of marine incursion.

Depth (m BGL)	4.68-4.78	4.78-4.88	4.88-4.98	4.98-5.08	5.08-5.18	5.18-5.28	5.28-5.38	5.38-5.48	6.06-6.16
Volume (g)	175	155	180	125	165	115	150	70	115
<b>TAXA</b>									
<b>FRESHWATER GASTROPODA</b>									
<b>Flowing water</b>									
<i>Theodoxus fluviatilis</i>	-	-	-	-	-	++	+	+	-
<i>Valvata piscinalis</i>	-	-	-	+	++	+++	++++	+++++	-
<i>Bithynia tentaculata</i>	-	-	-	-	++++	++	+++	++	-
<i>Bithynia cf leachii</i>	-	-	-	-	-	-	-	+	-
<i>Bithynia sp.</i>	-	-	-	+	++	+++	++	++	-
<b>Catholic</b>	-	-	-	-	-	-	-	-	-
<i>Lymnaea cf peregra</i>	-	-	-	+	++	++	++++	+++++	-
<i>Lymnaea palustris</i>	-	-	-	-	-	-	-	+	-
<i>Gyraulus crista</i>	-	-	-	-	-	-	+	-	-
<i>Gyraulus cf acronicus</i>	-	-	-	+	+	++	-	+	-
<i>Bathyomphalus contortus</i>	-	-	-	-	-	-	+	+	-
<b>Slum</b>	-	-	-	-	-	-	-	-	-
<i>Anisus leucostoma</i>	-	-	-	-	-	-	-	+	-
<i>Lymnaea truncatula</i>	-	-	-	-	-	-	+	+	-
<b>TERRESTRIAL GASTROPODA</b>	-	-	-	-	-	-	-	-	-
<b>Open Country</b>	-	-	-	-	-	-	-	-	-
<i>Vallonia costata</i>	-	-	-	-	-	+	-	-	-
<b>Shade-demanding</b>	-	-	-	-	-	-	-	-	-
<i>Discus rotundatus</i>	-	-	-	-	+	-	+	-	-
<b>Estimated total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>70</b>	<b>70</b>	<b>120</b>	<b>120</b>	<b>0</b>
<b>BIVALVIA</b>	-	-	-	+	+++++	+++++	+++++	+++++	-

+ 1-3; ++ 4-12; +++ 13-25; ++++ 26-50; +++++ >50. \* frag.

Table 12: Mollusc assessment for London Bridge Station, Trench E1

Depth (m BGL)	4.25-4.35	4.45-4.55	4.65-4.75	4.95-5.05	5.15-5.25	5.25-5.30
Volume (g)	175	175	175	175	175	115
<b>TAXA</b>						
<b>FRESHWATER GASTROPODA</b>						
<b>Flowing water</b>						
<i>Valvata piscinalis</i>	-	-	-	-	+	-
<i>Bithynia tentaculata</i>	-	-	-	-	+	-
<b>Ditch species</b>	-	-	-	-	-	-
<i>Planorbis planorbis</i>	-	-	-	-	+	-
<b>Catholic</b>	-	-	-	-	-	-
<i>Lymnaea cf peregra</i>	-	-	-	-	+	-
<i>Bathyomphalus contortus</i>	-	-	-	-	+	-
<b>TERRESTRIAL GASTROPODA</b>	-	-	-	-	-	-
<b>Catholic</b>	-	-	-	-	-	-
<i>Cochlicopa sp.</i>	-	-	-	-	+	-
<b>Estimated total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>

+ 1-3; ++ 4-12; +++ 13-25; ++++ 26-50; +++++ >50. \* frag.

Table 13: Mollusc assessment for London Bridge Station, Trench A3, BH4

## General Discussion

The results of the auger survey from London Bridge have been used to refine the current understanding of the Southwark floodplain/foreshore landscape development. The archaeology identified at the site and within the wider landscape can be further discussed in the light of these findings. The results are discussed by period in the following sections below:

### *Early Prehistoric period*

During prehistory the site would have been part of the freshwater channel sequence of the River Neckinger, a branch of the River Thames. The environmental evidence indicates an open predominantly treeless environment of wet meadow with freshwater channels. Evidence of cereal cultivation with the presence of the associated weeds of ribwort plantain is recorded in the pollen sequence from the Bronze Age channels and from the overlying peat deposits. More widespread evidence of cereal cultivation on the eyots during the Bronze Age is from the pollen record from Joiner Street and from the ard marks identified at the various sites along Tooley Street on the Horseleydown eyot (Sidell *et al.* 2002). No evidence for the pre-clearance landscape or the elm decline was present within the pollen sequence that could potentially contribute to the discussion on the early prehistoric landscape of the area.

No evidence of prehistoric activity was identified within the current phase of work associated with the Improvement Works at London Bridge Station. Evidence of archaeological activity, which was previously recorded at the site, occurs during the Bronze Age, with the remains of fish traps near to the edges of the Bridgehead eyot and a worked flint flake identified along Western Approach (TAA9: Taylor and Champness 2013). The evidence suggests an open environment with patches of trees perhaps on the higher ground of the eyot. Further evidence of Bronze Age activity has been identified just to the west of the site along Joiner Street (Sidell *et al.* 2002) where a Bronze Age pit and several worked flints were identified on the surface of the natural sands.

The accumulation of the overlying peat deposits identified in Trenches A1-3, C1 and H3 over the floodplain deposits marks a period of estuarine contraction and the spread of alder carr/fen over much of the Thames floodplain. The main Neckinger channel within the area of site appears to have either silted up and/or laterally migrated elsewhere on the floodplain. This phase of activity has been dated to the middle Bronze Age.

Bronze Age activity appears to have continued on the eyots and along the floodplain environment. The wooden trackway identified from the mainland to the Bermondsey eyot dated to 1740-1530 cal BC (Thomas and Rackham 1996) would indicate these islands remained an important focus of mid to late Bronze Age activity. Evidence of increased wetness is seen within the upper surface of the peats with an increase in aquatic species and increase in silts. The construction of wooden trackways and platforms across the Thames estuary has been considered as a way of formalising and maintaining traditional routeways across the floodplain (Meddens 1996). Links with the eyots were clearly



important enough to be maintained with the use of trackways and other means as cultivation continued on the eyots into the Late Bronze Age.

Evidence of estuarine incursions are first recorded at Union Street and Joiner Street in the 3rd Millennium cal BC, but it was not until 1100 cal BC that a permanent position of the tidal head was established in Southwark (Sidell *et al.* 2002). The evidence from site indicates a purely freshwater channel sequence during this period which suggests that the site was protected from these tidal inclusions by either being fed by the freshwater drainage waters or by the presence of a protective shingle spit. The diatom evidence from the surrounding sites indicates that the movement of the tidal head was not progressive upstream and did fluctuate during the Neolithic/Bronze Age, until its permanent establishment in the area around the late 2nd century BC.

#### *Early Roman period (1st century AD)*

Tidal inundation of the site is first recorded from the late 2nd millennium cal BC, with the replacement and potential erosion of the peat surface and deposition of estuarine silty clay. This occurs between -0.25m OD to 0m OD within the area of the site. The floodplain sees the replacement of the shallow wetland fen carr environments of the peat into a relatively rapid transition into tidal salt-marsh and mudflats. The rate of environmental change on the floodplain may have given early communities little time to adapt to the changing foreshore conditions.

The results of the estuarine expansion during the late 2nd century BC would have been widespread flooding over the site and low-lying edges of the eyot. In areas of former prehistoric activity recorded across Southwark, the accumulation of estuarine clays is recorded over prehistoric features and former cultivated land surfaces. This may have pushed prehistoric activity off the floodplain and away from the edges of the eyots that were by now potentially becoming more prone to tidal flooding. By the time of the Roman invasion, no particular Iron Age settlement of note was identified within this area of Southwark. Former focuses of Neolithic and Bronze Age activity appeared to have been abandoned.

With the foundation of *Londinium* in c. AD 50, urban settlement spread south from what was possibly the only crossing of the Thames, located in the vicinity of London Bridge Station. Direct evidence of a Roman Bridge crossing over the Thames only survives on the northern banks of the river, with an implied date for its construction is c. AD 50 (Watson *et al.* 2001). Evidence for extensive waterfront and drainage management has been suggested for both the North and South eyots of Southwark to control drainage patterns, prevent bank erosion and reduce flooding (Cowan *et al.* 2009). These waterfronts are believed to encompass the full perimeter of both islands. Evidence of a potential revetment/house foundations were identified at the edge of the eyot during the previous auger survey undertaken along Western Approach (TAA9).

No evidence of any early Roman activity was identified during the current survey suggesting that the main channel and foreshore environments remained predominantly natural during this period. Ships

or barges may have been used to transport goods to and from the islands but these would have been very much been controlled by the tides.

*Mid – Late Roman period (2nd-3rd century AD)*

The recording of 2nd-century Roman deposits across much of the survey area reflect an attempt to manage and improve access to the foreshore environment. These dump deposits were very gravelly in nature and contained less Roman building and rubbish deposits than have been previously recorded along Western Approach (TAA9), which contained building rubble of high-status material from painted wall plaster, tegula tiles, imbrex tiles, and chalk indicating that building material in particular was being deliberately used in the reclamation process. Away from the edges of the eyot, where convenient dumping of rubbish would have involved greater transport and more effort, we see much more deliberate reclamation deposits dominated by pebble and cobble gravels. This may also reflect that areas closer to the channels would have been more prone to water-logging and may have necessitated the need for more free draining deposits like gravel.

The degree to which the reclamation of the foreshore was successful appears to have been piecemeal across Southwark, with some areas faring better than others. Certainly some areas of the floodplain along Borough High Street were successfully reclaimed with the construction of buildings over a silted-up channel inlet. No such evidence of significant structures or activity has been identified on the surface of the reclamation deposits at the site. The environment evidence indicated semi-dry conditions over this reclamation surface with pools of standing freshwater but with brackish conditions closest to the river. It might be that these deposits or areas were never intended to support buildings but to facilitate access and in particular movement of goods across the foreshore.

The sequence through Guy's Channel recorded within A4.12 would indicate a main active channel during this period that runs west to east between Trenches A3 and A5. The diatom and ostracod evidence from the channel deposits would indicate that it was heavily polluted and coarse inclusions would suggest rubbish material was frequently discarded into the river. This represents the first development and management of Guy's Channel recorded within Trench A5. Although only the back of a waterfront/river platform was revealed, it does indicate an attempt was made in the late 2nd to 3rd century to exert greater control over Guy's Channel and foreshore environment perhaps to aid in the use of the channel during low-tides. Similar evidence for river management has been identified at Guy's Hospital along St Thomas Street and on the east edge of the channel at Maze Pond. The discovery of a Roman barge at Guy's Hospital dating from the late 2nd century AD within the channel is a key indicator that maritime links were maintained during this period. Evidence of renewed flooding dated to AD 170-90 at Hunt's House (Taylor-Wilson 2002) indicates periods when the waterfront was occasional overrun by the sea and was subsequently repaired.

The gravel dumps recorded on the site occurred during a period of Roman settlement expansion combined with a possible phase of a more stable tidal range. The expansion of settlement around the eastern margins of the eyot have been recorded at 11-15 and 21-27 St Thomas Street (Cowen *et al.*

2009) associated with the reclamation deposits on the floodplain. By the mid 3rd century the mean high water-levels would have dropped to 0m OD, with the mean low water-levels were -2m OD (Sidell *et al.* 2002).

#### *Late-Roman and Saxon periods*

The Late Roman or post-Roman period is represented on site by a return to tidal incursions over the Roman reclamation deposits. Dating of deposits during this period is particularly problematic due to the lack of associated features and any organic deposits within the sequence. No significant evidence of archaeological features or activity has been identified within the foreshore sequence during this period.

The post-Roman period is represented on the site by the accumulation of the sterile silty clays that overlie the Roman reclamation deposits. These deposits represent a return to tidal conditions and the development of tidal mudflats and salt-marsh over the site. The sharp nature of the boundary within the borehole samples may indicate the collapse of the late Roman waterfronts was quite rapid and the build-up of sedimentation may have accumulated over a short period of time. The return to tidal conditions at the site would indicate that the edges of the eyot were again prone to flooding making them less favourable for settlement.

The surrounding excavation evidence indicates that there were no buildings in use at any of the London Bridge Station sites after AD 350. The digging of rubbish pits and burials in former town houses indicate a decline in the fortunes of Roman Southwark. The evidence from Guy's Hospital indicate silting-up of the channel and periodic flooding over the quay at Guy's Hospital in the late 4th century AD, indicating that the late Roman waterfront was not sufficiently maintained during this period to prevent flooding and/or its eventual collapse.

Archaeological evidence for activity dating between the early 5th-mid 9th century is largely absent within Southwark, with the previously settled area seemingly abandoned during this time (MoLAS/EH 2000, 191). However, some structural vestiges of the Roman settlement seem to have remained standing throughout this period, in particular the masonry building at Winchester Palace (Watson *et al.* 2001, 56; Yule 2005, 78). Small-scale areas of occupation are suggested by isolated features, burials and rubbish deposits. The environmental evidence from the medieval sequence investigated in Trench C indicates open, cultivated arable land, surrounded by wet meadows. The foreshore environment appears to have returned to a natural state of tidal creeks and salt-marsh. The few late medieval features that have been identified indicate an open foreshore potentially used for seasonal pasture that would have been submerged during high spring tides.

#### *Late medieval reclamation and managed waterways*

Localised reclamation of the foreshore is recorded in the survey from the late 15th to early-middle 16th century associated with ground make-up deposits and the construction of river revetments within

Trenches A1-3 and E1-3. The reclamation process most likely also coincided with the management of waterways within the area. The earliest of these horizons tended to comprise flood deposits, and were overlain/truncated by multiple phases of timber revetting/ditches relating to water management. Dump layers and pitting would indicate increasing activity and management of the foreshore environment from the late 15th century within the area.

#### *Post-medieval ground raising and managed waterways*

Two phases of early post-medieval activity were identified mostly in the trenches during the mid/late 16th century and late 16th/17th century. The first early post-medieval phase comprised cut features and dump layers, indicating increasing more widespread reclamation of the foreshore. A series of wooden revetments would indicate greater management of the river courses and more organised drainage of the foreshore environment. Graves dating to 16th century within Trench A3 are believed to relate to St Thomas's Hospital which lay to the immediate west of the site, indicating more formal and permanent use of these reclamation areas.

By the late 16th/17th century the foreshore had been reclaimed included the development of occupation horizons, cut features, and construction, with evidence of numerous phases of building works. Along the channel edges various industries appear to have developed along its banks. A wooden drain and various wooden-lined tanks and pits identified within Trenches E and D1 would indicate that the channels were part of these industrial processes and were used to remove waste products from various industries associated with bone, metal and leather working.

#### *Industrial period*

Many of the former watercourses of Southwark were culverted in the Victorian period during the construction of London Bridge Station. The remains of some of the disused culverts were identified within several of the trenches. These were brick-built structures that channelled drainage water towards the Thames.

### **Recommendations for Further Analysis**

The geoarchaeological survey at London Bridge Station have helped develop a detailed understanding of the buried early prehistoric landscape, sequence of floodplain/foreshore environmental change and evidence of foreshore modification and management. The importance of the geoarchaeological mapping and environmental assessment of the foreshore sequence means that the evidence of changing archaeological patterns can be understood in terms of the changing foreshore landscape. Certainly periods of significant archaeological activity at the site coincide with evidence of foreshore modification and management.

The environmental evidence of freshwater conditions within the Neckinger channel provides valuable insights that not all areas of the floodplain experienced tidal conditions prior to the late 2nd century BC. The site therefore provides an important reminder of the complexity of these foreshore environments and that extrapolation of environmental conditions from one site to another must be viewed with some caution within such a complex environment.

The site also has the potential to address key aspects of Roman foreshore development, modification and management. Examination of the sequence of the potential Roman revetment and its potential abandonment in the late 2nd and 3rd century for one potentially located further to the east along Guy's Channel, should be made. The identified mid-late Roman reclamation deposits represent the height of the Roman settlement expansion. The evidence that this surface was inundated by estuarine conditions during the late/post-Roman period may coincide with the decline of Roman Southwark, and a collapse of its drainage systems and waterfronts.

Evidence of channel management and foreshore reclamation have been identified from the Late 15th century on the site.

### **Updated research aims**

The following research questions can be added to those already proposed within the project research design and those that developed out of Assessment 9. The additional aims are:

1. Investigate the nature of the channel management during the mid-late Roman period, including evidence for waterfront structures, land preparation (e.g. drainage) and land reclamation;
2. Investigate the nature of the late 2nd- and 3rd-century AD reclamation deposits identified on the foreshore to address the nature of activity on this surface
3. Investigate the relationship of late medieval and post-medieval waterfronts, channel structures and reclamation deposits represented at the site and consider these in a wider context.
4. Investigate evidence of post-medieval industrial activity along the banks of channels, associated features and the impact on the channels.
5. Consider the wider human questions raised by this work associated with foreshore constructions projects, their organisation, responsibility for maintenance and landownership. What factors governed how and who was able to access and manage the foreshore and channel edges.

### **Recommendations for further dating, environmental and sedimentary analyses**

A series of five radiocarbon dates will also be selected in order to help refine the floodplain/foreshore sedimentary model. These dates will be selected to address key research questions that develop out of the preliminary sedimentary and palaeoenvironmental analyses.

### **Recommendation for Pollen analysis**

#### *Trench H2, sample 39*

It may be worth analysing the upper part of sample 39, to confirm and detail the potential palaeoenvironments. Analysis of sediments from the upper part of sample 39 may help to confirm the possible evidence for cereal-type pollen in this section, which, combined with other data, for example, plant macrofossil data, may contribute to an understanding of land-use or potential processing activities at the site. Counts of up to 200-300 TLP (total land pollen, including pollen of trees, shrubs, herbs and fern spores) should be possible, at analysis stage (the lower than usual counts due to mixed preservation and relatively sparse assemblages). There is no suggestion that sediments deeper than 0.24m depth from the monolith sample should be analysed, as none of these deeper sub-samples yielded viable pollen counts at assessment.

#### *Trench C1*

The sediments between and adjacent to sub-samples 4.4-4.5m bgl (-0.23m- -0.33m OD) and 4.7-4.8m bgl (-0.53m- -0.63m OD) could be analysed for pollen, with the expectation of achieving counts of up to 200-300 TLP (due to mixed preservation and relatively sparse assemblages). Such analysis would help to clarify the various types of palaeoenvironments suggested from the assessment and, in particular, may provide additional data to support or not support potential proximity to marine influences. These data could be integrated with results from other palaeoenvironmental proxies, for example, from diatom and foram/ostracod analysis. Sub-samples deeper than 4.8m bgl (-0.63m OD) may not yield sufficient pollen to achieve a statistically robust assemblage.

#### *Trench A5 (Borehole 4.7)*

The sediments adjacent to 4.33-4.34m bgl (-0.11m- -0.12m OD) and 4.94-4.95m bgl (-0.72m- -0.73m OD) could be analysed for pollen (see Table 14 below), with an expectation of achieving counts of between 200-300 TLP. Analysis may provide information to show if the possible trend towards a less open and more wooded palaeoenvironment, between 4.94-4.95m bgl (-0.72m- -0.73m OD) and 4.33-4.34m bgl (-0.11m- -0.12m OD), is valid and to examine the possibilities of the incidence of cereal-type pollen at the site. Analysis would also be useful to explore more fully the possible indications for proximity to marine palaeoenvironments.

#### *Trench E1*

Although only one sub-sample (5.23-5.24m bgl (-0.68m- -0.69m OD) yielded a reasonable pollen assemblage, the assemblage itself is very interesting and potentially informative. It should be possible

to count between 200-300 TLP grains at analysis stage from this level and it could be that adjacent levels may also be productive. This single sample provides a snap-shot of a potentially medieval or post-medieval landscape that appears to show evidence for possible cultivation and a largely open palaeoenvironment.

*Trench A4 (borehole A4.12)*

It may be important to analyse pollen from this trench, as the assessment suggests a distinct change in the palaeoenvironments between the deepest productive sub-sample at 5-5.01m bgl (-0.78m - 0.77m OD) and the upper productive sub-sample at 3.40-3.41m bgl (+0.82m-0.81m OD). The upper sub-sample at 3.40-3.41m bgl (+0.82m-0.81m OD) is strikingly similar to that described from Trench E, at 5.23-5.24m bgl (-0.68- -0.69m OD) (above). It should be possible to achieve pollen counts of between 200-300 TLP.

Based on the assessment data, the following table summarises the potential of the various samples for pollen analysis.

<b>Trench/ Sample</b>	<b>Depths (m)</b>	<b>Number of sub- samples</b>	<b>Sediment type</b>	<b>Total for proposed analysis</b>	<b>Total assessed</b>
H2 / 39	0.05 - 0.25	5 at intervals	0.04m Dark grey silty clay, charcoal 0-0.12m, grading to dark grey brown silty clay with charcoal fragments.	<b>5</b>	<b>3</b>
C1	4.4 - 5.0	6 at intervals	0.10m Mid brown – grey silty clay with occasional organic deposits and shell fragments	<b>6</b>	<b>3</b>
A5 / 4.7	4.20 - 4.40 4.90 - 5.02	5 at intervals 3 at intervals	0.04m Mid grey silty clay	<b>5</b> <b>3</b>	<b>4</b> <b>2</b>
E1	5.18-5.30	3 at intervals	0.04m -	<b>2</b>	<b>1</b>
A4 / 4.12	3.20-5.10	20 at intervals	0.10m Mid greyish brown silty clay	<b>20</b>	<b>3</b>
				<b>41</b>	<b>16</b>
			Total requiring processing for analysis	<b>25</b>	

Table 14: Recommendations for further pollen analysis

Many of the sub-samples assessed during this study have proved to be of marginal potential only; reasonable pollen sums may be counted from those identified as having potential and/or marginal potential for full analysis but counts greater than 300 TLP and spores may be unrealistic. Analysis of pollen from this site at London Bridge has the potential to inform our understanding of the palaeoenvironmental history at this site, particularly during Roman to post-medieval times. The data generated from such analysis could be compared with pollen data from the nearby Blackfriars site. This analysis would add to and enhance the present understanding of environmental changes

documented from the Thames valley (Lewis *et al.* 2010, Stafford *et al.* 2012; Bates and Stafford, 2013).

### **Recommendations for waterlogged and mineralised plant remain analysis**

No further recommendations for waterlogged or mineralised plant remains. But the assessment results should be incorporated into the main environmental discussions.

### **Recommendation for diatoms analysis**

Analysis of the diatom assemblage of the Roman channel edge sequence from A5.7 will provide an indication as to the Roman foreshore environment. Three samples from the Saxon floodplain sequence from C1 also have good potential to inform about the changing post Roman environment. Three samples from augerhole E1.2 are also well preserved and have good potential for percentage diatom analysis. These samples will provide an indication as to the nature of the late medieval and post-medieval waterways. All the recommended diatom assemblages from this sequence provided evidence for tidal, estuarine influence at the site.

### **Recommendations for Ostracod and Foraminifera**

No further work is recommended for the Ostracod and foraminifera samples but the results should be incorporated within the general environmental and sedimentary discussions of the London Bridge foreshore sequence.

### **Recommendations for Mollusca**

Although shell was well preserved in the samples the numbers of identifiable individuals were generally quite low and the assemblages of low diversity. It is unlikely further detailed work in terms of absolute counts on the current sample residues will provide significant additional information. Again the results should be written up as part of the overall environmental and sedimentary discussions.

## **Bibliography**

Andersen, S., Th., 1979. 'Identification of wild grasses and cereal pollen'. *Damn Geol Unders* 1978, 69-92.

Battarbee, R. W., Jones, V. J., Flower, R. J., Cameron, N. G., Bennion, H. B., Carvalho, L. & Juggins, S., 2001. 'Diatoms', in J. P. Smol and H. J. B. Birks (eds.), *Tracking Environmental Change Using Lake Sediments Volume 3: Terrestrial, Algal, and Siliceous Indicators*. Dordrecht: Kluwer Academic Publishers, 155-202.

Behre, K. E., 1981. 'The interpretation of anthropogenic indicators in pollen diagrams'. *Pollen et*



*Spores* 23, 225-245.

Berglund, B. E. and Ralska-Jasiewiczowa, M., 1986. 'Pollen analysis and pollen diagrams', in B. E. Berglund (ed.), *Handbook of Holocene Palaeoecology and Palaeohydrology*, 455-484.

Boycott, A. E., 1936. 'The habits of freshwater mollusca in Britain', *Journal of animal ecology* 144, 129-30.

Bridgland, D. R., 1994. *Quaternary History of the Thames*. Geological Conservation Review Series. Chapman and Hall, London.

Brooks, D. and Thomas, K. W., 1967. 'The distribution of pollen grains on microscopic slides. The non randomness of the distribution'. *Pollen et Spores* 9, 621-629.

Cowen, C., Seeley, F., Wardle, A. & Wheeler, L., 2009. *Roman Southwark settlement and economy: Excavations in Southwark 1973-91*. Museum of London Archaeology Monograph 42.

Devoy, R. J. N., 1977. 'Flandrian sea-level changes in the Thames Estuary and the implications for land subsidence in England and Wales'. *Nature* 220, 712-715.

Devoy, R. J. N., 1979. 'Flandrian sea-level changes and vegetational history of the Lower Thames Estuary'. *Philosophical Transactions of the Royal Society of London B* 285, 355-407.

Devoy, R. J. N., 1982. 'Analysis of the geological evidence for Holocene sea level movements in Southeast England'. *Proceedings of the Geologists Association* 93, 65-90.

Drummond-Murray, J. and Thompson, P. with Cowan, C., 2002. *Settlement in Roman Soutwark: archaeological excavations (1991-8) for the London Underground Limited Jubilee Line Extension Project*, Museum of London Archaeology Service Monograph 12.

Ellis, A. E., 1926. *British Snails: Guide to the Non-marine Gastropoda of Great Britain and Ireland, Pleistocene to Recent*, Oxford University Press, Oxford.

English Heritage, 2007. *Geoarchaeology: Using an earth sciences to understand the archaeological record*.

English Heritage, 2011. *Environmental Archaeology. A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (second edition).

Evans, J. G., 1972. *Land Snails in Archaeology*. Seminar Press, London and New York.

Fægri, K. and Iversen, J., 1989. *Textbook of Pollen Analysis*, 4th edition.

Flower, R. J., 1993. 'Diatom preservation: experiments and observations on dissolution and breakage in modern and fossil material'. *Hydrobiologia* 269/270, 473-484.

Gibbard, P. L., 1985. *Pleistocene history of the Middle Thames Valley*. Cambridge University Press, Cambridge.

Gibbard, P. L., 1994. *Pleistocene history of the Lower Thames Valley*. Cambridge University Press, Cambridge.

- Haggart, B. A., 1995. 'A re-examination of some data relating to Holocene sea-level changes in the Thames Estuary', in D. R. Bridgland, P. Allen & B. A. Haggart, *The Quaternary of the lower reaches of the Thames: field guide*, Quaternary Research Association, 329-338.
- Hammerson, M. & Sheldon, H., 1987. 'Evidence for the Roman army in Southwark', in M. Dawson (ed.), *Roman military equipment, the accoutrements of war*, BAR Int Ser 336, 164-74.
- Halsey, C. J., forthcoming. 'Lost islands and Early Prehistoric landscapes of Southwark: Geoarchaeological investigations at St Michael's School, Bermondsey', *London Archaeologist*.
- Joly, C., Barille, L., Barreayu, M., Mancheron, A. and Visset, L., 2007. 'Grain and annulus diameter as criteria for distinguishing pollen grains of cereals from wild grasses'. *Review of Palaeobotany and Palynology* 146, 1-4.
- Jones, A. P., Tucker, M. E. *et al* (eds.), 1999. *The Description and Analysis of Quaternary Stratigraphic Field Sections*. Technical Guide 7.
- Kerney, M., 1999. *Atlas of land and freshwater molluscs of Britain and Ireland*, Harley Books.
- Knight, H., 2002. *Aspects of Medieval and Later Southwark: Archaeological Excavations (1991-8) for the London Underground Limited Jubilee Line Extension Project*. Museum of London Archaeology Service Monograph 13.
- Lewis, J., Leivers, M., Brown, L., Smith, A., Cramp, K., Mephram, L. & Phillpotts, C., 2010. *Landscape Evolution in the Middle Thames Valley*, Heathrow Terminal 5 Excavations Volume 2, Framework Archaeology.
- Long, A. J., 1995. 'Sea-level and crustal movements in the Thames estuary, Essex and East Kent', in D. R. Bridgland, P. Allen and B. A. Haggart (eds.), *The Quaternary of the Lower Reaches of the Thames. Field Guide*. Quaternary Research Association: Cambridge, 99-105.
- Long, A. J., Innes, J. B., Kirby, J., Lloyd, J. M., Rutherford, M. M., Shennan, I. and Tooley, M. J., 1998. 'Holocene sea-level change and coastal evolution in the Humber estuary, eastern England: an assessment of rapid coastal change', *The Holocene* 8, 229-247.
- Long, A. J., Scaife, R. G. & Edwards, R. J., 2000. 'Stratigraphic architecture, relative sea-level, and models of estuary development in southern England: new data from Southampton Water', in K. Pye and J. R. L. Allen (eds.), *Coastal and Estuarine Environments: sedimentology, geomorphology and geoarchaeology*. Geological Society, London Special Publication 175. The Geological Society: London, 253-279.
- Meddens, F. M., 1996. 'Sites from the Thames estuary wetlands, England, and their Bronze Age use', *Antiquity* 70, 325-34.
- Meisch, C., 2000. 'Freshwater Ostracoda of Western and Central Europe', in J. Schwoerbel & P. Zwick (eds.), *Süßwasserfauna von Mitteleuropa, Band 8/3*. Spektrum Akademischer Verlag, Heidelberg and Berlin. 522pp.

MOLA, 2011. *Thameslink Programme-London Bridge Station, London SE1. London Borough of Southwark. Historical environment and geoarchaeological assessment report*, Museum of London Archaeology Unpublished Report.

MoLAS/EH, 2000. *The Archaeology of Greater London: an assessment of archaeological evidence for human presence in the area now covered by Greater London*, Museum of London Archaeology Service/English Heritage.

Moore, P. D., Webb, J. A. and Collinson, M. E., 1991. *Pollen Analysis*, 2nd edition, pp 216.

Peglar, S. M., 1993. 'The mid-Holocene *Ulmus* decline at Diss Mere, Norfolk, UK: a year by year pollen stratigraphy from annual laminations'. *The Holocene* 3, 1-13.

Perring, D., 2002. *The Roman house in Britain*, London.

Ryves, D. B., Juggins, S., Fritz, S. C., & Battarbee, R. W., 2001. 'Experimental diatom dissolution and the quantification of microfossil preservation in sediments'. *Palaeogeography, Palaeoclimatology, Palaeoecology* 172, 99-113.

Sidell, E. J., Scaife, R. G., Wilkinson K. N., Giorgi, J. A., Goodburn, D., Gray-Rees, L. & Tyers, I., 1997. *Spine Road Development Erith, Bexley (RPS Clouston Site 2649): a palaeo-environmental assessment*, Museum of London Archaeology Service Unpublished Report.

Sidell, J., Wilkinson K., Scaife, R. & Cameron, N., 2000. *The Holocene. Evolution of the London Thames: archaeological excavations (1991-1998) for the London Underground Limited Jubilee Line Extension Project*. Museum of London Archaeology Service Monograph 5.

Sidell, J., Cotton, J., Rayner, L. & Wheeler, L., 2002. *The prehistory and topography of Southwark and Lambeth*, Museum of London Archaeology Service Monograph 14.

Stace, C., 2010. *The New Flora of the British Isles*, 3rd edition, Cambridge.

Stockmarr, J., 1971. 'Tablets with spores use in absolute pollen analysis'. *Pollen et Spores* 13, 615-621.

Taylor, J. & Champness, C. 2013. *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.

Thomas, C. & Rackham, J. (eds.), 1996. 'Bramcote Green Bermondsey: a Bronze Age trackway and palaeoenvironmental sequence', *Proc. Prehistoric Society* 62, 221-53.

Tweddle, J. C., Edwards, K. J. and Fieller, N. R. J., 2005. 'Multivariate statistical and other approaches for the separation of cereal from wild Poaceae using a large Holocene dataset'. *Vegetation History and Archaeobotany* 14, 15-30.

van Geel, B., 1978. 'A paleoecological study of Holocene peat bogs sections in Germany and the Netherlands'. *Review Palaeobotany and Palynology* 25, 1-120.

van Geel, B. and Aptroot, A., 2006. 'Fossil ascomycetes in Quaternary deposits'. *Nova Hedwigia* 82,

3-4, 313-329.

Watson, B., Brigham, T. & Dyson, T., 2001. *London Bridge: 2000 years of a river crossing*, Museum of London Archaeology Service Monograph 8.

Yule, B., 2005. *A prestigious Roman building complex on the Southwark waterfront: excavations at Winchester Palace, London 1983-90*, Museum of London Archaeology Service Monograph 23.

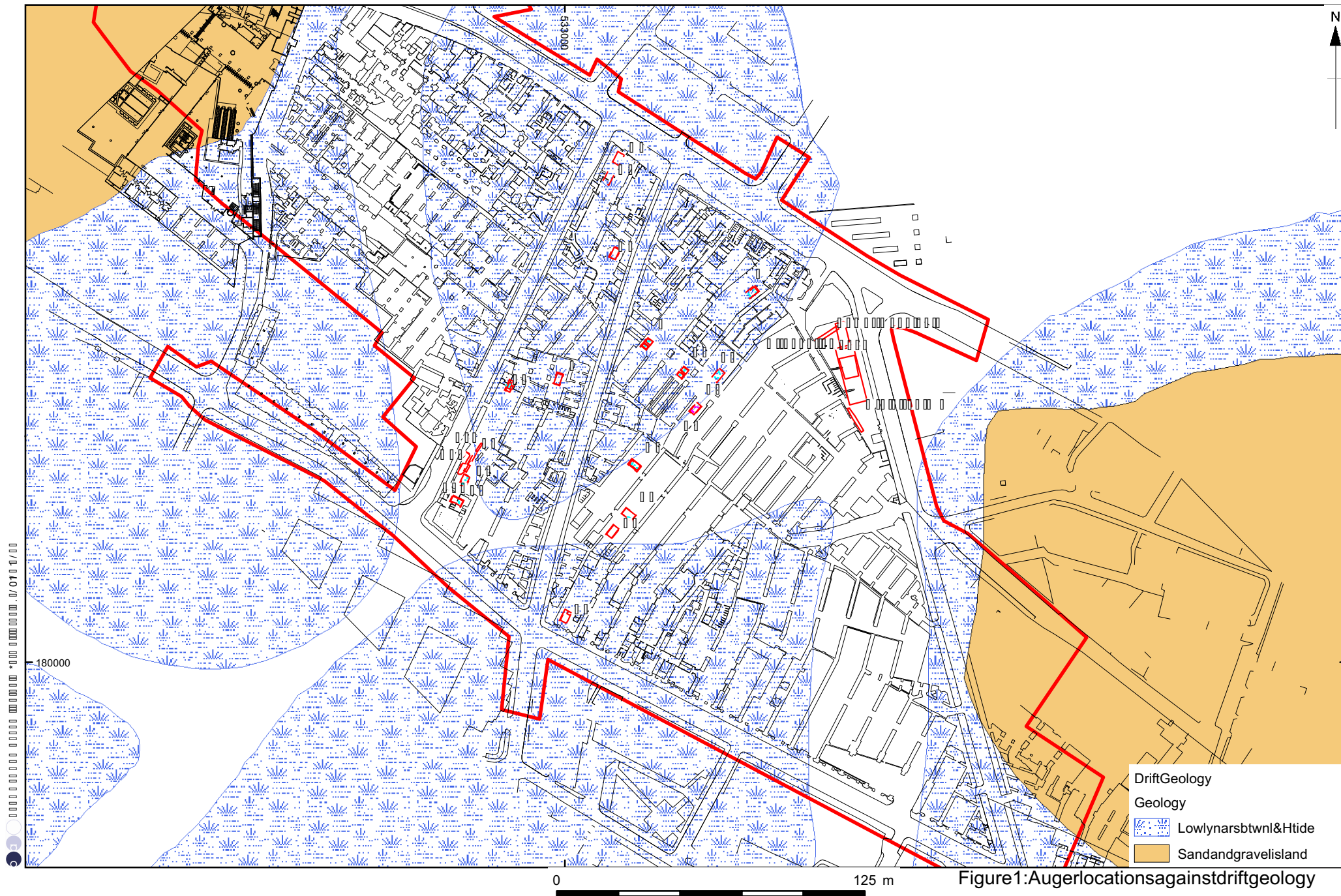
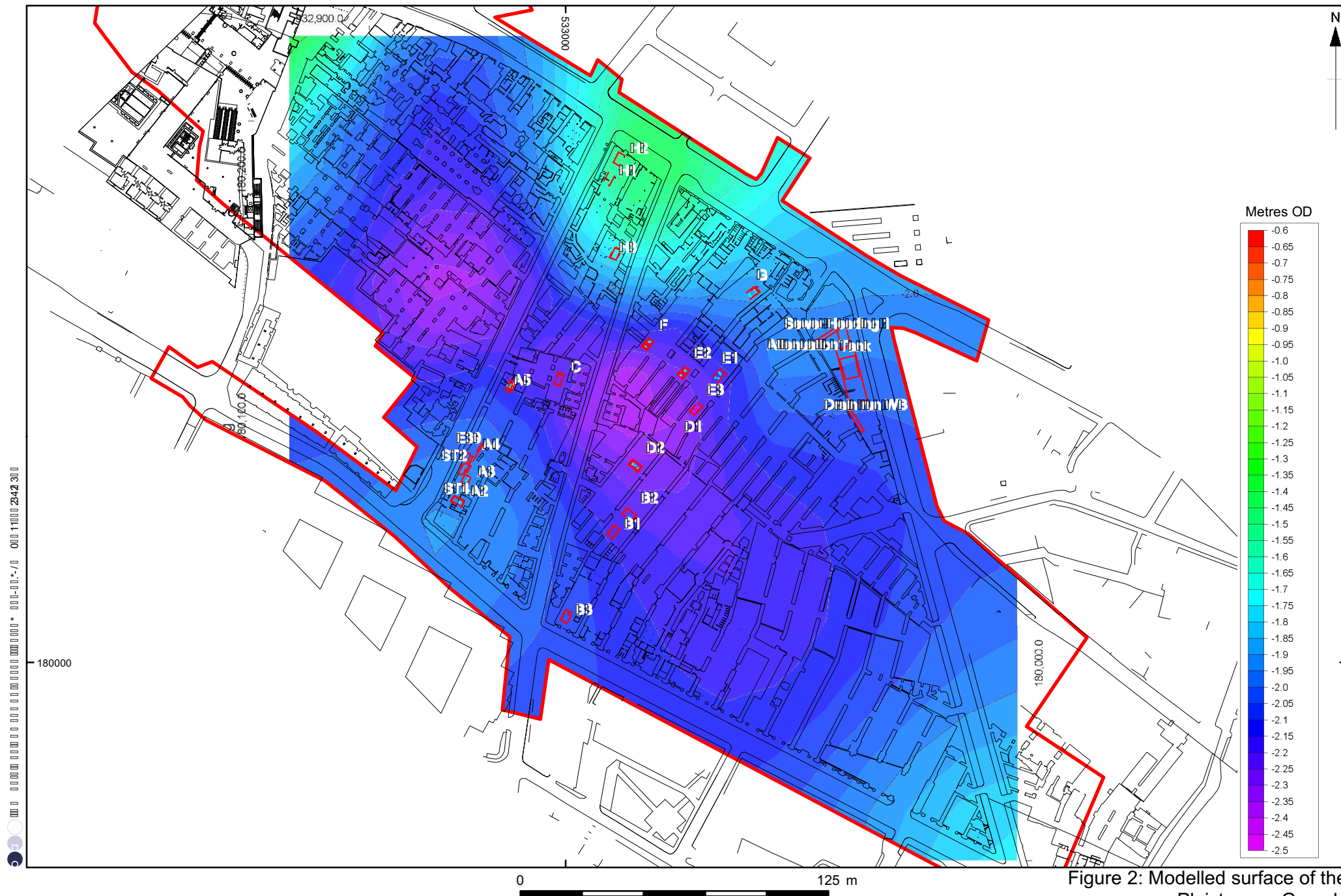


Figure 1: Auger locations against drift geology





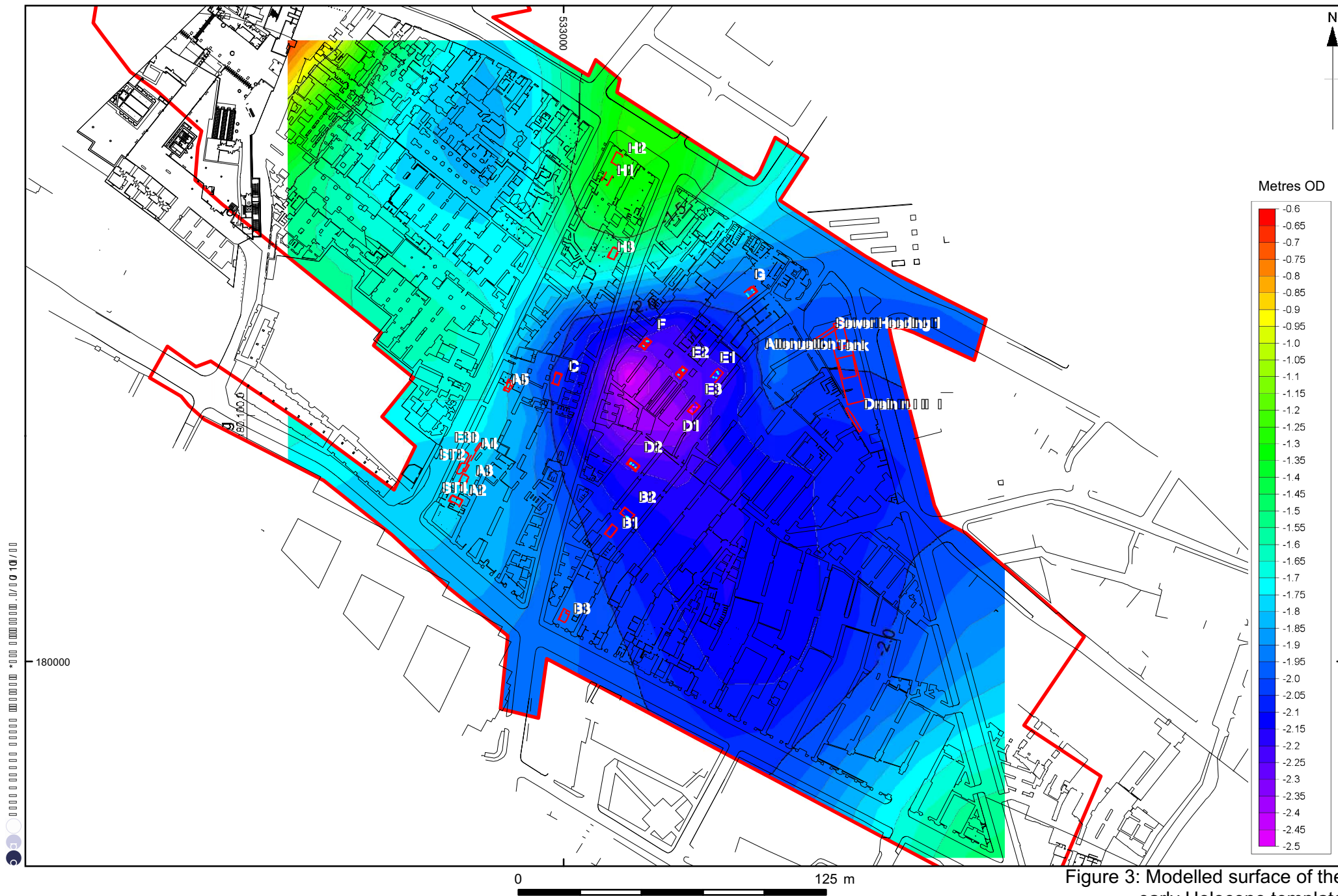


Figure 3: Modelled surface of the early Holocene template

# Augerhole Cross-Section

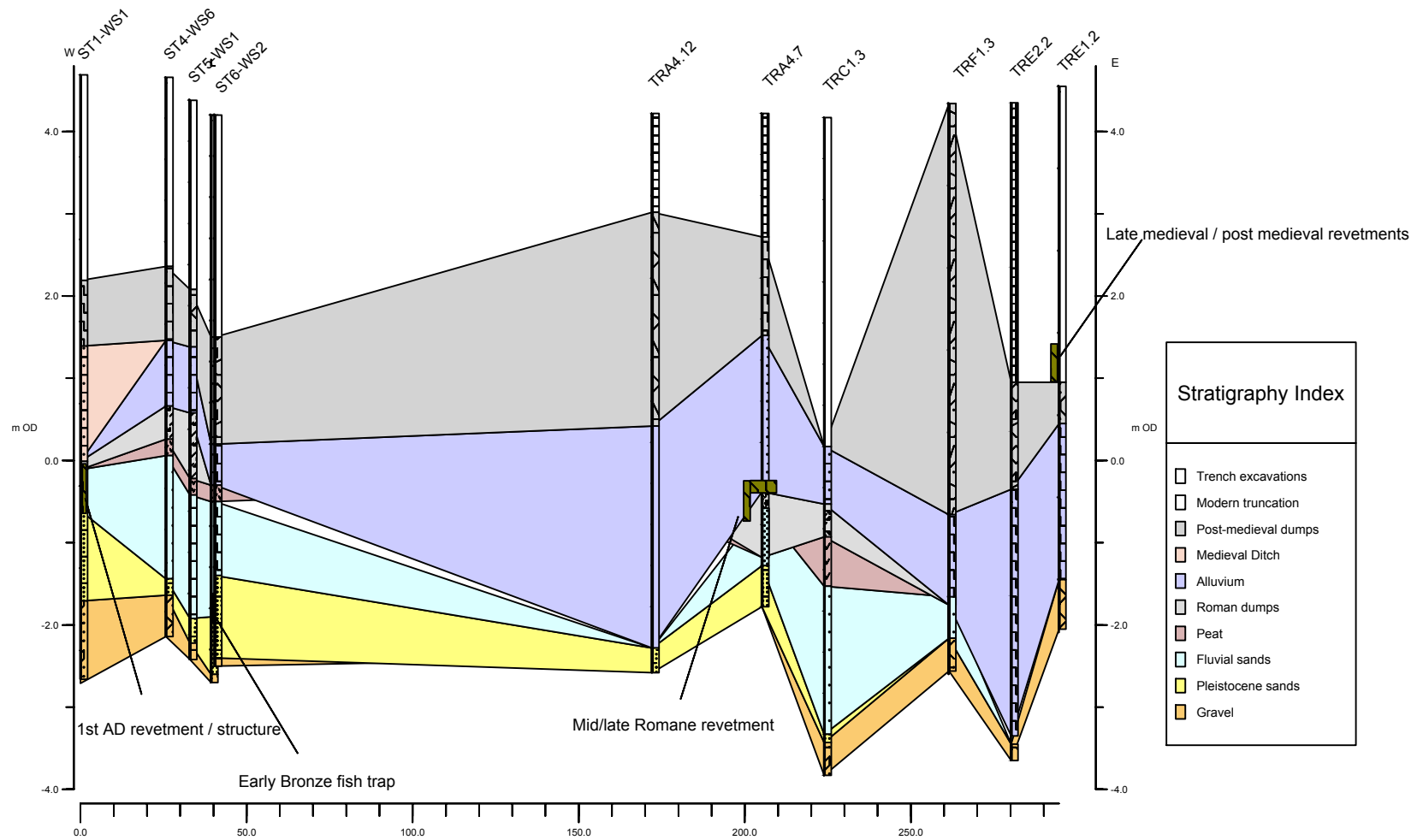


Figure 4: East-west auger transects (includes data from Ass 9)



# Augerhole Cross-Section N-S

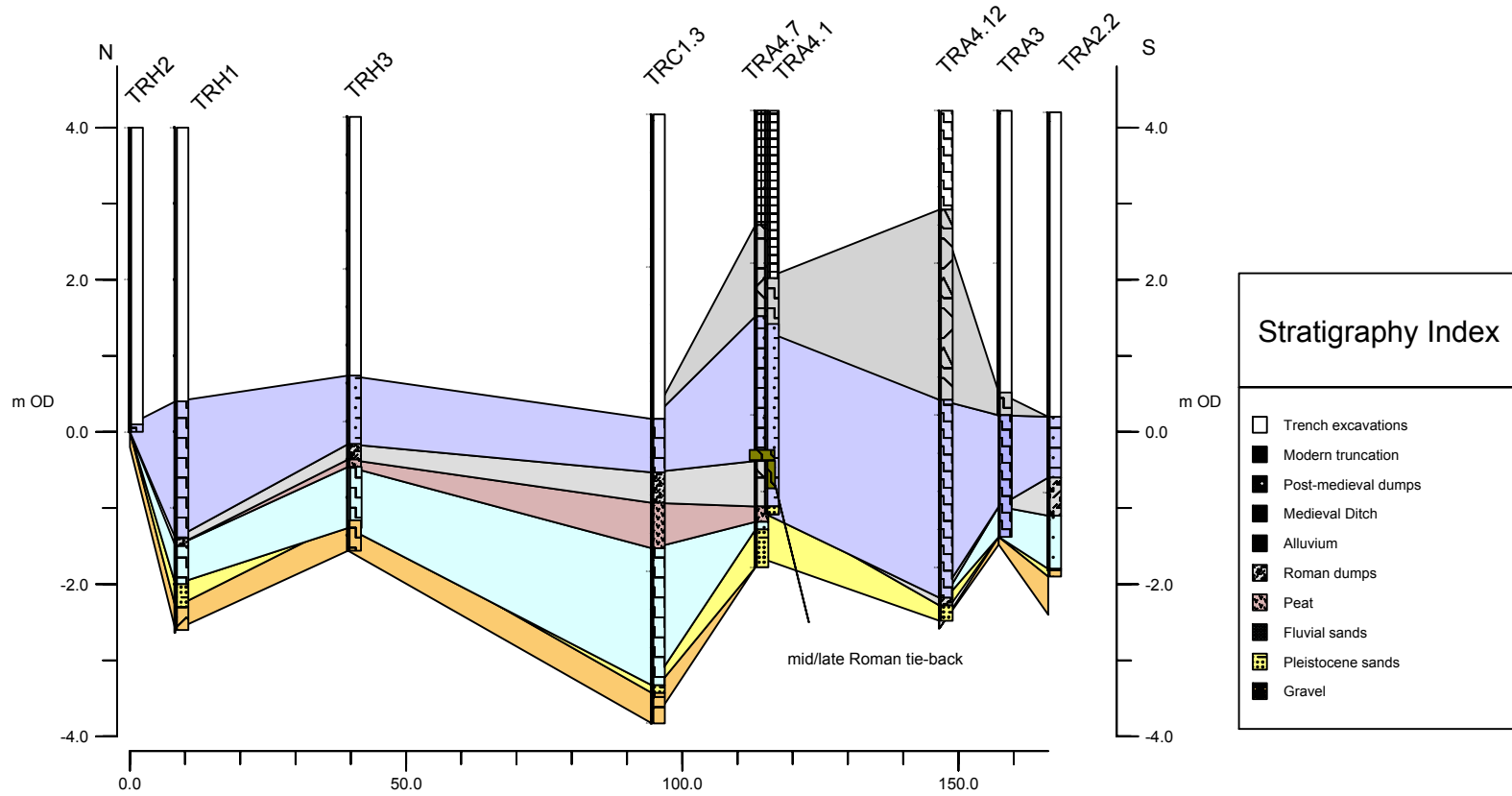


Figure 5: North-south auger transects (A1-5, C1 and H1-3)

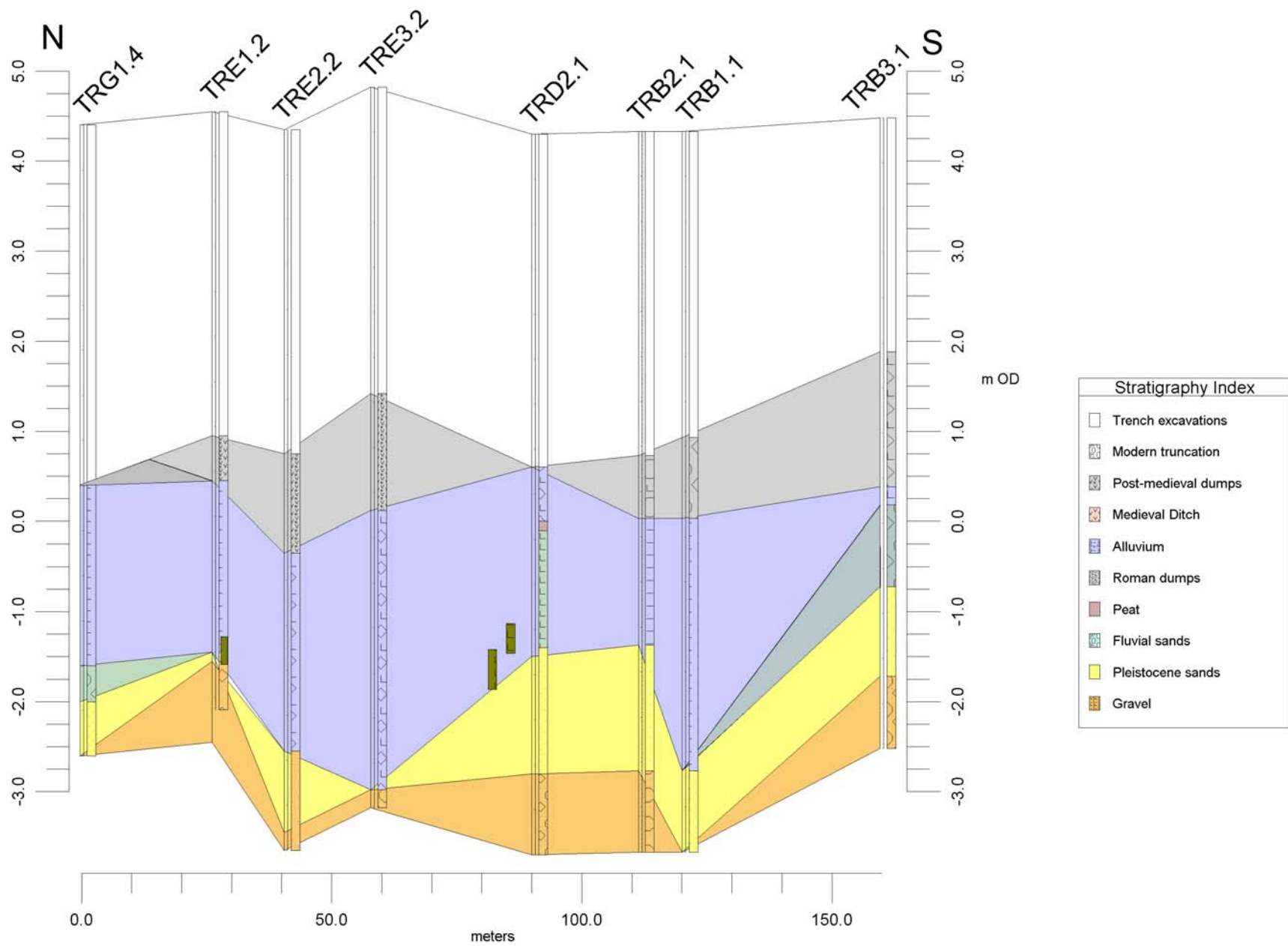


Figure 6: North-South section (B1-3, D1-2, E1-3 and G)

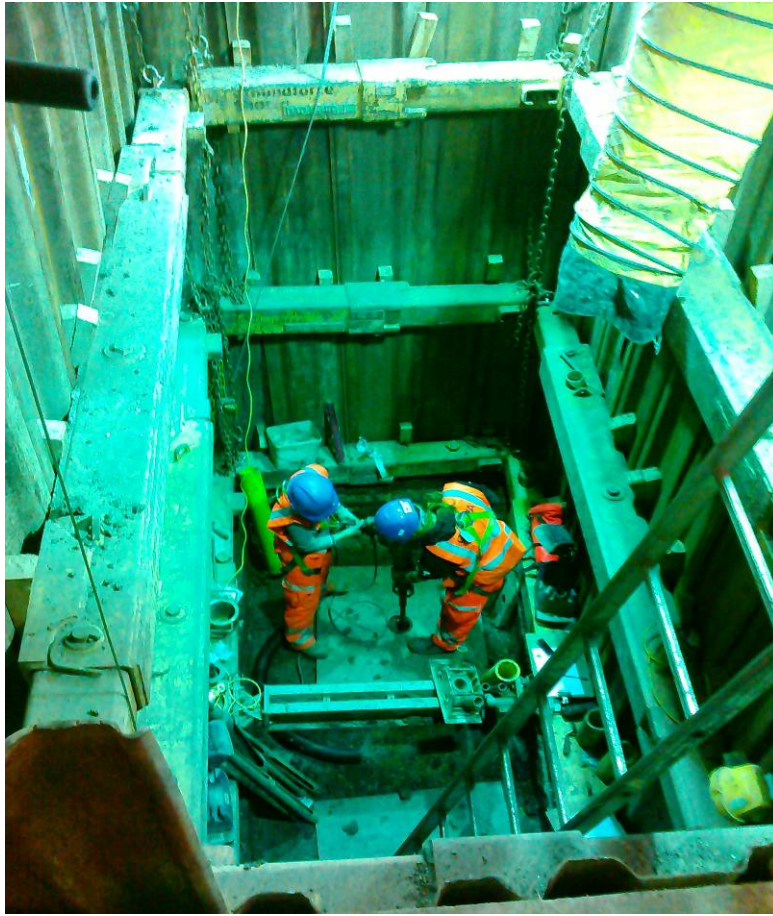


Plate 1: Augering at the base of the excavation trenches





Plate 2: Logging cores on site



Plate 3: Monitoring of geotechnical borehole investigations





Plate 4: Borehole sample 4.1 (4.5-5.5m depth) with wood at the base of the sample



Plate 5: Roman timbers being cleaned in Trench A5

## APPENDIX 21: OASIS FORM

OASIS ID: preconst1-175763

### Project details

Project name	Thameslink Archaeological Assessment 10
Short description of the project	<p>Investigations conducted as part of the London Bridge Improvement Works, London Borough of Southwark, comprised the excavation of 18 trenches, 68 augerholes and archaeological watching briefs on areas of deeper ground reduction. These investigations revealed a deeply stratified sequence from the underlying Pleistocene gravels, with evidence of the former water courses and meandering channels around Guy's Channel. These were overlain by flood deposits dating from the prehistoric, Roman and early post-medieval periods. Evidence of Roman occupation was limited to residual artefacts and part of a collapsed tie back, dated to the late 2nd/early 3rd centuries. Development increased rapidly after 1480 and included the founding of various industries such as tawing, butchery, smithing and leather working in addition to domestic occupation. These industries continued to function throughout the medieval and early post medieval period and began to decline with the expansion and sub-division of domestic properties during the post-medieval period. The impact of the numerous channels which bisected the site were identified throughout all periods of activity and identified in the form of multi-phase timber revetments, many of which utilised recycled material from ship breaking yards. By the later 17th to 19th centuries the site was largely developed and the discovery of a clay tobacco pipe kiln belonging to James Minto and waste from a nearby tavern or ale house were identified within an area formerly known as 'Frying Pan Alley'. These represent the last phase of activity prior to the demolition and redevelopment for the railway viaducts during the early/mid 19th century.</p>
Project dates	Start: 18-07-2012 End: 31-03-2013
Previous/future work	Yes / Yes
Any associated project reference codes	BVM-12 - Sitecode
Type of project	Recording project
Site status	Area of Archaeological Importance (AAI)
Current Land use	Transport and Utilities 2 - Other transport infrastructure
Monument type	BURIED SOIL HORIZON Bronze Age
Monument type	LAND RECLAMATION Medieval

Monument type	LAND RECLAMATION Roman
Monument type	LAND RECLAMATION Post Medieval
Monument type	PIT Medieval
Monument type	PIT Post Medieval
Monument type	PALAEOCHANNEL Palaeolithic
Monument type	TIMBER FRAMED BUILDING Post Medieval
Monument type	BUILDING Medieval
Monument type	BUILDING Post Medieval
Monument type	BURIAL Medieval
Monument type	CESS PIT Post Medieval
Monument type	DITCH Medieval
Monument type	DITCH Post Medieval
Monument type	LAZY BEDS Post Medieval
Monument type	INDUSTRIAL SITE Post Medieval
Monument type	INDUSTRIAL SITE Medieval
Monument type	CULVERT Post Medieval
Monument type	DEMOLITION DEBRIS Post Medieval
Monument type	REVETMENT Medieval
Monument type	REVETMENT Post Medieval
Monument type	OCCUPATION LAYER Medieval

Monument type	OCCUPATION LAYER Post Medieval
Monument type	ROBBER TRENCH Post Medieval
Monument type	RAILWAY VIADUCT Post Medieval
Significant Finds	DISH Roman
Significant Finds	BEAKER Roman
Significant Finds	COMB Medieval
Significant Finds	STRUCTURAL TIMBER Roman
Significant Finds	ROTARY KEY Medieval
Significant Finds	ARROWHEAD Medieval
Significant Finds	CAULDRON Medieval
Significant Finds	SPUR Medieval
Significant Finds	STRUCTURAL TIMBER Post Medieval
Significant Finds	PIPKIN Medieval
Significant Finds	COOKING VESSEL Medieval
Significant Finds	STRUCTURAL TIMBER Medieval
Significant Finds	DRINKING VESSEL Post Medieval
Significant Finds	BOWL Post Medieval
Significant Finds	KILN WASTE Post Medieval
Significant Finds	CHAMBER POT Post Medieval
Significant Finds	GAMING BOARD Post Medieval



Significant Finds	TANKARD Post Medieval
Significant Finds	SIGNET RING Medieval
Significant Finds	SHOE MAKING WASTE Medieval
Significant Finds	BONE WORKING WASTE Post Medieval
Significant Finds	BONE WORKING WASTE Medieval
Significant Finds	KILN FURNITURE Post Medieval
Significant Finds	GLASS WORKING DEBRIS Post Medieval
Significant Finds	METAL WORKING DEBRIS Post Medieval
Investigation type	""Part Excavation"", ""Part Survey"", ""Recorded Observation"", ""Test-Pit Survey"", ""Watching Brief""
Prompt	Direction from Local Planning Authority - PPS

#### Project location

Country	England
Site location	GREATER LONDON SOUTHWARK SOUTHWARK Archaeological Excavations at London Bridge Station Improvement Works
Postcode	SE1 9QU
Study area	22779.50 Square metres
Site coordinates	TQ 329 801 51.503688137 -0.0849463246055 51 30 13 N 000 05 05 W Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: -3.00m Max: -1.75m

#### Project creators

Name of Organisation	OA-PCA (Joint Venture)
Project brief originator	Network Rail and Southwark Council
Project design originator	Network Rail and Southwark Council
Project director/manager	Dan Poore and Peter Moore
Project supervisor	Amelia Fairman
Project supervisor	James Langthorne
Project supervisor	Paw Jorgensen
Type of sponsor/funding body	Network Rail
Name of sponsor/funding body	Network Rail

#### **Project archives**

Physical Archive recipient	LAARC
Physical Archive ID	BVM-12
Physical Contents	"Animal Bones", "Ceramics", "Environmental", "Glass", "Human Bones", "Industrial", "Leather", "Metal", "Textiles", "Wood", "Worked bone", "Worked stone/lithics"
Digital Archive recipient	LAARC
Digital Archive ID	BVM-12
Digital Contents	"Animal Bones", "Ceramics", "Environmental", "Glass", "Human Bones", "Leather", "Metal", "Stratigraphic", "Survey", "Wood", "Worked bone", "Worked stone/lithics"

Digital Media available	"Database", "GIS", "Images raster / digital photography", "Spreadsheets", "Survey", "Text"
Paper Archive recipient	LAARC
Paper Archive ID	BVM-12
Paper Contents	"Animal Bones", "Ceramics", "Environmental", "Glass", "Human Bones", "Leather", "Metal", "Stratigraphic", "Survey", "Wood", "Worked stone/lithics"
Paper Media available	"Context sheet", "Correspondence", "Diary", "Drawing", "Map", "Matrices", "Miscellaneous Material", "Photograph", "Plan", "Report", "Section", "Survey "

## Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Thameslink Archaeological Assessment 10: Archaeological Excavations at London Bridge Station Improvement Works, London Borough of Southwark
Author(s)/Editor(s)	Champness, C
Author(s)/Editor(s)	Taylor, J
Author(s)/Editor(s)	Fairman, A
Date	2014
Issuer or publisher	OA-PCA
Place of issue or publication	London
Description	A4 folio

Entered by	Jon Butler (jbutler@pre-construct.com)
Entered on	26 March 2014

## **APPENDIX 22: TRENCHES WA1-3**

**Amelia Fairman**

### **Summary**

The archaeological investigations detailed in this document were centred at National Grid Reference TQ 3296 8015 and constitute an appendix to 'Thameslink Archaeological Assessment 10 – London Bridge Improvement Works'. The archaeological investigations consisted of 3 trenches and 7 auger holes in Western Arcade and were conducted by OA-PCA under the site code BVM12 between 7th October 2013 and 31st January 2014.

The archaeological investigations encountered the uppermost archaeological horizon at 4.35m OD and demonstrated the presence of a stratified archaeological sequence measuring up to c. 3.78m in thickness.

The geoarchaeological borehole survey demonstrated an underlying geological sequence of Pleistocene gravels overlain by late Pleistocene/early Holocene sands. These sequences correlate well with previous investigations and correspond with channel and foreshore sequences associated with the eastern bank of Guy's Channel.

The archaeological sequence comprised evidence of activity from the early medieval period (11th to 13th centuries) up to modifications immediately pre-dating and in association with the railways during the mid to late 19th century.

Three broad phases of activity were identified relating to the medieval period. These dated between the 11th to 13th centuries, later 15th century and early/mid 16th century. Ground raising and channel margin activity in the form of refuse disposal and pitting were identified during all three sub-phases of activity. These results are likely to reflect the proximity of the trenches to Guy's Channel, therefore making the area unsuitable for substantial occupation and development during this period due to periodic flooding.

The area became increasingly developed by the later 16th to early 17th century. This was represented in the west of the area by brick foundations, and in the east of the area by refuse disposal associated with one of the terraced properties formerly fronting onto 'Dean Street'. The presence of a north-east south-west aligned water channel was evident from this period, and had been reinforced by the construction of a pile and plank revetment along its western bank. Alluvial deposits truncated by the construction of this feature may, however, suggest that this was a pre-existing natural feature in the landscape, later re-cut and managed during the early post-medieval period.

By the later post-medieval period pre-existing property boundaries were modified with areas subdivided and brick surfaces installed. The earlier revetted channel was modified during the later 17th to 18th century but fell out of use by the later 18th to 19th centuries. At this time, the structure was truncated, dismantled and the timbers utilised as foundation material for later masonry walls. The later walls may relate to the construction of the extant arches, and effectively sealed off and channelled the former watercourse.

## Introduction

The site is located adjacent to the east side of Stainer Street. Thameslink Archaeological Assessment 9 – Western Approach Viaduct is located to the west of the site and the main Thameslink Archaeological Assessment 10 – London Bridge Station Improvement Works to the east.

The archaeological investigations conducted as part of Thameslink Archaeological Assessment 10 (BVM12) comprised: the archaeological excavation of 3 additional trenches and 7 augerholes (see Fig. 2 Main Report). These mitigation trenches were excavated due to late changes in foundation design, which were liable to cause greater impact upon underlying archaeological horizons than was originally anticipated. The dimensions of the controlled excavation trenches are shown below:

Trench	Location	N-S	E-W	Depth	Height at top (m OD)	Augering below project depth (m)	Depth of window sample (m OD)
WA1	W68	4	2	3.11	4.58	4	-3.20
WA2	W68	2	4	3.85	4.49	4	-2.95
WA3	W68	2	4	3.92	4.49	4	-3.34

Table 1: Dimensions of trenches

The site is situated within vaults located beneath London Bridge Station, bound by Stainer Street to the east, Tooley Street to the north and by Joiner Street and St Thomas's Street to the west and south respectively. Concrete surfaces within the excavation areas were encountered at c. 4.50m OD. The surface level of London Bridge Station at concourse level above the vaults is present at 11.91m OD within the ticket hall and 11.68m OD within outdoor land to the west.

The methodology for the excavation of the trenches and the drilling of the augerholes was the same for those in the main Assessment 10 report.

The site is located approximately 165m to the south of the Thames, with the western part of the site situated above the projected location of the now buried Guy's Channel. The extrapolated location of the Southwark Street channel, also now buried, is situated c. 250m to the south-west.

The extensive geoarchaeological borehole survey of the site, as part of the TAA10 assessment, demonstrated that natural gravel was present between –3m OD and –1.75m OD and can be correlated with the Shepperton gravel formation. The results of the Western Arcade Trenches are consistent with these results and recorded natural gravel between –2.60m OD and –2.80m OD.

The archaeological site work was supervised by Amelia Fairman and the geoarchaeological survey was supervised by Carl Champness. The site was undertaken under the project management of Peter Moore and Dan Poore. Chris Place (Network Rail Project Archaeologist) acted as archaeological advisor to Network Rail and the progress of the archaeological investigations were monitored by Dr Chris Constable (Senior Archaeology Officer, Southwark Council).

The completed archive for 'Thameslink Archaeological Assessment 10' will be deposited at the London Archaeological Archive and Research Centre (LAARC) under the site code BVM12. The deposited archive will comprise artefactual material and written, drawn and photographic records.

## **The Archaeological Sequence**

### **Phase 1: Natural**

#### Trenches WA1, WA2 and WA3

Pleistocene gravels were identified at –2.88m OD in Trench WA1 [2693], and at –2.79m OD and –2.59m OD in Trenches WA2 and WA3 respectively ([2938], [2805]). These were overlain by fluvial sands and estuarine silts. Within Trench WA1 these fluvial sands and silts comprised a combined depth of c. 2.5m ([2692], [2691], [2690], [2689], [2680], [2688], [2687], [2686], [2685], [2684], [2683], [2682], [2681]) from –0.42m OD. A comparable thickness of fluvial sands and silts were observed within adjacent Trenches WA2 from –0.40m OD ([2943], [2937]) and Trench WA3 from –0.11m OD ([2804], [2803], [2802], [2801], [2800]).

The only horizons of note were encountered within Trench WA3. A peaty band at –0.84m OD was indicative of a channel edge environment and is consistent with the foreshore sequences recorded during previous works along Western Approach (TAA9). This was overlain by overbank estuarine silts and silty-clays.

### **Phase 2/3: Prehistoric/Roman**

No features or residual artefacts were encountered or retrieved during the investigations indicative of either prehistoric or substantial Roman activity. It is possible that such traces have been truncated by scouring/flooding due to the proximity of Guy's Channel. The residual artefacts of Roman date were primarily recovered from early medieval horizons and may suggest, similarly to the results of the

primary assessment area (TAA10), that the area of the trenches lay at the periphery of Roman settlement rather than being a focus.

#### **Phase 4a: Medieval (11th to 13th Century)**

##### Trenches WA1 and WA3 (Figs. 1 & 17, Sections 131 & 133; Plate 1)

The only evidence attributed to the early medieval period within the westernmost Trench WA1 comprised alluvial silts and ground consolidation deposits. Blue-grey silty clays [2679], [2678] and [2677] (Plate 1) were identified at 1.01m OD and comprised a c. 1.50m combined thickness of material. The upper horizons of [2677] contained pottery sherds dated between 1180 and 1450.

A similar sequence of ground consolidation and/or flood deposits were identified within Trench WA3 from 0.70m OD. Layers [2799], [2798], [2797] and [2806] were identified during augering with a combined depth of c. 1m. These were truncated by an irregularly shaped pit [2794] and square posthole [2796] along the northern limit of excavation. Both features were identified at project level and therefore were left *in situ*. These had been backfilled with soft grey-brown silty clay [2793] and [2795] which may represent a natural accumulation. The cut features were sealed by c. 0.40m thick alluvial deposits [2792] and [2784] from 1m OD. Pottery and tile were recovered from earlier deposit [2792] dated between 1180 and 1350 and 1240 to 1450 respectively. Residual Roman tile, imbrex and brick were also recovered from [2792].

Sub-square pit [2789] was identified along the trench's northern limit of excavation at 1m OD and covered an approximate area of 1.3m<sup>2</sup> by 0.14m in depth. This had been backfilled with green-grey silty clay [2788] containing inclusions of crushed shell and late 12th to mid 14th-century pottery and tile (including a fragment of Roman Calcareous Tile). The fill, in turn was truncated by two circular stakeholes, 100mm in diameter, of uncertain function. Stakeholes [2791] and [2787] were filled by silty-sand, clean of anthropogenic material ([2790] and [2786]).

#### **Phase 4b: Medieval (Late 15th Century)**

##### Trench WA1 (Figs. 2 & 17, Section 131)

A 0.20m thick levelling deposit of firm silty-clay [2675] demarcated initial activity within this trench dating to the late 15th century. This contained pottery dating between 1400 and 1500, a hinge (sf 512) and tile/brick dating from the mid 13th century. Sub-rounded pit [2669] truncated the upper horizons of [2675] and extended beyond the eastern limit of excavation, with a maximum observed diameter of c. 1.40m. The 0.40m deep pit had been backfilled sequentially with organic silty-clay [2674] and sandy-silt [2668] containing gravel, animal bone and pottery dating between 1480 and 1600. The pit was then capped by a 0.16m thick dump layer [2666] of firm, silty clay. Pottery sherds dating between 1430 and 1500, burnt Reigate stone and peg tile dated between 1240 and 1500 were recovered from the latter. One sherd of note included a fragment of medieval Valencian lusterware.

Squared refuse pit [2661] was located in the north-eastern corner of the trench and covered a 0.90m by 0.85m area by 0.30m in depth from 1.33m OD. Backfills of friable sandy-silt [2673], firm clay [2672] and mixed silty-sand [2660]/[2667] filled the pit in turn. These contained variable inclusions of pottery dating between 1480 and 1600, peg tile dated between 1240 and 1600, possible lead waste (sf 450) and animal bone. Only secondary fill [2672] yielded no dating material.

A possible north-west south-east aligned ditch was identified in the south of the trench. Ditch [2663] was identified at 1.36m OD and extended with steep sides beyond the project level depth (over 0.74m). The ditch extended across the full width of the trench by over 0.50m in width. The earliest identified fill [2676] comprised a 0.45m thick deposit of silty-sand with organic lenses, degraded wood, leather offcuts and frequent inclusions of animal bone and shell. Pottery recovered from this dated between 1500 and 1550, and peg tile/brick dated between 1400 and 1660. This was sealed by further organic rich fills [2671], [2670] and [2665] containing a comparable assemblage of animal bone, shell, tile and pottery dated up to 1550, plus a single small handle (sf 428). Silty-sand and clay fills [2664] and [2662] sealed the upper limits of the ditch and similarly contained a mixed assemblage of oyster shell, animal bone and contemporary pottery and tile to the underlying fills.

#### Trench WA2 (Fig. 2)

A c. 1.20m thickness of silty ground consolidation material sealed natural deposits within Trench WA2. Layers [2936], [2935], [2934] and [2933] were identified during augering from 0.80m OD. These were considered to be roughly contemporary with alluvial silts [2956] and [2959] from 0.76m OD at trench project level. Cultural material was recovered from [2934] and [2956] only and included pottery dated between 1580 and 1600, peg tile dated between 1480 and 1700, a copper alloy pin and iron knife (sf 563 and sf 432 from [2956]).

#### Trench WA3

Two broad sub-phases attributed to the later 15th century were identified within Trench WA3. Both of these comprised a series of dumped/levelling deposits and refuse disposal.

#### ***Phase 4bi (Figs. 3 & 17, Section 133)***

A possible natural accumulation of alluvium [2774] was identified at 1.25m OD. The firm, blue clay contained iron nails (sf 519), and occasional sherds of pottery dated from the mid 14th century and mid 15th century peg tile. A Roman tegula was also recovered from this deposit. This was truncated by a number of ephemeral rounded stakeholes [2781]/[2776]/[2778] which measured c. 0.12m in diameter and had been backfilled with silty-clay [2780]/[2775]/[2777]. The backfills were all sterile of cultural material except [2777] which contained a single sherd of Roman tile dated between AD 100 and AD 120. The function of these remains unclear.

The base of the trench was subsequently sealed by a c. 0.50m thickness of levelling [2779] and alluvial flood layers [2773] and [2766] in turn. The latter are likely a result of the trench's proximity to



the former alignment of Guy's Channel. Small inclusions of pottery and tile were recovered from both flood layers and dated between 1400 and 1500 and between 1240 and 1450 respectively. Some slightly earlier material dated from the late 11th century up to 1200 was recovered from [2766] and is likely to represent disturbed material. Irregular pit [2762] truncated [2766] and had been backfilled with sandy-clay [2761]. Pottery and tile recovered from [2761] dated from the mid 14th up to the late 15th century.

#### ***Phase 4bii (Figs. 4 & 17, Section 133)***

A second sequence of levelling and pitting was identified in the trench from c. 1.70m OD, and may reflect channel margin/edge activity relating to refuse disposal at the edge of the former channel. Compacted clay-gravel ground consolidation layer [2758] was identified at 1.64m OD and was truncated by sub-rounded pit [2760] filled by firm clay [2759] and possible linear [2757] in the west and east of the trench respectively. The latter continued beyond the northern, southern and eastern limits of excavation and may represent a roughly north-east south-west aligned linear. Cut [2757] was first identified at 1.63m OD, extended for at least 0.30m in depth, and was filled by a single fill of soft silty-clay [2756].

Both earlier cut features were overlain by dump layers of silty-clay [2754]/[2755] containing fragments of charcoal, wire (sf 518) and pottery dating from the mid 13th century up to 1400. These were truncated in turn by a second phase of pitting, represented by large rounded and squared pits [2753] and [2747]. Firm clay [2752] was used to backfill [2753] and contained mid 15th-century pottery sherds. Smaller pit [2751], filled by silty-clay [2750], re-cut the southern limits of [2751]. Squared pit [2747] extended 1.80m by 1.50m by 1m in depth and had been backfilled with a 0.28m thick primary fill of mottled clay [2785]. This was sealed by silty-clay organic fills [2765], [2764], [2763] and [2746]. Pottery recovered from all fills appeared to be roughly contemporary, dating between 1480 and 1600. Wire (sf 515) and an iron nail (sf 516) were also recovered from fills [2764] and [2746].

#### **Phase 4c: Medieval (Early/mid 16th Century)**

##### Trench WA1 (Figs. 5 & 17, Section 131)

Activity relating to the later medieval period was minimal within this trench. This comprised an initial horizon of dumped material from 1.64m OD, with a combined thickness of c. 0.30m. Layers [2659] and [2656] sealed all earlier features and comprised silty-clays with small inclusions of shell, animal bone, pottery and tile dating up to 1550. A small copper alloy pin (sf 511) was also recovered from [2659]. Rounded pit [2655] truncated dump layer [2656] and was located within the same area as earlier pits [2663] and [2669] from Phase 4b. The pit extended c. 1m in diameter by 0.25m in depth and had been backfilled with loose sandy-silt [2654], within which was animal bone, tile and pottery dated between 1480 and 1550.

A 0.18m thick dumped deposit of possible domestic debris sealed the trench from 1.79m OD. Dump [2653] contained a comparable assemblage of the same date range as earlier dumped deposits [2659]/[2656] in addition to a single copper alloy pin (sf 510) and an iron staple (sf 431). A single isolated squared posthole [2658] was identified in the southern limits of the trench and truncated [2653]. The posthole served an unknown function, extended 0.30m<sup>2</sup> and had been backfilled with green-brown sandy-silt [2657], clean of anthropogenic material.

#### Trench WA3 (Figs. 5 & 17, Section 133)

A series of cut features were identified within Trench WA3 which appeared to be related to both terracing and refuse disposal. Heavily truncated cut feature [2749] was located in the north-eastern corner of the trench, filled by coarse sandy-silt [2748] contained late 15th-century pottery and peg tile, and served an unknown function. This was truncated by terracing cut [2736] which post-dated earlier terracing cut [2743]. These features exhibited diffuse boundaries and undulating profiles which may indicate water scouring and disturbance. Firm silty-clay [2742] filled [2743] and contained mid 16th-century pottery sherds and animal bone fragments. Eastern cut [2736] by contrast contained a series of clay-silt and sandy-clay fills [2737]/[2735]/[2734]/[2733]. Each fill contained lenses of organic material, animal bone, and pottery consistently dated between 1480 and 1600.

A series of small rounded cut features representing either large postholes or small pits were identified in the west of the trench. Cuts [2741], [2745] and [2739] measured between 0.5m and 0.6m in diameter and had been backfilled, potentially naturally, with silty-clay [2740], [2744] and [2738]. All pottery sherds recovered from the fills suggested a 1500 to 1550 date range.

#### **Phase 5a: Early Post-medieval (Mid to Late 16th Century)**

##### Trench WA1 (Figs. 6 & 17, Section 131)

The only trench to yield evidence of the mid to late 16th century was WA1. This comprised a single refuse pit and numerous layers of ground consolidation/levelling material. Sub-squared pit [2652] was located along the eastern limit of excavation and extended up to 1.98m in width by 0.50m in depth from 1.91m OD. The sandy-clay backfill [2651] contained lenses of organic material, animal bone, pottery sherds (dated 1500 to 1550), oyster shell and degraded wood. This truncated a 0.16m thick dump layer [2647] of sandy clay with frequent inclusions of shell (oyster and limpet) and mid 16th-century pottery fragments.

#### **Phase 5b: Early Post-medieval (16th to 17th Century)**

##### Trench WA1 (Figs. 7 & 17, Section 131)

Irregular refuse pit [2640] lay in the east of the trench, within the same proximity of [2652] and had been deliberately backfilled with loose, gravelly silt [2639]. Animal bone, charcoal, peg tile and pottery sherds dated between the late 16th and early 17th century were recovered from the latter.

This and a large proportion of the trench was subsequently truncated by the construction of a large north-north-east south-south-west aligned brick foundation [2644]. The foundation had been trench built within linear construction cut [2642] with a founding level of 1.67m OD. An extension to the southern limits of the cut to the west suggests that the wall or overlying structure returned at this point. The unfrogged red bricks utilised in the construction of [2644] were dated between 1450 and 1600, and pottery recovered from the mortar bonding was dated between 1080 and 1200. The silty backfill [2645] of the construction cut, however, contained mid 16th-century pottery sherds and brick fragments of a contemporary date to the foundation. It remains a possibility that rather than representing an early post-medieval structure, that foundation [2644] was related to overlying Phase 6a wall [2633] and merely incorporated re-used materials from an earlier property. Further work may refine this phasing further.

#### Trench WA2 (Fig. 7)

##### ***Phase 5bi (Figs. 8 & 17, Section 138; Plate 2)***

The eastern limits of Trench WA2 were occupied by a north-north-east south-south-west aligned channel reinforced by the installation of a pile and plank revetment along the western bank. The position of this channel may explain the paucity of features or horizons pre-dating the early post-medieval period in this trench by comparison to Trenches WA1 and WA3. The revetment was driven into construction cut [2952] which exhibited a slightly concave profile with a width of 0.90m from 0.69m OD. The full depth of this feature was not established, and the diffuse boundary between the primary fill [2977] of sandy-clay and the alluvium cut by [2952] suggests that this may represent a re-cutting of a pre-existing natural feature. Large numbers of bricks, fragments of leather and pottery sherds within [2977] may have been deliberately laid to provide greater stability for the overlying revetment. The material culture recovered from the fill dated to the late 16th to early 17th century and included a number of copper alloy pins (sf 447).

Revetment [2922] (Fig. 17, Section 138 & Plate 2) comprised the initial installation of plank [2971] laid on edge from 0.96m OD. The 1.6m long plank was supported by a series of squared, driven piles along the eastern face (i.e. within the projected course of the channel). The timber piles ([2927], [2908], [2975], [2905] and [2904] from south to north) measured c. 100mm<sup>2</sup> by up to 1.83m in length from an uppermost elevation of 1.71m OD. The eastern faces of these were then overlain by a series of horizontally lain, overlapping timber planks [2973], [2890], [2972] and [2891] in turn. Squared timber piles [2928], [2903], [2902], [2901], [2955], [2900] and [2899] (from south to north respectively) were driven to secure the eastern faces of the latter planks. The piles were predominantly squared, boxed heart piles of similar dimensions to the earlier piles and driven from a comparable elevation. The 0.10m wide space between the two lines of planking was then filled by packing material [2976] of sandy-silt. Pottery and peg tile recovered from [2976] suggested a late 16th to early 17th-century date range. Structure [2922] covered an observed area of 1.73m in length (continuing beyond both northern and southern limits of excavation) by 0.40m width and over 1.16m in depth from 1.80m OD.

Numerous timber piles were identified to the west (landside) of the revetment and served an unknown function. These may relate to a tie-back or represent foundation piles for an overlying structure. The piles in the far west of the trench (from south to north [2921], [2920], [2919], [2918], [2974], [2917], [2916], [2915] and [2914]) were predominantly squared and driven from an uppermost elevation of 1.39m OD into dumped deposits of clean sandy-silt [2946]. A further c. 1.15m thickness of dumped sandy-clays ([2944], [2931] and [2877]) capped the westernmost piles from 1.49m OD. These contained pottery sherds consistently dated between the mid 16th and early 17th centuries and copper alloy wire (sf 439, sf 443).

#### ***Phase 5bii (Fig. 9)***

Additional reinforcement to [2922] was provided at a later stage by squared timber piles [2906], [2907] and [2909] between the two lines of planking and further packing material within the construction cut to secure the western line of revetting. The latter [2953]=[2951] silty-sand contained a small Tudor dress hook (sf 565), a fragment of a blade (sf 567), late 16th to mid 17th-century pottery sherds, angular gravels, shell and animal bone. Dump layers [2948] and [2939] were also located to the west of the structure and raised the ground level by a further 0.32m. These may have also been laid to provide further support. A mixed assemblage of cultural material was recovered from these and included early 17th-century fragments of clay tobacco pipes, late 16th to early 17th-century pottery sherds, glass (dated 1575 to 1650), numerous copper alloy pins (sf 559, sf 564) and copper alloy objects (wire sf 441/sf 446, lace chape sf 444, purse ring sf 445), burnt brick and peg tile, and occasional pieces of waterlogged leather.

Squared piles [2913], [2912], [2910] and [2911] were located immediately adjacent to revetment [2922] and may therefore have functioned as a tie back or additional support. These were driven from c. 1.60m OD and extended 100mm<sup>2</sup> by up to 1.50m in length. Timber beam [2960] lain on edge may represent discarded material or collapse.

A series of squared timber piles driven c. 0.40m east of the internal face of revetment [2922] may represent a later phase of repairs or narrowing of the channel. These were identified as [2968], [2967], [2966], [2965], [2957], [2963], [2962], [2961] from south to north respectively. The slightly lower elevation these were identified from by comparison to the main revetment (c. 0.90m OD) and smaller dimensions (60mm<sup>2</sup> to 80mm<sup>2</sup>) might also suggest these to belong to a different phase of works than the main construction. Other isolated posts of uncertain function were identified at a similar elevation within what would have been the footprint of the former channel ([2964], [2969] and [2970]).

#### ***Phase 5biii (Fig. 10)***

Alluvial deposit [2950] sealed the latter series of piles and lay to the east of revetment [2922]. The 0.10m thick deposit may represent a natural accumulation of silt during the use of the channel. The gradual disuse or abandonment of the channel was inferred by the presence of timber planks

(potential collapse), and deliberate dumps of material to fill the watercourse. Timbers [2947] and [2941] represented horizontally lain planks at 0.86m OD and 1.02m OD respectively. The placement of these could alternatively suggest their use as duck boards. These were divided by sandy clay [2945], a 0.20m thick deposit containing late 16th-century pottery sherds and brick/tile fragments with a 1480 to 1700 date range. A further 0.46m thickness of dumped debris [2940]/[2884] capped the channel to 1.43m OD. These silty-clay and brick rubble layers contained a high proportion of broken brick and tile, including some Flemish floor tile, pieces of Reigate stone and glazed peg tile and suggest a deliberate attempt to infill the earlier feature. Pottery sherds recovered from these layers suggested a late 16th century to 1700 date range, a date supported by contemporary clay tobacco pipe fragments.

#### Trench WA3 (Figs. 7 & 17, Section 133)

Activity dating to this period within Trench WA3 was of a different nature to that of adjacent Trench WA2. No evidence was encountered of waterlogging or cut features that could relate to the eastern bank of the watercourse encountered within Trench WA2. Furthermore, the features attributed to this phase were at a higher elevation than those within the latter trench, more comparable to the elevations within Trench WA1. This may suggest that the former watercourse terminated at some point west of Trench WA3 and therefore activity within this trench relates to that on the opposite bank.

Dump layers [2729], [2732], [2731] and [2726] were identified from c. 2m OD with a combined thickness of 0.20m. The sandy-clays contained a mixed assemblage of pottery sherds, animal bone, slag, oyster shell and peg tile. The pottery inferred an early 17th-century date range (1612 to 1650). A find of note from [2732] was a small piece of window glass with decoration in black and dated between 1575 and 1675 (Appendix 4).

A series of intercutting rounded ([2728] and [2725]) and sub-squared ([2730] and [2722]) refuse pits truncated the upper horizons of the dump layers. These were respectively filled by silty/sandy-clays containing pottery fragments, animal bone, shell and slag ([2728] filled by [2727]; [2725] filled by [2724]; [2730] filled by [2772]; [2722] filled by [2723] and [2721]). Dating material was recovered from all fills except [2772] and consistently suggested an early to mid 17th-century date range.

Structure [2771] lay along the southern limit of excavation and comprised a series of six driven piles following a north-west south-east alignment. Squared timber piles [2782], [2770], [2769], [2768], [2767] and [2783] covered an area at least 2.88m in length and continued beyond both eastern and western limits of excavation. The piles each measured c. 110mm<sup>2</sup> by up to c. 1.50m in length from an uppermost elevation of 2.14m OD. The dating of these features may need to be refined as it remains unclear precisely at which point these were driven from. Further research and assessment of the woodworking technologies and species ID may refine this further. It is likely that the structure represents the foundation piles for an overlying property that extended to the south of the trench.

#### **Phase 6a: Post-medieval (17th to 18th Century)**

#### Trench WA1 (Figs. 11 & 17, Section 131)

Brick wall [2633] was constructed directly over earlier Phase 5b foundations [2644]. The wall extended the full length of the trench by up to 1.14m width and utilised intermediate post Great Fire bricks dated between 1664 and 1725 bonded with a brown lime mortar. Silty backfill [2641] sealed the faces of the wall and was clean of any dateable material. A small rounded pit, or large posthole [2638] measuring 0.44m in diameter was subsequently cut into this backfill and filled by silty-clay [2637]. Few finds were recovered from the fill, but small fragments of peg tile suggested a date range up to 1700.

Following the construction of wall [2933] the surrounding area was raised to c. 2.60m OD with ground raising/levelling layers [2648], [2632]=[2635], [2631] and [2634]=[2636]. The location of these deposits along either side of the wall suggests that these could have still functioned with the boundary defined by [2933]. All deposits comprised firm silty-clay with a mixed assemblage of peg tile, animal bone, mortar lenses, chalk fragments, charcoal and pottery with a 1580 to 1615 date range. A small copper alloy pin (sf 509) was recovered from layer [2636] and part of a lead window came (sf 452) from [2635].

All other activity attributed to this phase was located east of wall [2933] and may suggest this to have been an external area beyond the property boundaries. Linear cut [2630] (not illustrated) was identified at 2.66m OD and extended along a north-west south-east alignment up to the edge of the wall with a maximum observed width of 2m by 0.20m depth. The function of this shallow feature is unclear and may relate to localised modifications. Backfill [2629] comprised a compact deposit of mortar and chalk with clay lenses and may suggest the demolition of a structure in this area. Further modifications to the area were suggested by rounded postholes [2628] and [2615] at the northern and southern limits of the cut. Each posthole extended up to 0.27m in diameter and had been backfilled with sandy silt ([2627] and [2614] respectively). Fragmentary pottery sherds recovered from the backfills suggested a broad date range from the mid 16th century up to the early 20th century. A small copper alloy pin or wire fragment (sf 508) was also recovered from [2627].

Construction within this area was represented by a small stone structure [2625] and red brick stub wall [2617]. The latter had been trench built within construction cut [2620] and ran perpendicular to wall [2633], founded at 2.59m OD. Mortar rich backfill [2619] filled the construction cut and contained pottery sherds dating between 1580 and 1700. The red/purple bricks and mortar used in the construction suggested a 1450 to 1709 date range for the materials. It is likely that this relates to a small sub-division or other non load bearing wall. The function of stone structure [2625] was less clear. The feature lay to the immediate south of [2617] and covered an area 0.48m by 0.12m by 0.11m depth and comprised a series of medium sized angular stones (many appearing burnt) with pieces of reused tile. The pieces had been clearly deliberately placed, and may represent packing material for a robbed/removed superstructure. Within the inner limits of the feature a fill of black-brown silty clay with animal bone [2624] had been dumped. This was overlain by compacted deposits

of silty clay [2618]/[2616]. These were interpreted as levelling deposits and contained early to mid 17th-century pottery sherds, peg tile, metal fragments and animal bone.

#### Trench WA2

##### ***Phase 6ai (Figs. 12 & 17, Section 137)***

Modifications to the Phase 5b revetment [2922] were made during the mid 17th to 18th centuries. A second phase of pile and plank revetting (structure [2942]) was constructed 0.21m east of the former structure from the higher elevation of 1.65m OD. It should be noted however, that these levels indicate significant horizontal truncation. The structure comprised a series of horizontally lain planks [2893]/[2894] supported by squared posts [2929], [2898], [2897] and [2926] from south to north respectively (Fig. 17, Section 137). Each timber pile measured c. 80-100mm<sup>2</sup>, and additional support was given to northern post [2897] by a secondary post [2925] fixed horizontally across the revetment. The space between this and the older revetment was then backfilled by a combined depth of 0.18m of packing material [2887] and [2886] which comprised mixed sandy-clay containing animal bone, glass, small copper alloy artefacts (numerous pins sf 556, sf 435, sf 436, wire sf 437, bodkin sf 434 and jeton sf 555), mortar fragments, iron wire (sf 449) pottery sherds, a small wood handle (sf 438) and building material with a mid 17th to early 18th-century date range.

Alluvial clay [2883] was identified within the former course of the channel and presumably relates to the natural silting up of this feature. The 0.23m thick deposit contained numerous small copper alloy pins (sf 561), and small sherds of mid to late 18th-century pottery and building material.

The land-side area of the revetment was raised again during this period by dumped layers of silty sand [2932], [2885] and [2881]. These raised the ground level to c. 1.41m OD. Primary and secondary layers [2932]/[2885] contained a mixed assemblage of clay tobacco pipe, animal bone, degraded remnants of fabric/leather, copper alloy wire (sf 440), glass, gravel lenses, iron sheet waste (sf 429), an iron balance arm (sf 430) and pottery sherds. The pottery and clay tobacco pipe dated exclusively to the mid/late 17th century up to 1710. Other finds of note recovered from both layers included a shoe buckle, numerous copper alloy pins (sf 560, sf 557), an iron tool (sf 558), and a sherd of imported Andalucian coarseware from [2885]. A loose timber stake [2882] and horizontal plank [2888] were recorded as overlying [2885]. It is unclear whether these represent debris within dump layers, or deliberately lain timbers for use as duckboards. Overlying dump layer [2881] had a comparable composition to [2885], however the pottery and clay tobacco pipe (sf 416, sf 417) inferred a slightly later date range of early/mid 18th century. This also contained a large number of copper alloy pins (sf 551, sf 552), a copper alloy shoe buckle (sf 433) and a bone handle (sf 554).

##### ***Phase 6aii (Fig. 13)***

Dumped deposits of sandy-clay [2858], [2861], [2860] and [2837] demarcated the disuse of the earlier revetted channel and raised the ground level to 1.77m OD and 2.27m OD in the central and eastern

limits of the trench respectively. The dumped deposits in the east of the trench may represent a slightly earlier phase of ground raising and contained material dated from the late 17th century up to 1720 and included a small bone comb (sf 545). The central dump layers [2861]/[2858] by contrast contained large numbers of copper alloy pins (sf 549), part of a metal buckle (sf 550), a lead token (sf 547), bone handle (sf 548) and pottery/clay tobacco fragments dating to the mid 18th century. Within this assemblage were a number of decorated/inscribed fragments of clay tobacco pipe (sf 409, sf 410, sf 411, sf 412, sf 413, sf 414).

The first evidence of masonry construction was identified within this phase in the central and western areas of the trench. Small red brick stub wall or truncated surface [2859] was located in the central part of the trench and had been trench built within cut [2863] at a founding level of 1.61m OD. Crushed chalk [2862], clean of dateable material, was used to backfill the construction cut. The single course of brickwork used materials dated between 1500 and 1660 and extended beyond the southern limit of excavation. Wall [2880]/[2850] was constructed 0.40m west of [2859] and followed a comparable north-west south-east alignment. The wall was trench built within linear construction cut [2879], and was founded over a horizontally lain timber plank [2978] at 0.57m OD. The wall was initially constructed with a 0.56m wide unfrogged red brick foundation [2880] of c. 9 courses of brickwork, overlain by a secondary build of red brick [2850] of 0.46m width by 0.40m depth. Material culture recovered from the backfills of the construction cut [2958]/[2930]/[2878] contained a high proportion of medieval pottery and building material, including a piece of Roman tile.

The area to the west of wall [2880] was subsequently overlain by an 80mm thick deposit of silty-sand [2876]. This was recorded from 1.62m OD and was clean of any dateable material. Modifications to this space were represented by the construction of north-east south-east aligned brick wall [2812] within cut [2865]. It is likely that the wall either sub-divided a pre-existing space or bound a new property. The bricks inferred a date range of 1700 to 1900 for the wall, the construction cut of which was backfilled by deposits of silty-clay [2923]/[2864] containing fragments of mortar, re-used building material and pottery sherds dating between 1580 and 1700. It is likely that the construction of this sub-dividing wall truncated an organic rich dump layer [2869] located in the north-western limits of the trench. The latter contained pottery sherds dated between 1550 and 1600 and roughly contemporary building material.

The north-western area of the trench, bound by [2812] and [2850] to the south and east appears to have been a former basement area. Soft brick floor surface [2848] was lain here at 2.24m OD over a 0.20m thick levelling deposit [2847]. The latter contained pottery sherds and building material consistently dated between 1580 and 1650 and may indicate the demolition or disturbance of earlier horizons during the remodelling of this area. These horizons were subsequently truncated by rounded pit [2845], filled by crushed mortar and oyster shell [2844] and sandy-silt [2846]. These fills contained an assortment of animal bone, 17th-century pottery sherds, metal fragments, clay tobacco pipe (dated 1680 to 1740) and building material.

Trench WA3 (Figs. 11 & 17, Section 133)



Activity dating from the 17th to early 18th century was limited within this trench and may suggest that at this time, the area lay at the periphery of the more developed areas or to the rear of a property along one of the subsidiary roads running into 'Dean Street'. Dump layers [2720] and [2711] comprised a combined depth of 0.25m from 2.36m OD. These deposits of silty-clay contained material indicative of domestic refuse, including animal bone, shell, pottery sherds (dated 1580 to 1680), clay tobacco pipe (dated 1680 to 1710) and a combination of both medieval and post-medieval peg tile and brick. A fragment of Portland stone moulding recovered from [2711] may have been associated with funerary material.

The levelling deposits were truncated by a large, rounded pit [2717] which lay within the western half of the trench extending beyond the northern, southern and western limits of excavation. The steep sided feature had been backfilled sequentially with deposits of charcoal rich clay silts [2719], [2718] and [2716]. A mixed assemblage of mortar lenses, oyster shell, tile (peg and pan tile), clay tobacco pipe and pottery sherds were recovered from these backfills and were consistently dated between the early/mid 17th century and the early 18th century.

#### **Phase 6b: Post-medieval (18th to 19th Century)**

##### Trench WA1

Two distinct phases were identified within this trench during the later 18th to 19th centuries. These comprised modifications to pre-existing masonry structures and property boundaries, followed by robbing events and then drainage. The latter is likely to immediately pre-date or coincide with the construction of the railway viaducts.

##### ***Phase 6bi (Figs. 15 & 17 Section 131)***

Red brick surface [2611]=[2610] lay to the east of wall [2617] and are likely to have functioned with this wall. These were constructed with reused unfrosted bricks with a surface level of 2.86m OD and were underlain by a 0.10m thick bedding layer [2612] of silty clay. Within the latter were inclusions of late 18th-century pottery sherds, peg tile and clay tobacco pipe fragments with a 1580 to 1900 date range. Possible repairs to the northern limits of the surface were suggested by compacted silty-clay layer [2613]. This contained a roughly contemporary assemblage of material, including late 18th-century clay tobacco pipe fragments, pottery sherds and burnt kimberidge shale fragments. Later modifications were indicated by the excavation of linear cut [2609] that truncated the surface and extended to a width of 0.22m by 0.14m depth along a north-west south-east alignment. This was interpreted as either a gully or a robber trench for an earlier sub-dividing wall. The silty backfill [2608] was clean of cultural material with which to help refine the date or function of this feature. Overlying levelling deposit [2607] demarcated the abandonment of these earlier features and surfaces and contained clay tobacco pipe pieces and pottery sherds consistently dated to the late 18th to early 20th century (1770 to 1910).

No formal surfaces were identified within the north-eastern limits of the trench. This area was subjected to a series of dumped deposits that effectively raised the ground level to a comparable level as levelling deposit [2607] to c. 2.99m OD. Layers [2626], [2623] and [2601] comprised organic rich clay-silts containing a mixed assemblage of glass, clay tobacco pipe (sf 420, sf 421), pottery sherds, metal objects (copper alloy pin sf 507 and lead window came sf 451 from [2626]), animal bone and gravels. The pottery sherds and clay tobacco pipe pieces suggested an early 19th-century date range (1820 to 1860).

Linear cut [2622] was located in the north of the trench and appeared to target wall [2633] (Phase 6a). This was therefore interpreted as a robber trench and had been backfilled with silt and chalk [2621]. Pottery and clay tobacco pipe fragments recovered from the fill dated to the later 17th and mid 18th centuries.

### ***Phase 6bii (Fig. 16; Plate 6)***

A second phase of use for the area was represented by the construction of a north-east south-west aligned culvert [2603]. This occupied the southern two thirds of the trench, roughly within the footprint of earlier masonry [2633], but on a slightly different alignment. The culvert was constructed with deeply frogged red bricks dated between 1825 and 1900. The top of the arch was recorded at 2.90m OD and terminated with a manhole in the centre of the trench, at which point two subsidiary pipes fed in from the west and east. This had been trench built within construction cut [2605] and was overlain by backfills of loose sandy silt [2606], [2604] and [2602]. The material culture recovered from the backfills was of a slightly earlier date range with pottery, clay tobacco pipe, a copper alloy pin (sf 505), copper alloy coin (sf 506) and building material dating largely from the late 16th to early 18th century. This may suggest that earlier properties or archaeological horizons were impacted upon by the construction of the culvert.

Following the construction of culvert [2603] the area was overlain by a 0.48m thickness of levelling material [2600]. This contained material culture dated to the early/mid 19th century (sf 418, sf 419), including part of a bone cutlery handle (sf 503) and raised the ground level to 3.48m OD.

### **Trench WA2 (Fig. 14; Plate 3 & 4)**

A greater intensity of construction was identified during the 18th to 19th centuries, and followed the same alignments as previously recorded structures and property boundaries. Within the spaces defined in the western limits of the trench (Phase 6a) a number of additional walls and rebuilds were installed, collectively identified as structure [2836]. These installations comprised an internal brick wall to reinforce the southern boundary, a floor surface and brick drain [2829]/[2830]/[2828]. The earliest of these modifications [2829] utilised bricks dated between 1775 and 1900 whereas the floor and drain incorporated re-used materials with a slightly earlier date range of 1500 to 1700. These features were sub-divided stratigraphically by the installation of packing material [2833] of sandy clay.

The eastern boundary of [2850] was reinforced by additional walls [2835] (Plate 4) and [2834]. These each measured 0.30m in width by up to 0.35m depth from 2.58m OD and utilised unfrogged red bricks bonded with a clinker mortar, dated between 1775 and 1900. These were trench built within construction cut [2874] over a horizontally laid plank [2870]. Fragments of clay tobacco pipe recovered from the construction cut backfill [2873] dated between 1730 and 1780 (sf 415).

Additional construction in the east of the trench comprised parallel walls [2841] and [2817] constructed with a 0.20m gap between the two. The easternmost wall appears to have been the earlier of the two. This was laid within construction cut [2816] over a brick foundation [2871] founded at 1.58m OD and two horizontally laid timber planks [2866] and [2867]. The overlying wall [2817] extended to a depth of 1.28m by 0.40m width, and was overlain by sandy-clay construction cut backfill [2826] containing pottery sherds dated between 1750 and 1789. Adjacent wall [2841] was identified from 2.65m OD with a total depth of 0.95m and width of 0.30m. This had been trench built within construction cut [2822] over foundation material of compacted sandy silt with brick rubble [2855] and two horizontally laid planks [2851] and [2852] (Plates 3 & 4). Each plank had been positioned over smaller timber braces running perpendicular to the wall trench [2856] and [2857]. The material culture recovered from primary fill [2855] was consistently dated between 1760 and 1780 and included numerous copper alloy pins (sf 546) and examples of decorated clay tobacco pipe (sf 405, sf 406, sf 407, sf 408). The secondary and tertiary construction cut backfills [2875]/[2839] and [2838] contained roughly contemporary material, including pottery with a 1720 to 1760 date range and early 18th-century clay tobacco pipe.

Levelling deposits of dumped sandy-silt [2854]/[2853] and mortar [2840] filled the 0.60m space between walls [2835] and [2811], raising the ground level to 2.28m OD. The dump layers contained frequent inclusions of mid 19th-century pottery sherds, clay tobacco pipe dated between 1820 and 1860 (including decorated pieces sf 401, sf 402, sf 403, sf 404) and late 18th to early 19th-century building material. The upper horizons of these were subsequently truncated by flat-based pit [2843] filled by silty clay and rubble [2842]. This linear cut may relate to a later phase of modifications for either of the bounding walls. An additional deposit of dumped demolition material [2821] sealed the pit from 2.58m OD. The latter contained brass wire (sf 544) and early 19th-century pottery sherds. Fragmentary brickwork [2818] laid within linear construction cut [2820] within this space suggests it may have been used as for drainage. The bricks utilised for [2818] dated between 1850 and 1900 and may therefore immediately post-date the construction of the viaduct.

Numerous levelling/dump layers were identified across the western ([2809], [2872], [2849], [2832], [2831], [2827]) and eastern limits ([2823], [2824]) of the trench. These were utilised to infill spaces between the numerous masonry structures and raised the ground level to 2.56m OD and 2.75m OD in the west and east respectively. The material culture recovered from the eastern dump layers dated exclusively to the mid to late 18th century. Pottery, clay tobacco pipe (including decorated examples sf 400, sf 426, sf 427) and building material recovered from the western dump layers however were

perhaps more indicative of earlier horizons truncated during the post-medieval redevelopment of the area, and dated between the late 16th and early 18th century.

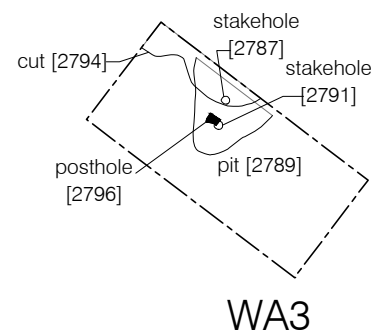
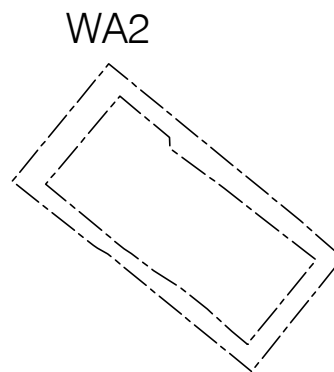
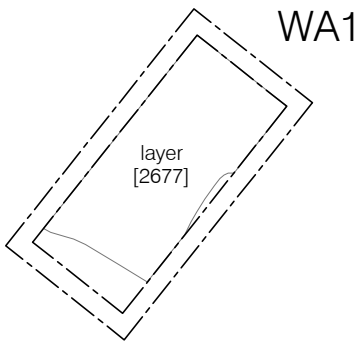
Continued activity in the eastern limits of the trench was suggested by partially revealed linear cut [2825] filled by possible industrial waste [2808]. A large number of horn cores and large animal bones were recovered from the backfill [2808] and were found in association with early to mid 18th-century pottery and clay tobacco pipe fragments (sf 424, sf 425). This area was modified again by the construction of mid to late 19th-century yellow brick wall [2813]. The trench built wall had been founded at c. 2.58m OD within linear cut [2815] and backfilled with [2814]. The function of [2813] remains unknown. Robbing cut [2811] filled by building rubble [2810] and demolition material [2807], which sealed the entirety of the trench represent the final phase of activity contemporary to the construction of the overlying viaduct. The only find of note recovered from [2807] was part of possible bone container (sf 453).

#### Trench WA3 (Figs. 12 & 17, Section 133)

Numerous linear cut features were ascribed to this phase of activity. However, due to the small size of the trench and therefore limited exposure of these features, their function and full dimensions could not be established. Cuts [2706], [2710] and [2715]/[2703] followed comparable north-west south-east alignments and were located from the south to north of the trench respectively. These features were relatively shallow at c. 0.18m in depth which may suggest extensive horizontal truncation, and were identified from an uppermost elevation of 2.46m OD. Backfills of clay-silt containing animal bone, glass, degraded wood, clay tobacco pipe, crushed mortar, copper alloy wire (sf 448) and pottery sherds ([2705], [2709], [2714] and [2702]) suggested these features were infilled within a relatively short period of time and dated between 1770 and 1845.

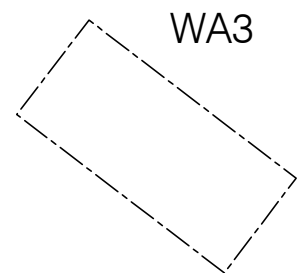
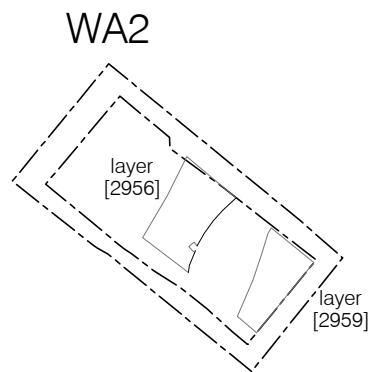
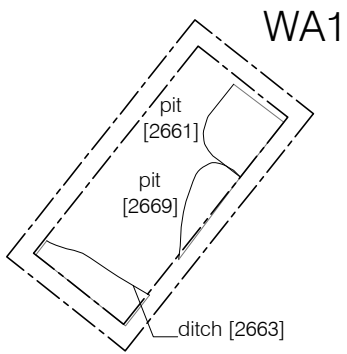
A heavily damaged wall was identified during shoring installation along the western limit of excavation. This was too fragmentary to record in detail. However, its associated construction cut [2708] did extend 0.50m into the trench and followed a north-east south-west alignment. This had been backfilled with crushed mortar [2707] which contained occasional fragmentary sherds of 18th-century pottery. The construction cut post dated the excavation of linear features [2710] and [2715] but pre-dated northerly cut [2703].

Additional features attributed to this phase included rounded pit [2713] filled by [2712] and dump layers [2704], [2701] and [2700]. Dump layers [2704] and [2701] raised the ground level to 2.52m OD and contained frequent inclusions of burnt clay, half bricks, tile and late 18th to 19th-century pottery sherds. The burnt inclusions may suggest industrial processes taking place in the immediate vicinity. The entire trench was subsequently overlain by demolition material [2700] which is likely to relate to the levelling of the area immediately prior to the construction of the extant viaduct.



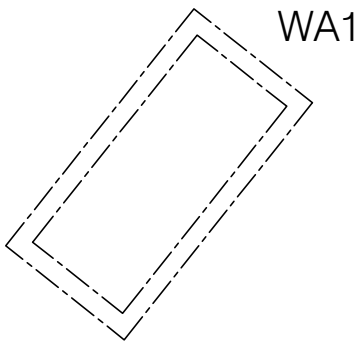
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Figure 1  
Phase 4a  
1:100 at A4

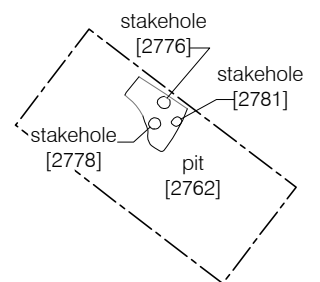
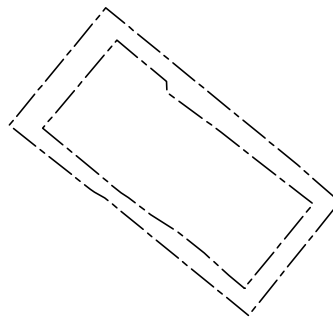


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Figure 2  
Phase 4b  
1:100 at A4



WA2

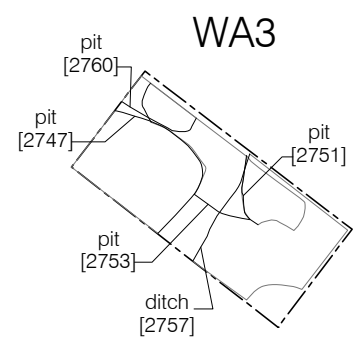
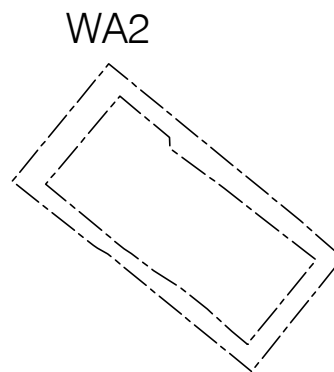
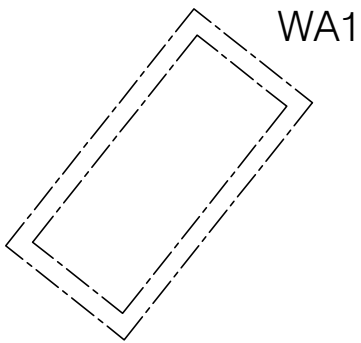


WA3



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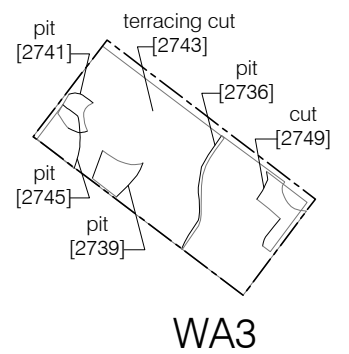
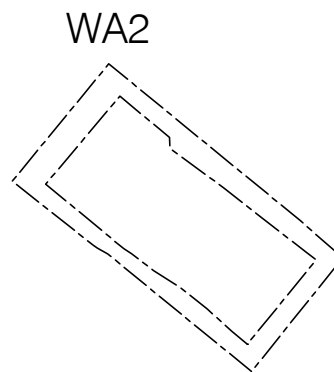
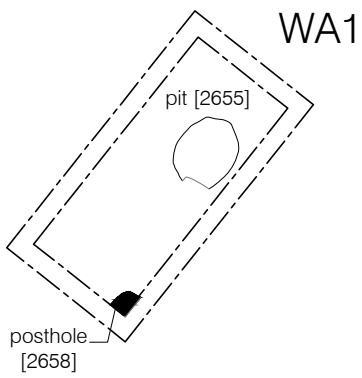
Figure 3  
Phase 4bi  
1:100 at A4



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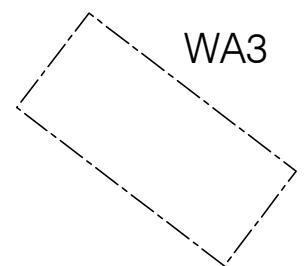
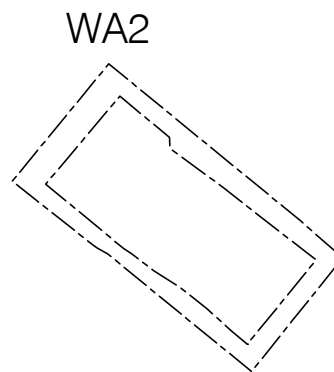
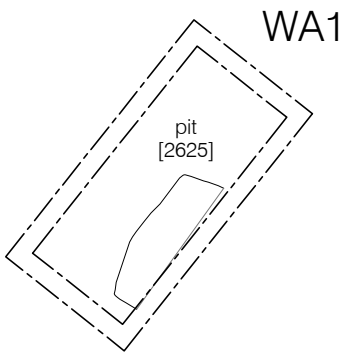
Figure 4  
Phase 4bii  
1:100 at A4





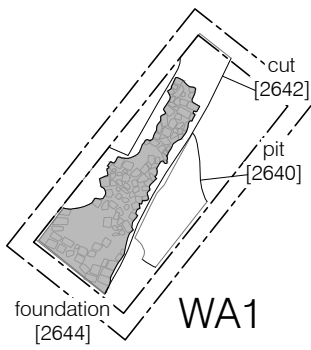
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Figure 5  
Phase 4c  
1:100 at A4

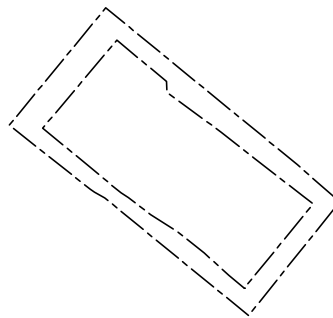


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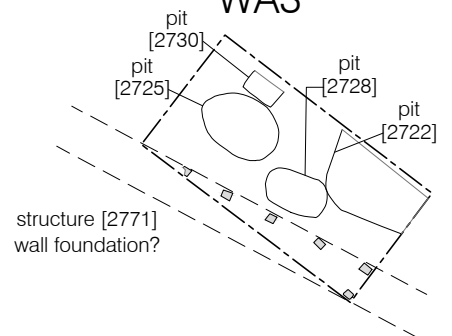
Figure 6  
Phase 5a  
1:100 at A4



WA2

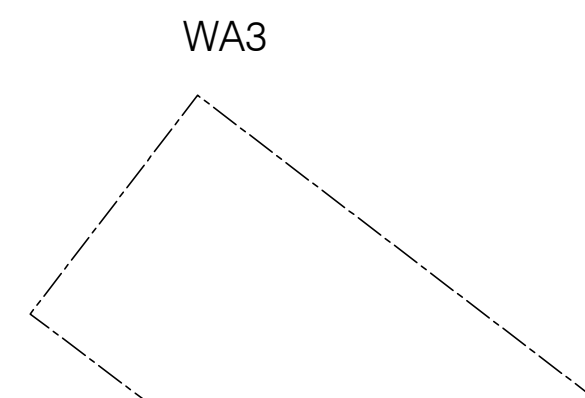
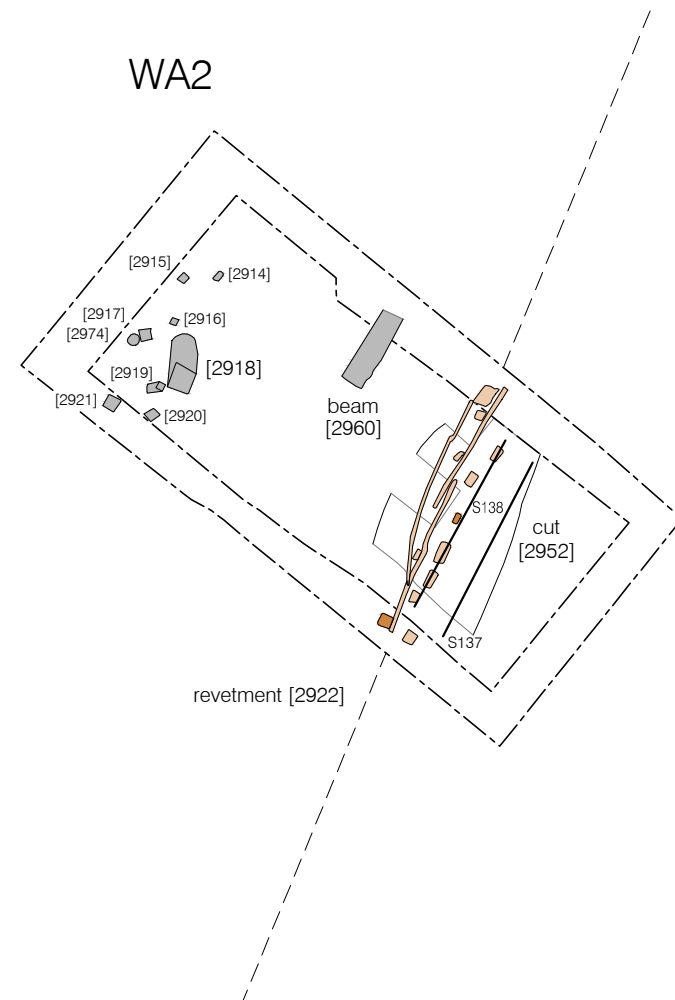


WA3



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Figure 7  
Phase 5b  
1:100 at A4

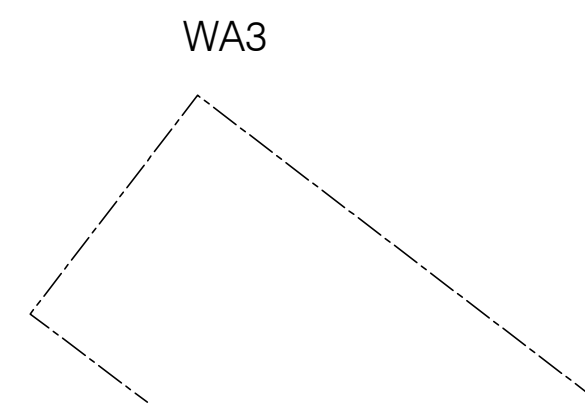
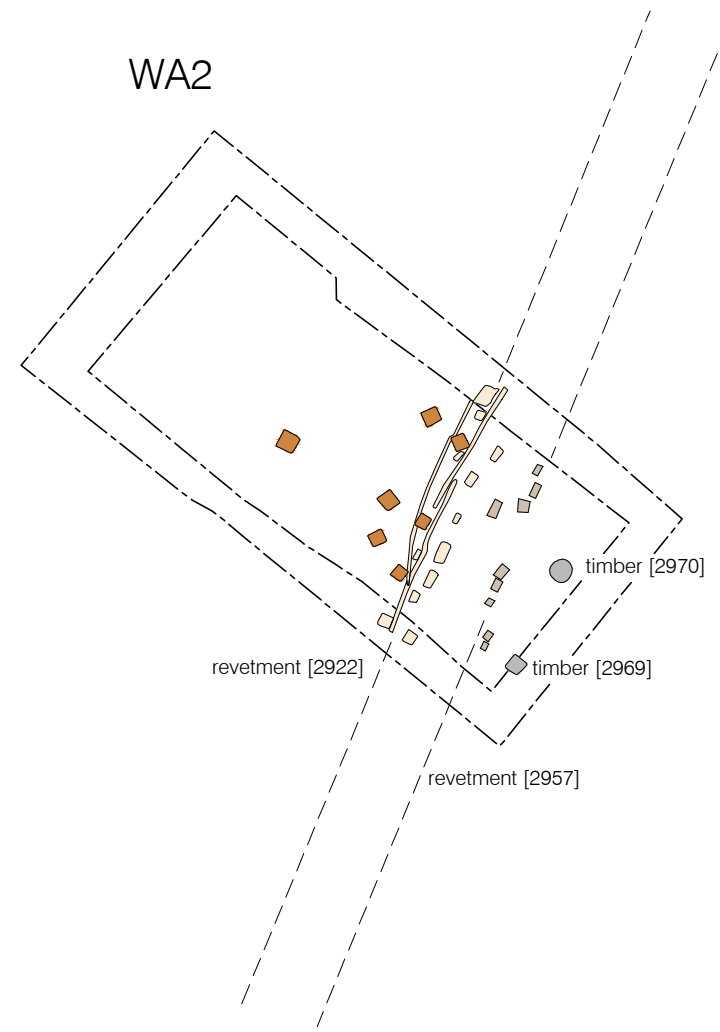
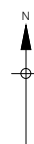


- Revetment [2922]
- Revetment [2922] later addition



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Figure 8  
Phase 5bi  
1:50 at A4



- Revetment [2922]
- Revetment [2922] later additions
- Revetment [2957]

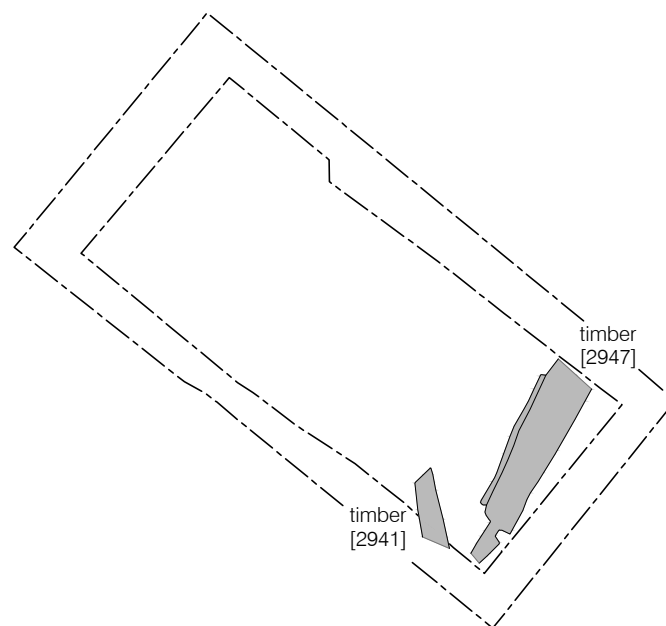
0 2.5m

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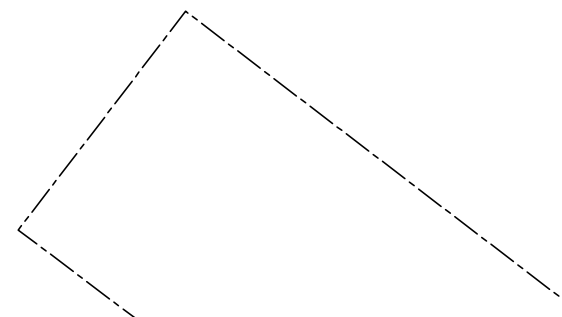
Figure 9  
Phase 5bii  
1:50 at A4



WA2

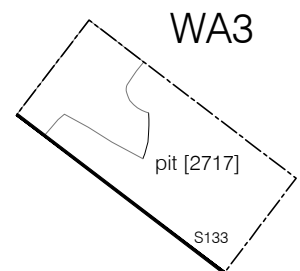
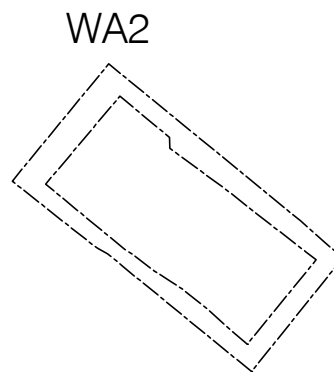
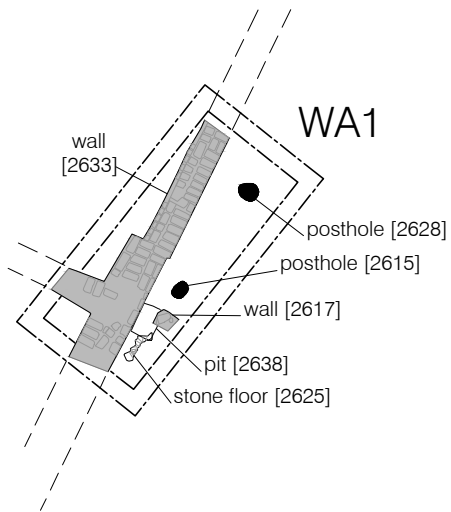


WA3



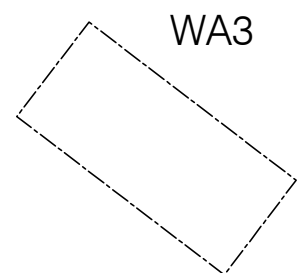
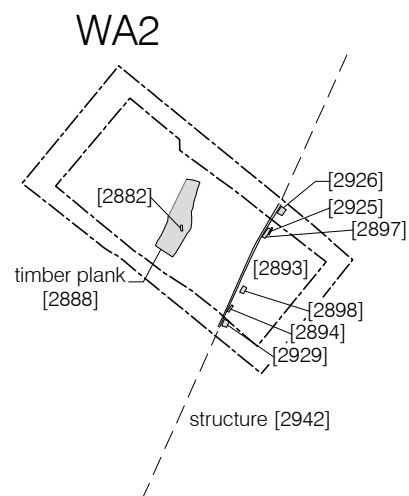
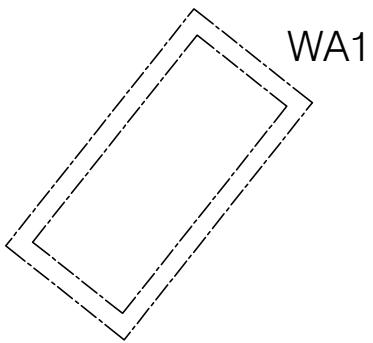
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Figure 10  
Phase 5biii  
1:50 at A4



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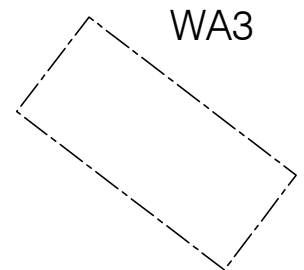
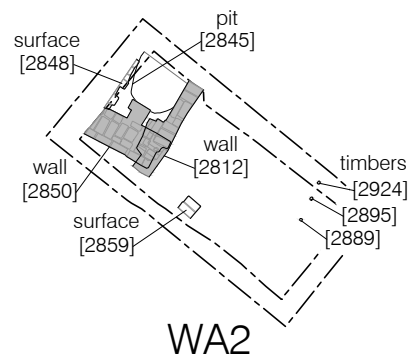
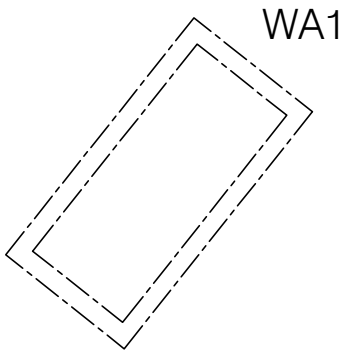
Figure 11  
Phase 6a  
1:100 at A4



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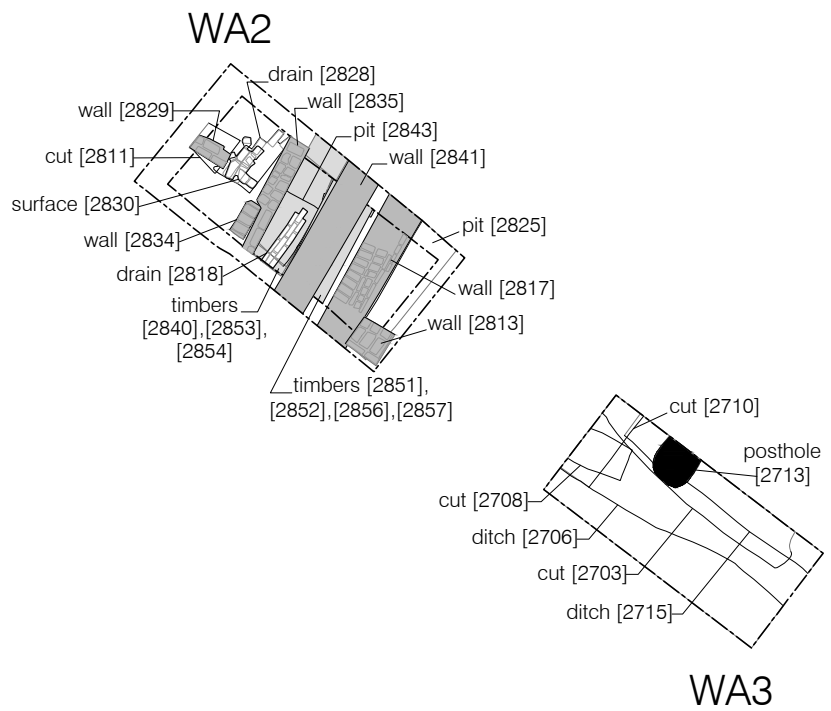
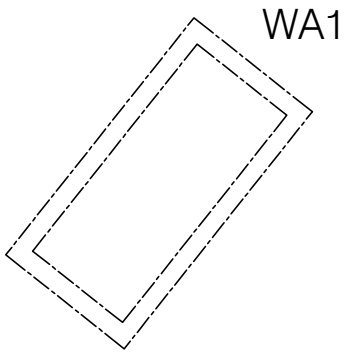
Figure 12  
Phase 6ai  
1:100 at A4





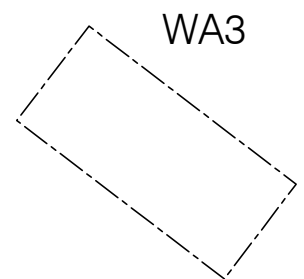
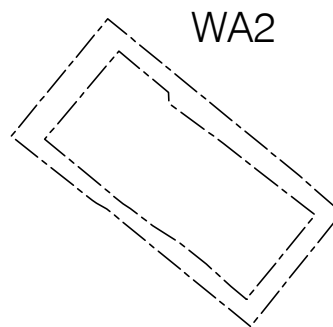
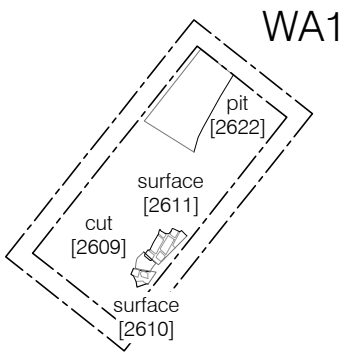
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Figure 13  
Phase 6aii  
1:100 at A4



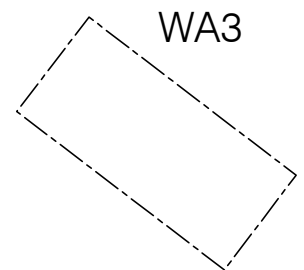
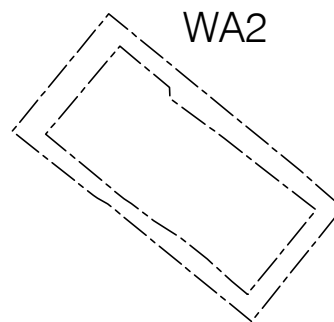
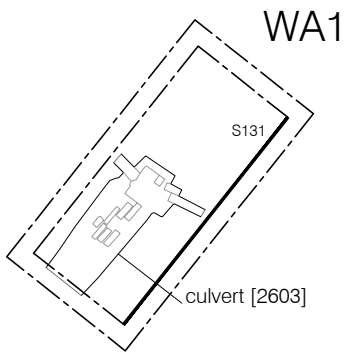
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Figure 14  
Phase 6b  
1:100 at A4



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Figure 15  
Phase 6bi  
1:100 at A4



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Figure 16  
Phase 6bii  
1:100 at A4





Plate 1: View to north-west of underlying alluvial clay [2677] at project level, Trench WA1



Plate 2: Revetment [2922] view to west, 0.5m scale, Trench WA2



Plate 3: Recycled timbers used as foundation [2851]/[2852], 0.5m scale, Trench WA2





Plate 4: Overview of parallel post-medieval walls [2835]/[2850] with timber foundations [2851]/[2852],  
Trench WA2





Plate 5: Brick culvert [2603], view to north-west, 0.5m scale, Trench WA1

## **Phased Discussion**

### **Phase 1: Natural**

Natural Pleistocene gravels were recorded within all trenches by augering beyond project level. These were recorded between –2.80m OD and –2.60m OD, and may be correlated with the Shepperton gravel formation. This horizon was overlain by a 2.5m thickness of late fluvial sands and silts. These levels correlate well with the findings from the main assessment area (TAA10), and those from the Western Approach Trenches (TAA9) to the immediate west of the investigation area.

### **Phase 2/3: Prehistoric/Roman**

No firmly identified traces of the Bronze Age peat horizon, as seen in the main TAA10 assessment area, were identified within this phase of excavations. A distinctive peaty band was noted within Trench WA3, but further analysis is required before this can be firmly associated with other peat horizons. No residual artefacts of a prehistoric date were recovered from the investigations, which suggest that occupation and exploitation of this area was limited at this time, or alternatively that the eyot edge environment and flooding have since removed these ephemeral traces.

A number of residual Roman artefacts were recovered from later deposits. These tended to cluster within the earlier medieval deposits (Phase 4a/4b) and may indicate the truncation of Roman horizons during the medieval development of the area. However, as stated previously, the proximity of Guy's Channel to the area under consideration is likely to have transported earlier material within flood deposits from other locations.

### **Phase 4: Medieval**

#### Phase 4a – 11th to 13th Century

Undifferentiated alluvial silts were identified at project level for Trenches WA1 and WA3. These were recorded between 0.70m OD and 1.01m OD, and as such are comparable with the results from the main assessment area that identified these deposits at 1.06m OD to the immediate east. A number of cut features in Trench WA3 (pits and stakeholes) are likely to represent channel margin activity and the disposal of domestic refuse. The boundaries between these features were diffuse and uneven indicative of repeated episodes of flooding.

#### Phase 4b – Late 15th to early 16th Century

Further evidence of channel margin activity in the form of dumped deposits, levelling and refuse pits were encountered within Trenches WA1 and WA3. Only ground consolidation deposits were identified in WA2. At least two broad phases of such activity were identified in easterly Trench WA3, sub-divided by alluvial material indicative that flooding continued during this period. The material

culture recovered from this phase of activity included no indication of higher status items, as seen within trenches belonging to the main TAA10 scheme of works.

The only indications of potential property boundaries dating to this period derived from Trench WA1 and a possible north-east south-west aligned ditch, located in the south of the trench. This feature did not continue into adjacent trenches and the exact function remains unclear. However, this was clearly a deliberately cut feature along a linear alignment, and may represent a subsidiary channel/boundary leading into Guy's Channel to the east.

#### Phase 4c – Early to Mid 16th Century

Further evidence of ground raising and pitting was encountered within Trenches WA1 and WA3 dated to this phase. The assemblages of material recovered were comparable to those from earlier Phase 4b and suggests more domestic rather than industrial occupation in the near vicinity.

#### **Early Post-Medieval**

#### Phases 5a and 5b – Mid to Late 16th Century/Late 16th to early 17th Century

Only one trench yielded evidence relating to earlier Phase 5a activity. This comprised a single refuse pit and ground consolidation layers within Trench WA1. By the later 16th to early 17th century construction within this trench was evident in the form of a brick foundation. This is likely to correspond with a small complex of buildings within side streets between Dean Street (later to become Stainer Street) and Joiner Street to the east and west respectively. The supposed basement level of 2.01m OD compares reasonably well with other properties identified archaeologically (e.g. a floor level for a Phase 5b property in Trench D2 at 2.46m OD).

Activity within eastern Trench WA3 comprised a series of ground consolidation layers and refuse pits. These were identified at a comparable elevation to features identified within Trench WA1. Evidence of construction was recorded in the south of the trench with a row of driven timber piles, assumed to represent the piled foundations for an overlying structure. This is likely to represent part of the same complex as the foundations identified in Trench WA1. The brick types recovered from features of this phase were comparable to examples identified in industrial surfaces in Main Assessment 10 Trench A3. However, this implication of industrial activities was not supported by the pottery assemblage, which contained no industrial forms and was entirely domestic in nature.

Central Trench WA2 contained evidence of water management, a type of activity prevalent within the earlier assessment trenches. The revetted channel passed through the eastern limits of the trench along a north-east south-west alignment and had been reinforced along its western bank by a substantial pile and plank revetment. Structure [2922] was identified from 1.80m OD but is likely to have been horizontally truncated by later construction. Numerous timber piles to the west of the structure are likely to relate to possible land ties and/or piled foundations for overlying structures. It seems that towards the end of this period the channel was deliberately capped and backfilled with

building rubble following a period of abandonment and collapse of the original revetment. At least two water channels are depicted on Morgan's map of 1682 as running along this alignment to the immediate west of 'The Maze'. The most westerly of these is depicted as passing straight between Trenches WA2 and WA3 and is therefore likely to correspond with the channel identified archaeologically.

## **Phase 6: Post-medieval**

### Phase 6a – 17th to 18th Century

The earlier revetment identified in central Trench WA2 was modified during the later 17th to 18th centuries with the construction of a later structure [2942] within the footprint of the former channel. The area to the west of these was then raised again, with timber planking potentially representing duck boards to counteract the waterlogged nature of the area. The channel fell out of use by the end of this period. Increased construction was also evident within the previously undeveloped central and western limits of the trench and were interpreted as the basement levels of properties within a small complex adjacent, but running roughly parallel to 'Dean Street'.

Further evidence for this complex was encountered within Trench WA1 and comprised the superposition of later walls over an earlier foundation. Ground raising deposits and pitting to the east of this may suggest this to have formed part of an external courtyard adjacent to a surrounding property.

Activity was also limited during this period within Trench WA3. Cartographic sources suggest this trench lay roughly within the footprint of a garden/backyard belonging to one of a series of terraced properties lining the western side of Dean Street at this time. The identified layers of dumped domestic debris and refuse pits would appear to support this interpretation. The material culture attributed to this phase of activity contained a few rare examples of imported glass from Venice, which would seem to be out of place in this area as high status items.

### Phase 6b – 18th to 19th Century

Similarly to the earlier assessment trenches (TAA10) activity recorded during this phase relates to the last phase of use for the land immediately prior to the construction of the extant railway arches. This section of the arches was constructed by 1841.

Activity within Trench WA3 dating to this period was limited to levelling deposits and shallow cut features. These, similarly to Phase 6a, were interpreted as being associated with a former property along Dean Street.

Modifications to earlier properties identified within Trenches WA1 and WA2 were made during this period. A brick floor was installed to the east of the earlier boundary wall within Trench WA1 and within the complex formerly identified in the west of Trench WA2. The latter space was also

reinforced and subdivided by additional walls and features associated with drainage. The assemblage of building material recovered from this phase of activity and high proportion of 18th- and 19th-century material testifies to the extensive residential and commercial development in this part of Southwark.

Additional features associated with water management/drainage superseded earlier brickwork within Trench WA1. The construction of a brick culvert with associated manhole lay directly over earlier masonry, but on a very slightly different alignment and appears to have made use of the earlier boundary wall as a foundation. This feature and the associated levelling deposits are likely to coincide with or post date the construction of the extant arches.

The construction of parallel walls within Trench WA2 are evidence of the abandonment of earlier timber revetting. However, the walls may have been utilised to channel the former watercourse and prevent flooding into adjacent areas. The use of timber planking as foundation material also suggests a deliberate dismantling of the revetment and recycling of materials. These constructions may therefore coincide with developments associated with the extant arches and have been put in place to facilitate the construction of the railways.

## **Contents of the Archive**

### **Paper Records**

- |                        |               |
|------------------------|---------------|
| • Context Sheets       | 373 Sheets    |
| • Environmental sheets | 8 Sheets      |
| • Registers            | 19 Sheets     |
| • Plans & Sections     | c. 217 Sheets |

### **Finds**

- |                                   |           |
|-----------------------------------|-----------|
| • Bone                            | 31 boxes  |
| • Clay Tobacco Pipe               | 2 boxes   |
| • Glass                           | 2 boxes   |
| • Pot                             | 17 boxes  |
| • Small finds                     | 3 boxes   |
| • Leather                         | 1 box     |
| • Ceramic Building Material/Stone | 1 crate   |
| • Timber                          | 40 pieces |

### **Photographic Record**

- |                   |            |
|-------------------|------------|
| • Digital (jpegs) | 16 Folders |
|-------------------|------------|

### **Finds Reports**

## Post-Roman Pottery Assessment

Chris Jarrett

This appendix considers only the pottery recovered from BVM12 Trenches WA1-3 which encompass contexts [2600] to [2977]. The methodology for assessing this pottery follows that for the earlier phases of archaeological work (Contexts [1] to [2599]). The quantification of the pottery considered here consists of 2144 sherds, 1649 ENVs, 58.680kg and they were recovered from 134 contexts. Additionally eighteen sherds and 968g of pottery are unstratified (ENVs were not calculated for this material). The condition of the pottery is good, ranging from sherd material to forms with complete profiles and very little of the material is abraded, although the tin-glazed wares are notably affected by wet depositional circumstances and the designs were often obscured by the discolouration of the glaze. The ceramic profile of this phase of archaeological work is similar to the previous one with medieval pottery, (130 sherds/114 ENV/2.981kg) particularly dated 1350-1500, less frequent than post-medieval wares (2048 sherds/1556 ENV/57.185kg). Sixteenth-century pottery groups are well represented on both phases of archaeological work, although from WA1-3 transitional fine redwares probably from an Essex source are noted in a small but significant quantity (and not recorded previously on BVM12) while 18th-century groups of pottery are also more common. The range of imports recorded on the WA1-3 areas is similar to that recorded previously, except for the addition of a singular sherd of medieval Valencian lustreware (VALM) (Context [2666]) and Andalucian coarseware (ANDCO) (Context [2885]). No post-Roman pottery industrial forms were recorded during this period of work and the groups of pottery on the whole appear to be very domestic.

Two vessels require illustration. Further analysis on the pottery for publication should concentrate on the 16th-century groups to demonstrate how they compare to the previously excavated contemporary ceramic groups on the site.

Context	Assemblage size	SC	ENV	Weight (g)	Context ED	Context LD	Context considered date
2600	S	10	8	128	1770	1840	1800-1840
2601	M	56	53	480	1820	1900	Mid 19th century
2602	S	2	2	5	1550	1900	Late 16th - mid 17th century
2604	S	8	8	309	1580	1700	1580-1700
2607	S	8	7	365	1770	1840	1770-1830
2612	S	3	3	22	1680	1800	Late 18th century
2613	S	1	1	1	1590	1900	18th century
2614	S	2	2	21	1550	1700	1550-1600
2616	S	1	1	2	1550	1700	1550-1700
2618	S	4	4	25	1630	1680	1630-1680
2619	S	1	1	43	1580	1900	1580-1700
2621	S	4	3	46	1580	1700	1580-1650
2626	M	37	26	846	1805	1840	1805-1840
2627	S	1	1	4	1550	1900	1550-1900
2631	S	4	3	307	1480	1600	1480-1600

Context	Assemblage size	SC	ENV	Weight (g)	Context ED	Context LD	Context considered date
2632	S	19	17	270	1550	1700	1550-1600
2634	S	2	2	37	1480	1600	1480-1600
2635	S	27	18	1582	1580	1700	1580-1615
2636	S	1	1	23	1480	1650	1480-1650
2639	S	2	1	206	1580	1700	Late 16th – early 17th century
2644	S	1	1	21	1080	1200	1080-1200
2645	S	4	4	186	1550	1700	1550-1600
2646	S	3	3	25	1550	1700	1550-1600
2647	S	21	17	639	1550	1580	1550-1580
2649	S	3	3	21	1550	1700	1550-1600
2650	S	11	10	154	1480	1550	1480-1550
2651	M	34	29	914	1500	1630	1500-1550
2653	S	19	17	526	1480	1600	1480-1600
2654	S	10	10	310	1500	1630	1480-1550
2656	S	18	15	356	1500	1600	1500-1550
2659	S	10	8	83	1480	1550	1480-1550
2662	S	5	4	250	1480	1600	1480-1600
2664	S	5	4	409	1480	1600	1480-1600
2665	S	8	5	303	1480	1600	1480-1600
2666	S	10	10	74	1430	1500	1430-1500
2667	S	7	6	387	1480	1600	Mid 16th century
2668	S	2	2	63	1480	1600	Mid 16th century
2670	S	13	11	515	1480	1600	1480-1550
2671	S	8	7	319	1480	1600	1480-1550
2673	S	2	2	14	1480	1600	1480-1600
2675	S	4	4	21	1400	1600	1400-1500
2676	S	16	11	314	1500	1630	1500-1550
2677	S	7	7	966	1080	1350	1080-1350
2701	S	5	2	74	1760	1830	1760-1830
2702	S	18	16	477	1700	1900	1730-1800
2704	S	36	31	887	1760	1830	1760-1780
2705	S	15	15	182	1760	1830	1760-1780
2707	S	5	5	95	1670	1900	18th century
2709	S	12	10	392	1680	1800	1680-1700
2711	S	14	14	253	1630	1680	1630-1680
2712	S	1	1	23	1480	1650	1480-1650
2714	S	14	8	242	1680	1710	1680-1700
2716	S	17	16	619	1630	1680	1630-1650
2718	S	13	11	355	1630	1700	1630-1700
2719	S	29	26	712	1630	1700	1630-1700
2720	M	61	56	1533	1580	1700	1580-1630
2721	M	47	42	959	1580	1900	1580-1600
2723	S	22	21	476	1550	1700	1550-1600
2724	S	4	4	56	1580	1900	1580-1600
2726	S	10	9	228	1580	1700	1580-1600
2727	S	10	9	226	1612	1650	1612-1650
2731	S	7	6	70	1612	1650	1612-1650

Context	Assemblage size	SC	ENV	Weight (g)	Context ED	Context LD	Context considered date
2732	S	14	14	299	1550	1700	1550-1600
2733	S	13	12	208	1500	1580	1500-1580
2734	S	23	16	451	1480	1600	1480-1550
2735	S	10	5	211	1480	1600	1480-1500
2737	S	3	3	58	1480	1600	1480-1600
2738	S	2	2	19	1480	1600	1480-1600
2740	S	5	5	122	1500	1580	1500-1580
2742	S	3	3	33	1550	1580	1550-1580
2744	S	3	3	151	1480	1550	1480-1550
2746	S	22	16	796	1500	1550	1500-1550
2748	S	2	2	31	1480	1600	1480-1500
2750	S	3	2	57	1480	1600	1480-1600
2752	S	8	8	165	1440	1600	1440-1500
2755	S	2	2	50	1240	1400	1240-1400
2756	S	11	9	225	1580	1700	1580-1700*
2761	S	6	6	22	1350	1650	1350-1500
2763	S	4	4	662	1480	1600	1480-1600
2764	S	7	5	339	1480	1600	1480-1550
2765	S	2	2	62	1480	1600	1480-1600
2766	S	3	3	71	1080	1200	1080-1200
2773	S	9	9	127	1400	1500	1400-1500
2774	S	6	6	64	1340	1400	1340-1400
2788	S	3	3	12	1080	1350	1180-1350
2792	S	17	11	171	1080	1350	1180-1350
2807	M	32	32	678	1820	1900	1820-1900
2808	M	64	50	2043	1720	1780	1720-1760
2810	S	5	4	122	1600	1800	1600-1800
2819	S	1	1	38	1580	1900	1580-1900
2821	S	8	8	268	1820	1900	1820-1900
2823	S	20	17	627	1720	1760	1720-1760
2824	M	43	39	1036	1745	1846	1745-1760
2826	L	5	4	131	1720	1780	1750-1789
2827	S	1	1	15	1580	1900	1580-1900
2832	S	1	1	4	1580	1900	1580-1900
2837	L	116	76	3152	1680	1800	1680-1720
2839	S	21	20	435	1720	1780	1720-1760
2840	S	1	1	4	1590	1900	18th century
2842	S	5	5	238	1720	1780	19th century
2844	S	1	1	3	1570	1846	17th century
2846	S	3	3	56	1580	1900	1580-1900
2847	S	4	4	47	1580	1900	1580-1650
2849	S	4	3	30	1630	1680	Early 17th -18th century
2853	S	13	12	85	1830	1900	Mid 19th century
2854	L	120	75	1428	1830	1900	Mid 19th century
2855	M	75	50	1595	1740	1780	1740-1760
2860	S	6	5	144	1580	1700	1580-1700
2861	L	202	88	6161	1740	1780	1740-1760



Context	Assemblage size	SC	ENV	Weight (g)	Context ED	Context LD	Context considered date
2864	S	4	4	110	1580	1900	1580-1700
2869	S	3	3	42	1550	1700	1550-1600
2872	S	2	2	38	1480	1650	1480-1650
2873	S	8	6	618	1580	1700	1580-1700
2877	S	19	19	402	1580	1900	Late 16th – early 17th century
2881	M	96	54	4120	1701	1711	Mid 18th century
2883	S	14	11	306	1630	1700	Mid – late 18th century
2884	S	2	2	80	1580	1900	1580-1700
2885	M	82	53	3591	1660	1870	1660-1700
2886	M	34	21	587	1630	1846	1630-1680
2887	S	10	10	256	1600	1800	1600-1630
2931	S	5	5	277	1480	1660	1480-1550
2932	M	57	52	2083	1660	1800	1660-1680
2934	S	3	1	22	1480	1600	1480-1600
2939	M	55	43	1640	1580	1700	1580-1600
2940	S	2	2	16	1580	1700	1580-1700
2943	S	1	1	1	1570	1700	1570-1700
2944	S	2	2	236	1580	1900	1580-1650
2945	S	7	7	265	1580	1900	1580-1700
2948	S	17	14	779	1580	1700	Late 16th –early 17th century
2951	S	3	3	100	1580	1900	1580-1650
2956	S	16	15	710	1580	1900	1580-1600
2958	S	2	2	15	1480	1600	1480-1600
2976	S	8	6	62	1580	1700	Late 16th –early 17th century
2977	S	6	6	127	1580	1700	Late 16th –early 17th century

Table 2: BVM12, Trenches WA1-3: Distribution of pottery types showing individual contexts containing pottery, showing the number of sherds (SC), estimated number of vessels (ENVs) and weight, the date range of the latest pottery type (Context ED/LD) and a suggested deposition date.

## Clay Tobacco Pipe Assessment

**Chris Jarrett**

This appendix considers only the clay tobacco pipes recovered from BVM12 Trenches WA1-3 which take in contexts [2600] to [2939]. The methodology for assessing this material adheres to that for the earlier phases of archaeological work (Contexts [1] to [2599]). This part of the assemblage consists of 480 fragments, consisting of 155 bowls, 21 nibs (mouth pieces) and 304 stems and recovered from 50 contexts. Additionally two bowls were unstratified. The condition of the material is much the same as that recovered from the previous archaeological work on the site, although eighteen fragmentary bowls could not be assigned to a type and 22 bowls are considered residual. The clay tobacco pipe bowl types have a date range of 1610-1860 with the most frequent bowl type recorded as the 1660-80 dated spurred AO15 shape (27 examples), followed by the 1680-1710 dated AO22 form, and

recorded as eighteen examples. Twenty-three bowls are maker marked, while two 1730-80 dated OS12 bowls have a distinctive moulded ridge on the base of the heel (context [2855], sf 406 and sf 408). Also of interest is an AO20 bowl with the probable pre-firing initials of J and either C, G or O incised at the base of the back of the bowl (Context [2881], sf 416). Another AO22 bowl is of significance for having on its back a circular stamp with the initials E F in relief (Context [2823], sf 427). There are a wide range of initials on the 18th- and 19th-century maker marked bowls although each combination of initials only occurs as one or two instances. Most of these initials were previously recorded in the earlier phase of archaeological work. None of the clay tobacco pipes from this part of the BVM12 excavation conclusively shows evidence for clay tobacco pipe manufacture, which was recorded previously on the excavation.

The main significance of the clay tobacco pipes under consideration here is that they complement the assemblages from the other Thameslink excavations and help to understand the local clay tobacco pipe industry. Two bowls are recommended for illustration to supplement the publication text.

Context	Fragment count	Assemblage size	Context ED	Context LD	Context considered date
2600	10	S	1770	1845	1800-1845
2601	13	S	1770	1845	1800-1845
2602	1	S	1580	1900	1580-1900
2604	3	S	1580	1900	1580-1900
2607	3	S	1660	1680	1730-1910
2612	2	S	1580	1900	1580-1900
2613	1	S	1760	1910	1760-1910
2621	4	S	1760	1910	1760-1910
2623	1	S	1760	1910	1760-1910
2626	7	S	1820	1860	1820-1860
2627	1	S	1580	1910	1580-1910
2701	2	S	1580	1910	1580-1910
2702	2	S	1580	1910	1580-1910
2704	10	S	1580	1910	1580-1910
2705	11	S	1680	1710	1680-1710
2709	4	S	1680	1710	1680-1710
2712	1	S	1770	1845	1770-1845
2714	2	S	1700	1740	1770-1845
2716	4	S	1700	1740	1770-1845
2718	1	S	1580	1910	1580-1730
2719	3	S	1580	1910	1580-1910
2720	4	S	1680	1710	1680-1710
2807	7	S	1730	1780	1730-1780
2808	29	S	1730	1780	1730-1780
2810	1	S	1580	1910	1580-1910
2823	27	S	1730	1780	1730-1780
2824	12	S	1730	1780	1730-1780
2826	1	S	1580	1910	1580-1910
2827	1	S	1580	1910	1580-1910

Context	Fragment count	Assemblage size	Context ED	Context LD	Context considered date
2831	1	S	1580	1910	1580-1910
2833	2	S	1580	1910	1580-1910
2837	33	M	1700	1710	1700-1710
2838	10	S	1700	1740	1700-1710
2840	1	S	1700	1710	1700-1710
2842	1	S	1680	1710	1680-1710
2846	2	S	1580	1910	1680-1740
2849	4	S	1700	1740	1700-1740
2854	16	S	1820	1860	1820-1860
2855	25	S	1760	1800	1760-1780
2860	15	S	1660	1680	1660-1680
2861	97	L	1730	1780	1730-1780
2873	2	S	1730	1780	1730-1780
2881	48	M	1730	1780	1730-1780
2883	1	S	1580	1910	1580-1910
2884	1	S	1580	1910	1580-1910
2885	40	M	1700	1740	1700-1710
2887	1	S	1580	1910	1580-1910
2932	10	S	1660	1680	c. 1640
2935	1	S	1640	1660	1640-1660
2939	1	S	1640	1660	1640-1660

Table 3: BVM12 (WA1-3): distribution of the clay tobacco pipes showing for each context clay tobacco pipes occurred in the number of fragments, size of the assemblage, the date range of the latest bowl type (Context ED and Context LD) and a spot date (context considered date). A date range of 1580-1910 denotes that only clay tobacco pipe stems were present in the context.

## Glass Assessment

### Chris Jarrett

This appendix considers only the glass recovered from BVM12 Trenches WA1-3 (Contexts [2600] to [2977]). The methodology for assessing this glass follows that for the earlier phases of archaeological work (Contexts [1] to [2599]). The glass from this phase of work consists of 107 fragments representing some 62 vessels and this was recovered from 35 contexts as small sized groups (under 30 fragments). None of the glass was unstratified. The glass is in a fragmentary state and does not appear to be abraded, although naturally weathered glass is typically present. General forms could be identified. The glass dates entirely to the post-medieval period, except for a very decayed fragment of glass recovered from context [2624] which is most likely to be of a medieval or early post-medieval date. A number of 16th to 17th-century high socio-economic status items were recovered from the WA1-3 work. These consist of the base of a 17th-century plain dish (Context [2939]) and cylindrical beakers; one is decorated with thick-cut horizontal trailing and it is dated c. 1575-1650 (Context [2948]) and another has an optically blown mesh design, dated c. 1575-1675 (Context [2732]). A very

rare find recovered from context [2977] is another cylindrical beaker with *vetro a retorti* decoration and dated to the late 16th-early 17th century. This is almost certainly a product of Venice. Also of probably the same source is a fragment of soda vessel glass with applied curving strips with rounded ends, four of which are enamelled in white and the other in blue. This item is probably 16th-century in date and was recovered from context [2635]. In natural olive green glass was noted a rounded bottle broadly dated to the 16th-18th century and found in context [2771]. The majority of the rest of the glass consisted of vessel glass and particularly fragmentary wine bottles, some with broadly dated string rim finishes. A small case bottle was recorded in context [2626] and single examples of moulded beer bottles dating to after c. 1830 were found in contexts [2632] and [2634]. Window glass was also noted in many of the contexts containing glass and one black painted decorated fragment is of particular note and that was found in context [2732], dated c. 1575-1675.

The glass from the WA1-WA3 is comparable to that recovered from the previous work on BVM12. Certainly the early post-medieval glass has significance at a local level and it is recommended that it is published in Monograph 2 and related where possible to high status residences located in the immediate area. Four items require illustrating/photographing.

Context	No. frags	ENV	Spot date	Window glass present
2601	1	1	Mid 18th -19th century	
2602	1	2	18th - 19th century	
2607	1	1	Post-medieval	Yes
2614	1	1	Post-medieval	Yes
2621	1	1	Post-medieval	Yes
2623	1	1	Post-medieval	Yes
2624	1	1	Medieval/early post-medieval	Yes
2626	9	1	c. 1580-1900	Yes
2632	1	1	c.1830 onwards	
2634	1	1	c.1830 onwards	
2635	2	2	16th century	
2701	2	1	c. 1780-90	
2702	1	1	Post-medieval	
2704	2	2	Mid 18th -19th century	
2705	2	2	Post-medieval	Yes
2709	1	1	Mid 18th - 19th century	
2711	1	1	16th -18th century	
2716	1	1	Post-medieval	
2732	2	2	c. 1575-1675	Yes
2734	1	1	Post-medieval	
2808	4	4	Post-medieval	Yes
2837	2	2	Post-medieval	Yes
2838	1	1	Post-medieval	
2847	2	2	Post-medieval	
2849	2	2	Late 17th - early 18th century	
2853	1	1	Post-medieval	
2854	7	4	Mid 18th - 19th century	Yes

Context	No. frags	ENV	Spot date	Window glass present
2855	9	5	Mid 18th century	Yes
2861	35	8	Late 17th - mid 18th century	
2881	7	1	Late 17th - mid 18th century	Yes
2885	2	2	Mid 17th - 19th century	Yes
2887	3	2	Post-medieval	Yes
2939	2	1	1600-1700	
2948	1	1	1575-1650	
2977	1	1	Late 16th – early 17th century	

Table 4: BVM12, WA1-3: Distribution of the glass showing for each context it occurs quantification by number of fragments and estimated number of vessels (ENV) and a considered deposition date, besides the presence of window glass.

## The Metal, Small Finds and Leather

### Märit Gaimster

In all, over 400 individual metal, small finds and leather objects were retrieved from the WA 1–3 trenches; they are all listed in Table 5. Leather objects and slag were only rapidly assessed at this stage of work. Awaiting further phasing, associated pottery indicates the material belongs predominantly to Phase 4 and 5 with assemblages dating from the late 15th to early 17th centuries, the 17th and 18th centuries respectively. The early modern material, with around 100 finds, reflects the previously elusive period that is now far better understood with the recent publication of nearby waterfront sites (Egan 2005). Finds include characteristic Tudor and Stuart forms, such as dress clasps (sf 565), so-called purse rings (sf 445) and lace-chapes (sf 444) but also numerous copper-alloy pins (sf 447, 509–11, 556, 559 and 563–4) and wire (sf 439, 441, 443, 446, 508, 514–15 and 544), indicating possible pin-making. There is also a copper-alloy jeton (sf 555), and an unstratified silver halfcrown of Charles I (sf 569). The potential 17th-century assemblage (around 150 finds), too, includes a remarkable amount of copper-alloy pins, with one context producing nearly 100 individual examples (sf 435–6), as well as copper-alloy wire (sf 437, 440, 448). A bodkin pin (sf 434) is characteristic of the period, with numerous silver examples reported through the Treasure Act (eg. Barton and Hitchcock 2008, 135-37). The type is commonly found in East Anglia, where it has been associated with Dutch immigration and trade contacts. The simpler copper-alloy versions are less well-known, but there are examples from excavations (cf. Margeson 1993, fig. 4 no. 21). One of the main uses for these pins would have been to thread bands or cords in lace-up corsets and bodices, but these multi-purpose objects were also often used as hair- or headdress pins (Margeson 1993, pl. II). A further interesting find is a delicately carved wooden cutlery handle finished with a copper-alloy knob (sf 438). The group of around 120 finds associated with 18th-century pottery, like the previous assemblages, is dominated by copper-alloy pins (sf 546, 549, 554 and 561), with over 100 individual examples. There are also two shoe buckles (sf 433 and 560) and a lead token (sf 547).

The finds from Trenches WA 1–3 should be included in any further publication of metal and small finds from the site. For this purpose, eighteen objects will require x-raying, while the jeton (sf 555) and the lead token (sf 547) will need cleaning by a conservator to aid identification. Around fifteen finds would need to be drawn for publication. The leather finds and slag should be further assessed by specialists.

## Bibliography

Barton, C. and Hitchcock, F. (eds.), 2008. *Treasure Annual Report 2005/6*. Department for Culture, Media and Sport.

Egan, G., 2005. *Material culture in London in an age of transition. Tudor and Stuart period finds c 1450-c 1700 from excavations at riverside sites in Southwark*. Museum of London Archaeology Service Monograph 19.

Margeson, S., 1993. *The Medieval and Post-Medieval Finds from Norwich Survey Excavations*. East Anglian Archaeology 58.

CONTEXT	SF	DESCRIPTION	POT DATE	MATERIAL	OBJECT	NO OF OBJECTS	RECOMMENDATION
0	504	copper-alloy coin; highly corroded; diam. 28mm; ?penny	n/a	copper	coin	1	x-ray
0	524	copper-alloy livery button; shield within ?quadrilobe; back marked 'walter williams london'; diam. 29mm; early 19th century	n/a	copper	button	1	
0	566	copper-alloy ?repair patch; octagonal with reddish copper rivet hammered out through centre; W 28mm	n/a	copper	?repair patch	1	further ident
0	568	copper-alloy pin with solid head; complete; L 43mm	n/a	copper	pin	1	
0	569	silver ?halfcrown of Charles I; complete but irregular/cut; diam. 34mm	n/a	silver	coin	1	further ident
0		leather shoe; part of sole only; WA2	n/a	leather	shoe	1	
2600	503	bone cutlery handle; flat oval section with rounded end; L 85mm	1800-1840	bone	handle	1	
2600		iron nail; incomplete	1800-1840	iron	nail	1	
2601	450	lead ?waste; cut strip; W 8mm; L 75mm	mid-19th c	lead	?waste	1	
2601		iron nails; two incomplete	mid-19th c	iron	nails	2	
2604	505	copper-alloy pin, Caple Type B; complete; L 40mm	1580-1700	copper	pin	1	
2604	506	copper-alloy coin; highly corroded; diam. 26mm; ?halfpenny	1580-1700	copper	coin	1	x-ray

2606		iron strap; substantial; W 60mm; L 190mm+	n/a	iron	strap	1	x-ray
2606		slag; one lump	n/a	slag		1	
2618		slag; one small lump	1630-1680	slag		1	
2626	451	lead window came; fragment only; L 70mm	1805-1840	lead	window came	1	
2626	507	copper-alloy pin/wire; fragment only	1805-1840	copper	pin/wire	1	
2627	508	copper-alloy pin/wire; fragment only	1550-1900	copper	pin/wire	1	
2627		slag; one small lump	1550-1900	slag		1	
2635	452	lead window came; fragment only; L 100mm	1580-1615	lead	window came	1	
2635		slag; one substantial lump	1580-1615	slag		1	
2636	509	copper-alloy pin, Caple Type B; complete; L 20mm	1480-1650	copper	pin	1	
2644		slag; one lump	1080-1200	slag		1	
2645		iron ?nail; L 95mm	1550-1600	iron	?nail	1	x-ray
2647		iron nail; incomplete	1550-1580	iron	nail	1	
2649		iron nail	1550-1600	iron	nail	1	
2650		woolen fabric; fragments only	1480-1550	wool	fabric	1	
2653	431	iron staple; U-shaped with rectangular-section body; L 65mm; now bent out of shape	1480-1600	iron	staple	1	
2653	510	copper-alloy pin with ?solid head; complete; L 46mm	1480-1600	copper	pin	1	x-ray
2653		iron nails; six incomplete	1480-1600	iron	nails	6	
2654		iron pin/wire; fragment only; L 45mm; gauge 2.07mm	1480-1550	iron	pin/wire	1	
2659	511	copper-alloy pin, Caple Type B; complete; L 44mm	1480-1550	copper	pin	1	
2659		iron nails; two complete; one a ?horseshoe nail	1480-1550	iron	nails	2	
2660		iron sheet/vessel; two pieces; 65 x 115mm	n/a	iron	sheet/vessel	1	x-ray
2662		iron nails; three incomplete	1480-1600	iron	nails	3	
2665	428	iron ?handle; flat oval-ended with traces of ?wood; W 20mm; L 80mm+	1480-1600	iron	?handle	1	x-ray
2665		iron nails; two; L 125mm	1480-1600	iron	nails	2	
2666		iron nails; two; L 70 and 55mm	1430-1500	iron	nails	2	
2675	512	copper-alloy mount; 20 x 22mm; hole for fixing in each corner	1400-1500	copper	mount	1	
2676		leather offcuts; three small pieces	1500-1550	leather	offcuts	1	
2677		iron nail	1080-1350	iron	nail	1	
2714	448	copper-alloy wire; L c. 125mm; gauge 1.2mm	1680-1700	copper	wire	1	
2719		iron nail; incomplete	1630-1700	iron	nail	1	
2720		iron nail; incomplete	1580-1630	iron	nail	1	

2721		iron nails; two incomplete	1580-1600	iron	nails	2	
2724		slag; one lump	1580-1600	slag		1	
2726		iron nail; incomplete	1580-1600	iron	nail	1	
2732	514	copper-alloy wire; three cut lengths 50-100mm; gauge 1.07, 1.6 and 1.75mm	1550-1600	copper	wire	3	
2733		slag; two lumps	1500-1580	slag		2	
2746	516	iron nail; L 53mm	1500-1550	iron	nail	1	
2755	518	copper-alloy needle; complete; L 115mm	1240-1400	copper	needle	1	
2755		iron nails; four incomplete	1240-1400	iron	nails	4	
2756	517	iron nails; four incomplete	1580-1700	iron	nails	4	
2761		iron nail; incomplete	1350-1500	iron	nail	1	
2764	515	copper-alloy wire; L 95mm; gauge 1mm	1480-1550	copper	wire	1	
2774	519	iron nails; three incomplete	1340-1400	iron	nails	3	
2792		iron ?mount; curved tapering fragment only; W 20mm; L 90mm	1180-1350	iron	?mount	1	
2807	453	bone fitting; fragment of tapering curved side with narrow open end and wider end threaded; decorated with simple incised line at top and bottom; ht. 40mm	1820-1900	bone	fitting	1	further ident
2807	520	bone brush; leaf-shaped handle, perforated at end, and part of brush plate only; W 20mm; L 75mm+	1820-1900	bone	brush plate	1	
2821	544	copper-alloy wire; L 65mm; gauge 1.32mm	1820-1900	copper	wire	1	
2824		iron nail; incomplete	1745-1760	iron	nail	1	
2827		iron ?object; L 60mm	1580-1900	iron	?object	1	x-ray
2835	553	copper-alloy pins; at least ten Caple Type C, partly embedded in concretion; L 24-32mm	n/a	copper	pins	10	
2837	545	bone comb; double-sided with fine and coarse teeth at either side; fragment only; ht. 45mm+; W 40mm+	1680-1720	bone	comb	1	
2846		iron ?object; 35 x 65mm	1580-1900	iron	?object	1	x-ray
2854		iron nails; two incomplete	mid-19th c	iron	nails	2	
2854		leather shoe; several pieces of sole	mid-19th c	leather	shoe	1	
2855	546	copper-alloy pins; at least nineteen Caple Type C, L 21-34mm	1740-1760	copper	pins	19	
2855		leather shoe; complete sole	1740-1760	leather	shoe	1	
2860		leather offcut; one small piece	1580-1700	leather	offcut	1	
2861	547	lead token; uniface and heavily corroded; diam. 20mm	1740-1760	lead	token	1	clean; further ident



2861	548	?ivory tang-hafted cutlery handle; tapering round-section with bulbous end and carved knop finial; L 70mm	1740-1760	ivory	handle	1	
2861	549	copper-alloy pins; at least 36; L 22-35mm	1740-1760	copper	pins	36	
2861	560	copper-alloy, ?gunmetal, shoe buckle; double-sided trapezoidal with central bar; W30mm; ht. 22mm	1740-1760	copper	buckle	1	
2861		leather shoe; sole and part of uppers	1740-1760	leather	shoe	1	
2861		leather shoe; several parts of uppers	1740-1760	leather	shoe	1	
2861		textile; thin strip of finely woven fabric	1740-1760	textile	fabric	1	
2872		iron ?object; 25 x 70mm	1480-1650	iron	?object	1	x-ray
2881	433	copper-alloy ?shoe buckle; part of moulded frame only; ht. 34mm	mid-18th c	copper	?shoe buckle	1	
2881	551	iron wire; two pieces; L 35 and 40mm; gauge 1.5 and 1.87mm	mid-18th c	iron	wire	2	
2881	552	bone tang-hafted handle; tapering round-section with rounded end perforated for suspension	mid-18th c	bone	handle	1	
2881	554	copper-alloy pins; at least 44 Caple Type C; L 19-31mm; one sturdier pin L 38mm	mid-18th c	copper	pins	44	
2881		leather shoe; sole and part of uppers	mid-18th c	leather	shoe	1	
2881		textile; 85 x 100mm square of finely woven fabric	mid-18th c	textile	fabric	1	
2883	561	copper-alloy pins; five Caple Type C, L 21-28mm; one sturdier with ?solid head; L 60mm	mid-/late 18th c	copper	pins	6	
2885	429	iron sheet waste; triangular offcut; W 60mm; tinned	1660-1700	iron	waste	1	x-ray
2885	557	copper-alloy pins; six Caple Type C; L 23-25mm; one sturdier L 40mm	1660-1700	copper	pins	7	
2885		leather shoe; several parts of uppers	1660-1700	leather	shoe	1	
2886	434	copper-alloy bodkin; complete with spoon finial; L 107mm	1630-1680	copper	bodkin	1	
2886	435	copper-alloy pins; at least 30 Caple Type C; L 23-30mm; one sturdier L 55mm; one with ?solid head, L 63mm	1630-1680	copper	pins	32	
2886	436	copper-alloy pins; at least 65 Caple Type C; L 18-35mm	1630-1680	copper	pins	65	

2886	437	copper-alloy wire; cut length 31mm; gauge 2mm	1630-1680	copper	wire	1	
2886	438	?wooden cutlery handle; finely carved with trilobe terminal and tang fixed with copper-alloy knob; L 52mm	1630-1680	compos	handle	1	further ident
2886	449	iron ?wire; L c. 75mm; gauge 1.58mm	1630-1680	iron	?wire	1	x-ray
2886		textile; small piece of finely woven fabric	1630-1680	textile	fabric	1	
2887	555	copper-alloy jeton; Nuremberg rose-and-orb type; diam. 25mm	1600-1630	copper	jeton	1	clean
2887	556	copper-alloy pins; six Caple Type C; L 25mm	1600-1630	copper	pins	6	
2931	439	copper-alloy wire; two lengths 260 and 480mm; gauge 1 and 1.05mm	1480-1550	copper	wire	2	
2931		leather shoe; two parts of sole only	1480-1550	leather	shoe	1	
2932	430	iron square-section ?balance arm; tapering to fine looped finial; L c. 250mm+	1660-1680	iron	?balance	1	x-ray
2932	440	copper-alloy wire; two cut lengths 75 and 120mm; gauge 1.02 and 1.10mm	1660-1680	copper	wire	2	
2932	558	iron shears; incomplete; part of blade and handle only; L 105mm+	1660-1680	iron	shears	1	x-ray
2932	560	copper-alloy pins; 20 Caple Type C; L 20-30mm; three sturdier L 40mm	1660-1680	copper	pins	23	
2932		iron fitting; moulded strap of thin plate; W 15mm; L 220mm+; ?modern	1660-1680	iron	fitting	1	
2932		leather shoe; complete sole of small child's shoe	1660-1680	leather	shoe	1	
2934		leather shoe; fragment of sole only	1480-1600	leather	shoe	1	
2939	441	copper-alloy wire; three cut lengths 75-145mm; gauge 1.13, 1.40 and 1.52mm	1580-1600	copper	wire	3	
2939	559	copper-alloy pins; at least fifteen Caple Type C; L 23-25mm; two sturdier without heads; L 40mm	1580-1600	copper	pins	17	
2939		leather shoe; incomplete sole only	1580-1600	leather	shoe	1	
2942	442	copper-alloy wire, very fine; L 90mm; gauge 0.44mm	n/a	copper	wire	1	
2942		leather shoe; several parts of sole and uppers	n/a	leather	shoe	1	
2944	443	copper-alloy wire; cut length 250mm; gauge	1580-1650	copper	wire	1	

		1.45mm					
2944		iron pin/wire; L 100mm; gauge c. 2mm	1580-1650	iron	pin/wire	1	
2944		leather shoe; parts of uppers only	1580-1650	leather	shoe	1	
2948	444	copper-alloy lace-chapes; two complete; L 27 and 40mm	late 16th - early 17th c	copper	lace-chapes	2	
2948	445	copper-alloy ring of twisted wire; diam. 15mm; ?purse ring	late 16th - early 17th c	copper	?purse ring	1	
2948	446	copper-alloy wire; very fine; L 40mm; gauge 0.51mm	late 16th - early 17th c	copper	wire	1	
2948	564	copper-alloy pins; seventeen Caple Type C; L 22-31mm	late 16th - early 17th c	copper	pins	17	
2948		leather shoe; fragments only	late 16th - early 17th c	leather	shoe	1	
2948		textile; fragments of finely woven fabric	late 16th - early 17th c	textile	fabric	1	
2951	565	cast copper-alloy dress hook; complete with trapezoid loop and hook; decorated with a triple-lobe design; L 30mm	1580-1650	copper	dress hook	1	
2951	567	iron shears; almost complete side with blade and handle; blade with double recess; L 140mm	1580-1650	iron	shears	1	x-ray
2951		iron ?pin/tool; circular-section body with one flattened D-section end; L 170mm+	1580-1650	iron	?tool	1	x-ray
2951		leather shoe; fragment only	1580-1650	leather	shoe	1	
2953		leather; fragments only	n/a	leather	fragments	1	
2956	432	iron knife; complete with traces of ?wooden scales; six rivets and oval end plate <i>in situ</i> ; L 180mm	1580-1600	iron	knife	1	x-ray
2956	563	copper-alloy pin; complete Caple Type B; L 26mm	1580-1600	copper	pin	1	
2956		leather shoe; fragments of sole and uppers	1580-1600	leather	shoe	1	
2958	562	iron ?gardening trowel; complete socket and part of curved blade; L 185mm+	1480-1600	iron	?garden ing trowel	1	x-ray
2977	447	copper-alloy pins; two complete; Caple Type B, L 28mm; Caple Type C, L 28mm	late 16th - early 17th c	copper	pin	2	
2977		leather shoe; fragments of uppers only	late 16th - early 17th c	leather	shoe	1	

Table 5: Small finds, BVM-12, Trenches WA1-3

## **Building Materials**

**Kevin Hayward**

A brief review of the large (719 examples 188kg) building material assemblage together with a list of spot dates from Trenches WA1 to WA3 (BVM12) follows (Table 6). Comparison between the overall character of this assemblage will be made with the findings from the main excavation (BVM12) including (if any) major discrepancies.

### **The Ceramic Building Material**

The very large ceramic building material assemblage (698 examples, 183kg) from WA1-3 shares a number of similarities with the main BVM12 excavation. First, there is the near absence of Roman ceramic building material. Indeed where it does occur, e.g. [2677] [2792], it is found abraded and intermixed with medieval assemblage, with only one context [2777] yielding just Roman material. This similarity reflects the sites peripheral location lying to the east of the main Roman settlement of Southwark.

The medieval component also has quantities of dumped, glazed peg tile, but lacking the higher status items (glazed patterned Westminster and Penn Tile) seen at BVM12.

There are groups of the same types late medieval/early post-medieval brick as seen on surfaces in BVM12 Trench A3 which provided evidence for some sort of early post-medieval industrial activity such as “smithing”.

The bulk of the assemblage, again consists of mid to late 18th and 19th-century brick structures with the same narrow post Great Fire bricks and mortar types (Clinker rich) as seen at BVM12. This again reflects the extensive residential and commercial development in this part of Southwark, both before and during the construction of the 1830s London Bridge Station.

Other than a dating tool, the building material assemblage offers little in the way of unusual items or rare fabrics. With this in mind there are no requirements for illustration or photography. The assemblage should merely be referred to at publication stage (for the medieval/early post-medieval Monograph) as an extension to the activity from BVM12.

### **The stone**

As with the main excavation, the assemblage of stone is small (22 examples 5.3kg), with very few items of intrinsic value. The exception being another example of a Norwegian ragstone hone from [2724] which requires illustration for the medieval publication.

**Trench WA1**

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2600	2276; 3032r	Post Great Fire brick and early post-medieval peg tile	2	1480	1900	1664	1900	1664-1900	No mortar
2601	3120; 3107; 2276; 3108; 3105	Burnt Kimmeridge Shale and Reigate stone; York stone Kentish ragstone. Fragment; post-medieval peg tile	9	50	1900	1480	1900	1600-1900	No mortar
2603	3032	Deep frogged post Great Fire brick	1	1664	1900	1664	1900	1825-1900	No mortar
2604	2276; 3030	Early post-medieval peg tile and brick	3	1400	1900	1480	1900	1480-1700	No mortar
2607	3046; 3107	Early post-medieval brick; Reigate stone burnt	3	1060	1700	1450	1700	1450-1700	No mortar
2610	3065	Early post-medieval brick reused T3 dark grey mortar	1	1450	1700	1450	1700	1450-1700	1750-1900
2612	2276; 3046; 3065f	Early post-medieval peg tile and brick T2 brown mortar	5	1450	1900	1480	1900	1480-1700	1450-1700
2613	3120	Burnt Kimmeridge Shale;	4	1600	1800	1600	1800	1600-1800	No mortar
2617	3046; 3101	Early post-medieval brick T2 brown lime mortar	1	1450	1700	1450	1700	1450-1709	1450-1700
2618	2276	Early post-medieval peg tile	1	1480	1900	1480	1900	1480-1700	No mortar
2624	2271; 3030	Medieval peg tile and med early post-med brick	2	1180	1800	1180	1800	1400-1700	No mortar
2626	2276	Post medieval peg tile	2	1480	1900	1480	1900	1480-1800	No mortar
2629	2276; 3101	Post medieval peg tile; T9 tuffaceous mortar	2	1480	1900	1490	1900	1480-1800	1300-1650
2632	2271	Medieval peg tile	1	1180	1800	1180	1800	1300-1700	No mortar
2633 South End	3032nr3033; 3046; 3101	Intermediate post Great Fire brick early post-medieval brick, T2 brown lime mortar	2	1450	1725	1664	1725	1664-1725+	1450-1700
2633 North End	3033 3101	Early post-medieval brick T2 brown lime mortar	2	1450	1700	1450	1700	1450-1700	1450-1700
2634	2271; 2276	Post-medieval peg tile	2	1180	1900	1480	1900	1480-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2635	3120; 2271; 2276; 3046; 3101	Burnt Kimmeridge Shale; early post-medieval peg tile and brick; lime mortar	17	1180	1900	1480	1900	1600-1800	No mortar
2637	2271; 2276	Early post-medieval peg tile	3	1180	1900	1480	1900	1480-1700	No mortar
2639	2586; 3030	Early post-medieval peg tile and brick	2	1180	1800	1180	1800	1400-1700	No mortar
2644	3046; 2271; 1977E; 2850E	Vitrified early post-medieval brick sunken margin; glazed Flemish floor tile; early post-medieval peg tile	5	1180	1700	1450	1700	1450-1600+	No mortar
2645	3046; 2271	Early thin post-medieval red brick	2	1180	1700	1450	1700	1450-1700	No mortar
2646	3046; 3101; 2271; 2276	Early post-medieval brick thicker than above T2 brown mortar; medieval and early post-medieval peg tile	4	1180	1900	1480	1900	1480-1700	1450-1700
2647	3046; 2271; 2276	Early post-medieval peg tile and brick	4	1180	1900	1480	1900	1480-1700	No mortar
2648	2271; 2276	Slither of medieval peg tile and early post-medieval peg tile	2	1180	1900	1480	1900	1480-1700	No mortar
2650	2271; 2587	Medieval peg tile early post-med	3	1180	1800	1180	1800	1300-1700	No mortar
2651	2271nr2276; 3046	Possibly medieval peg tile no glaze; early post-medieval brick	7	1180	1800	1180	1800	1450-1700	No mortar
2653	3046; 2271; 2276; 2850	Early post-medieval brick Flemish sandy glaze floor tile; medieval and early post-medieval peg tile	5	1180	1900	1480	1900	1480-1700	No mortar
2654	3033; 2276	Post-medieval peg tile and red brick burnt	3	1450	1900	1480	1900	1500-1800	Mortar burnt
2656	2587; 2276	Abraded medieval peg tile; burnt reused post-medieval peg tile	6	1240	1900	1480	1900	1480-1800	Mortar burnt
2659	2271; 2276; NOAK; 3101	T7 tuffaceous mortar; medieval	6	1180	1900	1480	1900	1480-1650+	1300-1600

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2660	2271	peg tile and early post-medieval Prob. medieval peg tile no glaze	1	1180	1800	1180	1800	1300-1700	No mortar
2662	2271	Prob medieval peg tile no glaze	1	1180	1800	1180	1800	1300-1700	No mortar
2664	3046	Early post-medieval brick	1	1450	1700	1450	1700	1450-1700+	No mortar
2665	2587; 2271	Medieval peg tile	3	1180	1800	1180	1800	1300-1700	No mortar
2666	2271; 2587; 3107	Medieval peg tile glazed; burnt Reigate stone block	4	1060	1800	1180	1800	1240-1500	No mortar
2667	2271; 2587; 3101	T7 tuffaceous mortar and medieval peg tile	5	1180	1800	1180	1800	1240-1600	1300-1600
2668	2271; 2587	Abraded medieval peg tile no glaze	5	1180	1800	1180	1800	1300-1700	No mortar
2670	2271; 2587	Medieval to early post-medieval peg tile	5	1180	1800	11180	1800	1240-1600	No mortar
2671	2271	Medieval peg tile	4	1180	1800	1180	1800	1400-1700	No mortar
2673	2271; 2576; 3101	Medieval peg tile glaze lime mortar 16	2	1180	1800	1180	1800	1240-1600	1300-1600
2675	2271; 2587; 3023; 2459a; Calc Roman teg	Medieval peg tile; Radlett Brick and sandy tile; calc fabric tegula	10	50	1800	1180	1800	1240-1600	No mortar
2676	2271; NOAK; 3030nr3065	Medieval peg tile; late medieval transitory brick	5	1180	1800	1180	1800	1400-1660	No mortar
2677	3102; 3023b; 2452; 2459a; 2271; 2271nr2272; 2272	Daub or fired clay; Roman tegula and imbrex 1 late; earlier medieval glazed bat and peg tile	10	1500bc	1880	1180	1800	1180-1450	No mortar

## Trench WA2

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2808	2276; 2279; 2586; 3032; 3034nr3035; 3065	Post medieval peg tile, pan tile, post Great Fire brick and early post-medieval brick no mortar	8	1180	1900	1664	1900	1750-1900	No mortar
2810	2271; 2276	Peg tile late medieval to early post-medieval no mortar	2	1180	1900	1480	1900	1500-1900	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2812	3032; 3034; 3033; 3101	Tudor-Stuart brick and post Great Fire brick 2 mortars T3a and T2	3	1450	1900	1664	1900	1700-1900	1450-1700 overprinted by 1600-1800
2813	3032; 3101	Well made frogged post Great Fire brick T3 clinker mortar	1	1664	1900	1664	1900	1850-1900	1750-1900
2817	3032R; 3101; 3034; 2850; 2271	Narrow unfrogged post Great Fire clinker brick T3 clinker mortar voussoir post Great Fire brick; unglazed floor Flemish tile; post-medieval peg tile	8	1664	1900	1664	1900	1775-1900	1750-1900
2818	3032	Frogged well made post Great Fire brick no mortar	1	1664	1900	1664	1900	1850-1900	No mortar
2820	3033	Early post-medieval brick	1	1450	1700	1450	1700	1450-1700	No mortar
2823	2276; 3032R	Post Great Fire brick and post-medieval peg tile fine moulding sand	11	1480	1900	1664	1900	1700-1900	No mortar
2824	2276; 3101	Type 3 Clinker mortar post-medieval peg tile	6	1480	1900	1480	1900	1600-1900	1750-1900
2826	2850	Unglazed Flemish floor tile	2	1600	1850	1600	1850	1600-1850	No mortar
2827	3046; 3101	Early post-medieval brick and T2 brown mortar	1	1450	1700	1450	1700	1600-1700	1450-1700
2828	3046; 3033; 3101	Early post-medieval brick and T3a grey mortar	2	1450	1700	1450	1700	1500-1700	1600-1800
2829	3034	Narrow post Great Fire brick T3 grey mortar	1	1664	1900	1664	1900	1775-1900	1750-1900
2830	3033	Early post Great Fire brick no mortar	1	1450	1700	1450	1700	1450-1700	No mortar
2832	2586	Early post-medieval peg tile no mortar	2	1180	1800	1180	1800	1400-1800	No mortar
2834	3046; 3034; 3101	Post Great Fire and early post-medieval brick; T2 brown mortar	2	1450	1900	1664	1900	1664-1850	1450-1700+
2835	3032; 3101	Narrow post Great Fire bricks type3 clinker mortar	2	1664	1900	1664	1900	1775-1900	1750-1900



Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2837	2271; 2276; 2279; 2850; 3033	Early post-medieval brick sunken margin, pan tile and peg tile; unglazed Flemish floor tile	15	1180	1900	1480	1900	1650-1800	No mortar
2838	2276	Unglazed peg tile no mortar	1	1480	1900	1480	1900	1600-1900	No mortar
2840	3034; 3101	Narrow post Great Fire brick type3 clinker mortar	1	1664	1900	1664	1900	1775-1900	1750-1900
2841	3032; 3101	Narrow post Great Fire brick type3 clinker mortar	1	1664	1900	1664	1900	1775-1900	1750-1900
2842	3032; 2271; 2279	Narrow post Great Fire brick T3 clinker; pan tile Type 10 mortar early post-medieval peg tile	3	1180	1900	1664	1900	1775-1900	1750-1900
2844	3030; 3065; 2276	Early muddy late medieval and early post-medieval poorly made brick and peg tile	4	1400	1900	1480	1900	1500-1700	No mortar
2846	2276	Post-medieval peg tile coarse moulding sand	3	1480	1900	1480	1900	1480-1700	No mortar
2847	2271; 2276; 3030nr3065	Late medieval to early post-medieval peg tile curved tile and brick	5	1180	1900	1480	1900	1480-1660+	No mortar
2849	2271; 2850	Early post-medieval peg tile and unglazed Flemish floor tile	3	1180	1850	1600	1850	1600-1800	No mortar
2853	2276	Post-medieval peg tile	2	1480	1900	1480	1900	1480-1800	No mortar
2854	2276; 2279; 3032R	Post-medieval peg tile, pan tile and narrow post Great Fire brick	8	1480	1900	1664	1900	1775-1900	No mortar
2855	2271; 2276; 3046; 3032	Late medieval early post-medieval peg tile, brick and post Great Fire brick	8	1180	1900	1664	1900	1664-1900	No mortar
2859	3030; 3101	Early muddy late medieval voussoir early post-medieval brick; T3a grey mortar	1	1400	1660	1400	1660	1500-1660	1600-1800
2860	2271; 2586	Late medieval early post-	2	1180	1800	1180	1800	1400-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2861	2271; 2276; 2279; 2850; 3030nr3065; 3032V; 3034; 3046; 3120; 3101	medieval brick Burnt Kimmeridge shale; post-medieval peg and pan tile; post-medieval brick and machine voussoir post Great Fire brick; unglazed Flemish floor tile; Clinker mortar	29	50	1950	50	1950	1800-1900	1750-1900
2864	3046; 3101	Reused early post-medieval brick sunken margin clinker mortar	1	1450	1700	1450	1700	1500-1700	1750-1900 (Reused in this later mortar)
2869	2271; 2276	Late medieval and early post-medieval peg tile	2	1180	1900	1480	1900	1480-1900	No mortar
2871	3032; 3101	Proto early post Great Fire brick T3a light grey mortar	1	1664	1900	1664	1900	1664-1800	1600-1800
2872	3065; 2271	Early post-medieval peg tile and brick sunken margin	3	1180	1800	1180	1800	1450-1700	No mortar
2877	2276; 2586; 3120	Early post-medieval peg tile and coal	5	50	1950	50	1950	1600-1800	No mortar
2881	2586; 2271; 2276; 2850; 3033; 3120	Burnt Kimmeridge shale, pan tile; post-medieval peg tile and brick sunken margin with unglazed post-medieval floor tile	10	50	1950	50	1950	1630-1800	No mortar
2883	2276; 3032R; 3101	Narrow post Great Fire brick, burnt post-medieval peg tile and clinker mortar	5	1480	1900	1664	1900	1775-1900	1750-1900
2884	2271; 2586; 2276; 3046; 3033; 3030nr3065	Early post-medieval peg tile and brick with sunken margins	9	1180	1900	1480	1900	1480-1700	No mortar
2885	2271	Medieval prob as thin peg tile	2	1180	1880	1180	1800	1180-1600	No mortar
2886	2271; 2586; 3030nr3065	Early post-medieval brick and peg tile and pan tile	7	1180	1800	1630	1800	1630-1700+	No mortar
2887	2586	Early post-medieval peg tile	1	1180	1800	1180	1800	1400-1800	No mortar
2930	2276	Early post-	2	1480	1900	1480	1900	1480-1800	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2931	2276; 3046	medieval peg tile Early post-medieval peg tile and brick	2	1450	1900	1480	1900	1480-1700	No mortar
2932	2276	Early post-medieval peg tile	1	1480	1900	1480	1900	1480-1700	No mortar
2934	2586; 3030	Late medieval to early post-medieval brick	2	1180	1800	1180	1800	1400-1660+	No mortar
2939	2271; 2276; 3030; 3046; 3033; 3030nr3046	Early post-medieval peg tile and lots of burnt brick sunken margin	9	1180	1900	1480	1900	1480-1700	No mortar
2940	2271; 2276; 3046; 3063; 3107; 3101	Reigate stone fragment; glazed medieval and early post-medieval peg tile and brick; glazed Flemish floor tile; T7 tuffaceous mortar	8	1060	1900	1480	1900	1480-1700	1300-1660
2944	2276; 3033	Early post-medieval peg tile and brick sunken margin	4	1450	1900	1480	1900	1480-1700	No mortar
2945	2271; 2276; 2586; 3030nr3046; 3065; 3101	Early post-medieval sunken margin brick and peg tile; Type 7 tuffaceous mortar	7	1180	1900	1480	1900	1480-1700	1300-1660
2950	2276; 3023	Roman brick and post-medieval peg tile	2	50	1900	1480	1900	1480-1700	No mortar
2956	2276; 3046	Early post-medieval brick and peg tile	6	1450	1900	1480	1900	1480-1700	No mortar
2958	2271; 2459a	Roman tile and medieval peg tile	2	50	1800	1180	1800	1180-1450	No mortar
2963	2271; 2587	Medieval glazed and unglazed peg tile	3	1180	1800	1180	1800	1240-1450	No mortar
2976	2271; 2587; 3033	Medieval glazed and unglazed peg tile early post-medieval brick sunken margin	4	1180	1800	1180	1800	1450-1700	No mortar
2977	2271	Probably burnt medieval peg tile	1	1180	1800	1180	1800	1180-1600	No mortar

### Trench WA3

Context	Fabric	Form	Size	Date range of material	Latest dated material	Spot date	Spot date mortar
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Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2701	2587; 3064W; 3031nr3043	Curved tile reused; Manganese purple wall tile; muddy early yellow and pink bricks possibly Estuarine	4	1240	1800	1620	1800	1700-1800	No mortar
2704	3064W; 3108; 2279	Manganese purple wall tile decorated design; York stone; pan tile	4	1600	1950	1600	1950	1700-1800+	No mortar
2705	2279; 2271; 2586	Pan tile and reused medieval peg tile	7	1240	1850	1630	1850	1700-1850	No mortar
2707	3032R; 3101	T2 clinker mortar on narrow 3032 red	1	1664	1900	1664	1900	1775-1900	1750-1900
2711	2276; 2279; 3110PM; 3101; 3030nr3065	Pan tile and later post-medieval peg tile; curved moulding Portland Whit Bed funerary?; late medieval brick reused T3 brown mortar	5	50	1950	50	1950	1750-1900	1450-1700 (residual)
2712	2271	Late medieval peg tile	1	1180	1800	1180	1800	1400-1800	No mortar
2714	2276; 3046	Peg tile post-medieval reused gravel mortar and reused early post-medieval brick	1	1450	1900	1480	1900	1700-1900	1850-1950
2716	2279; 2271; 2276	Pan tile; post-medieval peg tile	3	1180	1900	1480	1900	1630-1900	No mortar
2718	2271	Med-early post-med peg tile	1	1180	1800	1180	1800	1400-1800+	No mortar
2719	2271; 2276; 2586	Post-medieval peg tile	5	1180	1900	1480	1900	1480-1800	No mortar
2720	2271; 2587; 2276	Mixture of medieval and early post-medieval peg tile no glaze	11	1180	1900	1480	1900	1480-1700	No mortar
2721	2587; 2271; 2276; 3046; 3042; 3031 yellow	Mainly medieval iron oxide peg tile no glaze, late medieval early post-medieval brick	17	1180	1900	1480	1900	1480-1650	No mortar
2723	3032; 2587; 3046; 2276; 3101	Fragment post Great Fire brick; medieval peg tile and post-medieval peg tile; early post-medieval red and T12 shelly mortar	4	1240	1900	1664	1900	1664-1900	1750-1900
2724	3120; 3119	Caen stone fragment and Norwegian	2	600	1900	1060	1900	1200-1600+	No mortar

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2726	2276; 3046	ragstone Early post-medieval peg tile and brick no mortar	3	1450	1900	1480	1900	1480-1700	No mortar
2727	2271	Glazed medieval peg tile and early post-med peg tile	3	1180	1900	1480	1900	1480-1600+	No mortar
2731	2271; 2276; 3033; 3101	Medieval early post-medieval peg tile; early post-medieval brick; T7 tuffaceous mortar	5	1180	1900	1480	1900	1480-1600+	1300-1650
2732	2271; 2276; 2587; T3 mortar	Reused medieval abraded and early post-medieval peg tile; T3 mortar??	7	1180	1900	1480	1900	1480-1700+	1750-1900??
2733	2587; 2271; 2276; 3135	Glazed and unglazed medieval peg tile some post-medieval peg tile; fine pink microgranite cobble	9	50	1950	50	1950	1480-1700	No mortar
2734	3033; 2271; 2276; 2320; 3101	Lots of early post-medieval reds, medieval and mainly early post-medieval peg tile; late medieval local floor tile; T7 mortar	26	1180	1900	1480	1900	1480-1700	1300-1600
2735	2276; 2271	Medieval and early post-medieval peg tile	7	1180	1900	1480	1900	1480-1700+	No mortar
2737	2271; 3031nr3043	Late medieval early post-medieval peg tile Estuarine brick	2	1180	1800	1180	1800	1400-1650+	No mortar
2738	2586; 2271	Both unglazed med peg tile mms	2	1180	1800	1180	1800	1300-1700	No mortar
2740	2587	Medieval peg tile	1	1240	1450	1240	1450	1300-1600	No mortar
2742	2276; 2271; 2587; 3033; 3101	Medieval and early post-medieval peg tile early post-medieval brick; T7 tuffaceous mortar	9	1180	1900	1480	1900	1480-1700	1300-1600
2744	2276	Early post-medieval peg tile	4	1480	1900	1480	1900	1480-1700+	No mortar
2746	2271; 2276; 3046; 3101	Medieval and early post-medieval peg tile; post-medieval red brick; T7 tuffaceous mortar	21	1180	1900	1480	1900	1480-1700	1300-1600
2748	2276	Early post-medieval peg tile; T15 lime mortar	1	1480	1900	1480	1900	1480-1800	1300-1600

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date mortar
2750	2276	Early post-medieval peg tile Reused	2	1480	1900	1480	1900	1480-1800	No mortar
2752	2271; 2276	Medieval early post-medieval peg tile	4	1180	1800	1180	1800	1300-1700	No mortar
2755	2271nr2272; 2271	Medieval early post-medieval peg tile	3	1135	1800	1180	1800	1300-1700	No mortar
2756	3105; 2271	Kentish ragstone rubble; medieval glazed and unglazed peg tile	7	50	1800	1180	1800	1180-1600	No mortar
2758	2271; 2587	Abraded medieval peg tile	5	1180	1800	1180	1800	1240-1500+	No mortar
2761	2271; 2587; 2271nr2272	Abraded medieval peg tile	5	1135	1800	1180	1800	1240-1500+	No mortar
2763	2276; 2271; 3030nr3065; 3101	Late medieval early post-medieval peg tile; late medieval brick and T7 tuffaceous mortar	10	1180	1900	1480	1900	14810-1660+	1300-1600+
2764	2271; 2276; 3046	Medieval and post-medieval peg tile reused in T7 tuffaceous mortar early post-medieval brick	8	1180	1900	1480	1900	1480-1700	1300-1600+
2765	2459a; 2271; 2271nr2272	Roman tile; peg Tile medieval	5	50	1800	1180	1800	1180-1600	No mortar
2766	2454; 2271; 2587	Medieval peg tile and Roman imbrex	9	50	1800	1180	1800	1240-1500	No mortar
2773	2271; NOAK; 3205; 2587	Medieval glazed and unglazed peg and bat tile lots of early fabrics	34	1180	1800	1180	1800	1240-1450	No mortar
2774	2587; 2452; 2271; 3046; NOAK; 2271nr2272	Medieval glazed and unglazed peg tile lots of early fabrics; Roman tegula; fragment early post-med brick	27	55	1800	1180	1800	1450-1600	No mortar
2777	3009	Hartfield Roman Tile	1	100	120	100	120	100-120+	No mortar
2788	2271; 3020; 2587; NOAK	Medieval glazed and unglazed peg tile late Roman Calcareous tile	8	50	1800	1180	1800	1240-1450	No mortar
2792	2271; 2587; 3006; 2452	Medieval glazed and unglazed peg tile; Roman sandy tile, imbrex and brick	15	50	1800	1180	1800	1240-1450+	No mortar

Table 6: Building material spotdates

## The Animal Bone

Kevin Rielly

### Description of the bones

This area provided an additional 1,580 animal bones by hand collection, the great majority of which was very well preserved and minimally fragmented. It was possible to assign this collection to a provisional phasing based on the pottery dating evidence, as shown in Table 7. Most of the bones clearly derive from post-medieval levels and from those dated to the 16th and 18th centuries in particular.

Date:	11-14	14/15	15/16	16	17	16/17	17/18	18	19	U
Species										
Cattle	1	15	53	79	34	27	10	99	6	8
Cattle-size	8	13	51	74	37	25	13	52	27	7
Sheep/Goat	6	5	164	104	27	45	19	110	29	30
Pig	1	2	6	9	11	6	3	32	2	3
Sheep-size	6	6	107	33	10	18	5	72	11	5
Red deer					1	1				
Fallow deer				1						
Roe deer					1					
Dog				1				1		1
Rabbit			1	2		1		1	3	
Small mammal			1	1				1		
Cat				1		2		1	1	
Chicken		1	8	5		1		2	3	
Goose			2	3	1			1	2	
Goose-size								1		
Mallard								1		
Grand Total	22	42	393	313	122	126	50	374	84	54

Table 7: Distribution of hand collected bones by date (centuries AD), where U is undated.

The previous bone collection from this Thameslink assessment area provided similar concentrations; however, these earlier excavations also provided a large medieval assemblage. Sheep outnumber cattle and pig bones throughout these 'phases' accompanied by minor amounts of game and poultry. Notably the single fallow deer from a 16th-century deposit is a relatively complete antler. The removal of one tine using a saw would suggest it derived from a local antler-working establishment. The 15th /16th and 16th-century deposits provided a wealth of sheep footbones as well as one notable cache of heavily butchered cattle skulls. These two types of waste, which can be interpreted as tawing and butchers waste respectively also feature in the previous assemblage, although with a greater temporal distribution, covering the later medieval up to the 18th century regarding tawing waste, with the same start date up to the 16th century for butchers waste. There is a notable addition, however, to the previous evidence, with a concentration of cattle horncores (a minimum of 29 cores) from an 18th-century pit ([2825]). There was no indication that these comprised a lining, as is often the case elsewhere in this general area during this period. In which case they may simply represent waste from

a local tanner or butcher. Several of these cores were large and clearly represent unimproved longhorns, typical of the 18th century in London. Finally, the latest deposits, dating to the 18th and 19th centuries provided evidence for the introduction of larger stock (cattle, sheep and pig), as well as the use of the saw as a butchery tool.

## **Timber Assessment**

### **Damian Goodburn**

Forty pieces of timber were recovered from the three trenches and these will be assessed and analysed at a later date.

## **Environmental Samples Assessment**

### **Rebecca Nicholson, Kath Hunter & Sheila Boardman**

Eight bulk samples were recovered from the three trenches and processed using standard water flotation in a modified Siraf-style tank. Where anaerobic preservation of organic materials (waterlogging) was suspected 1L sub-samples were sieved to 0.25mm and retained wet. The resulting dried flots and wet sub-samples were scanned and the results are presented as a table below (Table 8), which includes rough counts of fishbone, snails and fragments of Mollusca. Sample residues were dried and sorted for artefacts and ecofacts.

Two of the samples from WA1 produced abundant partly charred cereal remains. Sample 505 from medieval (15th century) pit fill [2667] includes cultivated oat florets and grains (*Avena sativa*), as well as degraded leather and textile. Sample 504, from medieval ditch fill [2671] includes hulled barley and cultivated oat in the floret, loose oat, barley and wheat grains and also abundant straw fragments. Broad beans and flax seeds are also present, as are insect remains including a possible charred grain weevil, and textile fragments. Both of these samples could have come from a bag of animal feed (a 'nosebag'), a suggestion which warrants further analysis. Sample 508, from later 15th-century pit fill [2764] (WA3) includes cereal bran and corncockle seeds (the latter likely to have been a contaminant in flour) as well as probable fig seeds. All are typical of deposits containing human faeces and it is likely that the feature was used as a cesspit.

The charcoal from two samples was scanned, based on the initial assessment of abundance. These were samples 507 [2735] and 508 [2764], from fills of medieval pits ([2735] & [2747]). Sample 507 seems to comprise mainly beech (*Fagus sylvatica*) and oak (*Quercus*) charcoal, with smaller amounts of dogwood/wayfaring tree/guelder rose (*Cornus/Viburnum*), willow or poplar (*Salix/ Populus*), field maple (*Acer campestre*) and birch (*Betula*). The majority of the material appears to be small timber



fragments, but the oak charcoal is mostly roundwood (with 2-8 growth rings) and sapwood, and the beech also includes some roundwood. Sample 508 is less mixed, with mostly beech and oak charcoal, and interestingly some fragments of walnut (*Juglans regia*) charcoal. The latter is a non-native tree and finds of walnut wood charcoal are rare, although the walnuts themselves and fragments have been recovered from many (largely waterlogged) Roman and/or medieval deposits in London, York, Vindolanda, Norwich, Oxford, Bristol and elsewhere (Archaeobotany ABCD database).

Small quantities of marine shell (oyster, mussel, cockle) were recovered from the residues of samples 503 [2650], 507 [2735] and 508 [2764]. The majority of the shells are in fair or good condition, but the small number precludes further analysis.

Fish remains were recovered from the residues of samples 507 [2735] and 508 [2764]. Sample 507 includes bones from herring (*Clupea harengus*), eel (*Anguilla anguilla*), small gadid (Gadidae) and flatfish while sample 508 also includes a pike (*Esox lucius*) vertebra.

## **Recommendations**

Three of the sample flots (samples 504, 505 and 508) are recommended for further analysis of the waterlogged and charred plant remains. It is also recommended that the charcoal from sample 503 is scan recorded, that from sample 507 is rapidly analysed and sample 508 is fully analysed. The insect remains from sample 504 are relatively common, potentially interesting and worthy of analysis since they are likely to reflect the source of the material and/or pests which contaminated the grain. The fish remains should be identified and added to the records for assessment 10. The preserved textile in medieval sample 504 from the fill of ditch 2663 (WA1) should be looked at by a specialist. All results will be included in the respective specialist reports in Monograph 2.

Sample No	Context	Trench/ area	Dating Decision	Feature Type	Mesh size Flot/µm	sample vol/L	Charred								Mineralis ed					Waterlog ged																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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																																?wool.		
506	2676	WA1	Late Med	fill of pit2663	-	<1												*													entire waterlogged leaf for species ID	B		
507	2735	WA3	Med	fill of pit 2735	250	20						(****) ****					*							*			*					WPR /Modern elder seeds modern wood mortar,		Good
508	2764	WA3	Med	Fill of Pit[2747]	250	1						(****) **	**				***	***	****	(*) ****	*	****		*			**	**		**		Wet flot – subsample. Lumps of waterlogged cessy material some containing fragments of cereal bran and corn cockle ( <i>Agrostemma githago</i> ) seed coat suggests food/fodder contaminant. Possible figseeds (cf. <i>Fiscus carica</i> ). Residue CBM.	B/A	Mod
508	2764	WA3	Med	Fill of Pit[2747]	250	8						(****) *					***	****	(****) ****			***		*								CPR sub. - Abundant WPR indet plant fragments including wood, elder seed ( <i>Sambucus nigra</i> ) Caryophyllaceae fragment ?wild strawberry type (cf. <i>Fragaria vesca</i> )?fig(cf. <i>Fisicus carica</i> )? Water logged worked wood from residue.,laminated organic material with seeds and cess , cess lumps with some bran inclusions. from residue.	D	Mod

## **Geoarchaeological Assessment**

**Carl Champness**

### **Introduction**

An auger survey was undertaken as part of three new Trenches, WA1-3, that were excavated in Western Arcade, as part of the redevelopment of London Bridge Station. A series of seven augerholes were carried out as part of this investigation in order to contribute to the site's geoarchaeological deposit model and to search for wooden remains like boats, trackways or revetments that may survive at depths beyond the levels reached by the trenching. This work develops and refines the work previous undertaken at the site along Western Approach, TAA9 (Taylor & Champness 2013) and as part of the London Bridge Station Improvement Works, TAA10.

### **Research Aims**

The specific research aims relevant to the geoarchaeology have been previous listed within the main Assessment 10 report (Appendix 20). The principal aim of the new auger survey was to collect additional sedimentary data and provide palaeoenvironmental samples from new areas of the site that could help inform and refine the site's geoarchaeological deposit model.

### **Methodology**

A total of seven augerholes were undertaken as part of the targeted excavations at London Bridge Station, along the Western Approaches. Three 4m x 2m excavations (WA1-3) were undertaken just to the west of Stainer's Street (Fig. 1). These excavations were taken down to an average depth of 4m in order to record and characterise any archaeological remains that survive underneath the Victorian foundations of the station and would be disturbed by the new piling array. The investigations continued in the base of the trenches using augerholes to sample the full sedimentary sequence to Pleistocene gravels and assess the underlying foreshore sequence for signs of archaeological remains.

The augerholes were retrieved using an electric power auger that was drilled from the base of each trench. Between 2 and 3 augerholes were undertaken in order to investigate the deeper foreshore sequence. The number of augerholes varied between trenches depending on ground conditions and access issues, related to available space within the trenches. A continuous representative sequence of 1m by 0.12m sleeved core samples was retrieved from each trench to the top of the Pleistocene gravels.

The majority of the augerhole samples were rapidly logged on site to provide feedback to the excavations and to identify key sequences worthy of further investigation at depths beyond the Scheme's base-levels. One representative sleeved core sequences were retained from each

excavation area with additional cores being kept where archaeological remains were identified within the samples.

## **Results**

### **Updating the stratigraphic modelling**

The results of the auger survey from WA1-3 have been used to update the existing site deposit model presented within the previous geoarchaeological assessments (MoLAS 2011; Taylor & Champness 2013 Assessment 9; Main Assessment 10 report). The stratigraphic correlations presented in these models have been revisited in the light of new data and spatial coverage of the new area of the site. No new stratigraphic units were assigned based on the results of WA1-3 and the sequences broadly fitted in with the stratigraphic units predicted by the model. The interpretative east-west cross-sections (Main Assessment 10 report, Appendix 20 Fig. 4) has been updated with the results from this new work (Fig. 2).

### **Summary of archaeological remains revealed in the augerholes**

No archaeological deposits or structures were identified during the auger survey from Trenches WA1-3 that warranted further investigation. The broad sedimentary sequences identified in the survey correlated well to the proposed deposit model for London Bridge Station (TAA10 Main Report, Appendix 20). The new sequences did not significantly refine the model, but did provide new data points from a key area of the site, where it crosses Guy's Channel.

One of the most significant finds in the new trenches was a series of 15th to 16th-century revetments and reclamation deposits identified within the base of Trench WA2. These were post and plank construction and represent an attempt to manage the later courses of Guy's Channel. Further post-medieval river revetments were also recorded in the trenches associated with more widespread reclamation from the late 16th-17th century. These waterways appear to have been transformed into more managed channels, with associated drainage ditches as a result of increasing urbanisation of the area.

The results from the new trenches and augerhole survey did not produce any new evidence for prehistoric or Roman activity, but helped to map and characterise the late medieval and post-medieval managed channel sequences within this area of the site.

The survey results for each excavation trench are discussed in more detail below:

#### **Trenches WA1 (WA1.1-1.2)**

Two augerholes were completed within Trench WA1 which were near to what is believed to be the eastern edge of Guy's Channel. Both augerholes were successfully completed, with WA1.2 providing a full sample sequence through the foreshore sequence down to Pleistocene gravels.

The Pleistocene gravels were recorded within WA1.1 at 7.68m bgl in depth (−2.88m OD). The gravels were overlain by loose mid-grey silty sands with inter-bedded clay bands between 7.68m to 5.45m bgl in depth (−2.88m and −0.65m OD). These deposits appear to represent varying channel flow within a possible estuarine environment. Fragments of degraded wood and twigs were noted in these deposits. These bedded sands were sealed by a loose organic poorly sorted sandy gravel and dark brown silty/sand clays deposits between 5.45m-5.22m bgl (−0.65m - −0.42m OD). These deposits contained frequent oyster shell, stone, chalk and gravel material, representing ground make-up or infilling deposits. Bands of more sterile estuarine silty clay deposits were also recorded above these deposits that might indicate that estuarine flooding remained a problem in this area.

These deposits were overlain within the base of the trench by a series of late medieval/early post-medieval estuarine silts and ground consolidation layers. These were truncated along the southern limits of excavation by a roughly east-west aligned linear cut feature, either a possible property boundary or drainage ditch. A series of inter-cutting pits were cut into ground make-up deposits, roughly dated to the late 15th/16th century.

### **Trench WA2 (WA2.1-2.3)**

Three augerholes were completed across Trench WA2, which was located near to the eastern edge of Guy's Channel. The first augerhole (WA2.1) was unsuccessful as it encountered an obstruction and was abandoned. The Trench was augered at a higher level than normal due to water ingress. The obstruction was within the levelling deposits, consisting of brick rubble; however this deposit was fully excavated after augering. However, a full sequence was achieved in WA2.2 to Pleistocene gravels which was logged on site. Three sleeved samples were also successfully recovered from WA2.3, but the basal sleeved sample was not fully recovered as the gravels fell out of the base of the sample.

The Pleistocene gravels were encountered at a depth of 7.80m bgl (−2.75m OD) in WA2.2 and 7.75m bgl (−2.70m OD) in WA2.3. The base of the gravels was not reached within WA2.1 due to a series of obstructions that were encountered at a depth of 0.5m bgl. Overlying the Pleistocene gravels was a series of laminated mid-grey pale white calcareous silty sands between 7.80m and 5.50m bgl (−2.75m and −0.45m OD). Coarse rounded gravel and rare pottery were recovered from the upper deposits of this unit. This was overlain by a soft blackish grey fine silt deposits between 5.60m and 4.08m bgl (−0.45m and +0.97m OD) with rare coarse inclusions, representing the silting-up and dumping of rubbish material within a potential channel. These dumped deposits contained frequent sub-rounded gravel, shell material, leather and chalk. Wood fragments and coarse inclusion including CBM were identified above the gravel deposits, contained within a dark brownish grey sandy clay with chalk and shell inclusions. These deposits were overlain by a series of silt clay estuarine silts and post-medieval reclamation/channel infill deposits.

The top of the estuarine silts were not reached during trench excavation and lay at c. 4.6m bgl (0.06m

below project level). The earliest deposits identified within the trench comprised ground consolidation layers, into which a roughly north-south aligned timber revetment had been constructed. It is likely, given the slope of cleaner clays to the west of the trench, that this had been placed into a pre-existing channel, which was artificially narrowed by its construction in the late 15th/16th centuries. A series of posts ran perpendicular to the structure, extending to the west and may represent possible tie-backs, or remnants of an earlier revetment. These were overlain by a series of organic-rich dump layers containing quantities of leather, animal bone and burnt clay tobacco pipe. It is likely that these date between the 16th/17th and later 17th/18th centuries.

### **Trench WA3 (WA3.1-3.2)**

Two augerholes were completed in the base of Trench WA3, which was located just to the west of Stainer Street. A partially complete sequence was recovered in WA3.2, which was sampled to a depth of 8m bgl (–3.34m OD).

The Pleistocene gravels were encountered at a depth of 7.25m bgl (–2.59m OD) overlain by light yellow medium sand and pale grey fine sand and silt deposits. A large twisted root was recorded within the basal sands. These sands were sealed by an organic silty peat between 5.50m – 4.56m bgl (–0.84m +0.10m OD). This unit was quite variable in nature with a thin brown organic silt separated by two more peaty bands. This sequence appears to reflect a channel edge environment and is consistent with the general foreshore sequence recorded along Western Approach (TAA9) during the previous works. The peat was overlain by light brownish grey overbank estuarine silts and silty clays that were sealed by late medieval reclamation deposits.

The earliest features identified within the trench were within a c. 1-1.5m thick horizon of medieval/early post-medieval dumping and pitting. The pottery and glass recovered from these features suggest a mid 16th-century date. Alluvial layers sub-divided these features and inferred that flooding remained a problem during this period.

### **Dating and palaeoenvironmental assessment of the floodplain/foreshore sequence**

There was insufficient time for samples to be sent off for radiocarbon dating or palaeoenvironmental work for the assessment. Only limited suitable material were identified within the new samples. The organic silts and peat units identified within Trench WA3 were the only potential new targets for dating. These samples will be considered for dating along with the other samples from Assessments 9 and 10 during the analysis stage. The selection of samples for further dating or palaeoenvironmental assessment will be considered in light of the project research aims and to help refine the dating framework and environmental sequence of the overall floodplain/foreshore landscape.

### **Discussion**



The data obtained from the auger survey from the three new trenches have been used to refine the current deposit model and interpretative cross-sections for the site. This data has helped to contribute to the spatial coverage of the model and also provide further checks as to the validation of the model's stratigraphic correlations. All of the various phases of work from London Bridge will be integrated and further developed in order to aid in the understanding of the Southwark floodplain/foreshore landscape and its associated floodplain archaeology.

The lack of prehistoric and Roman evidence is slightly disappointing but not unexpected given the size of the sample area. No evidence of any earlier channel revetments of Guy's Channel were identified prior to the 15th century. The finds of late medieval and post-medieval channel sequences and revetments will contribute to understanding of the post-Roman Southwark landscape.

### **Recommendations For Further Analysis**

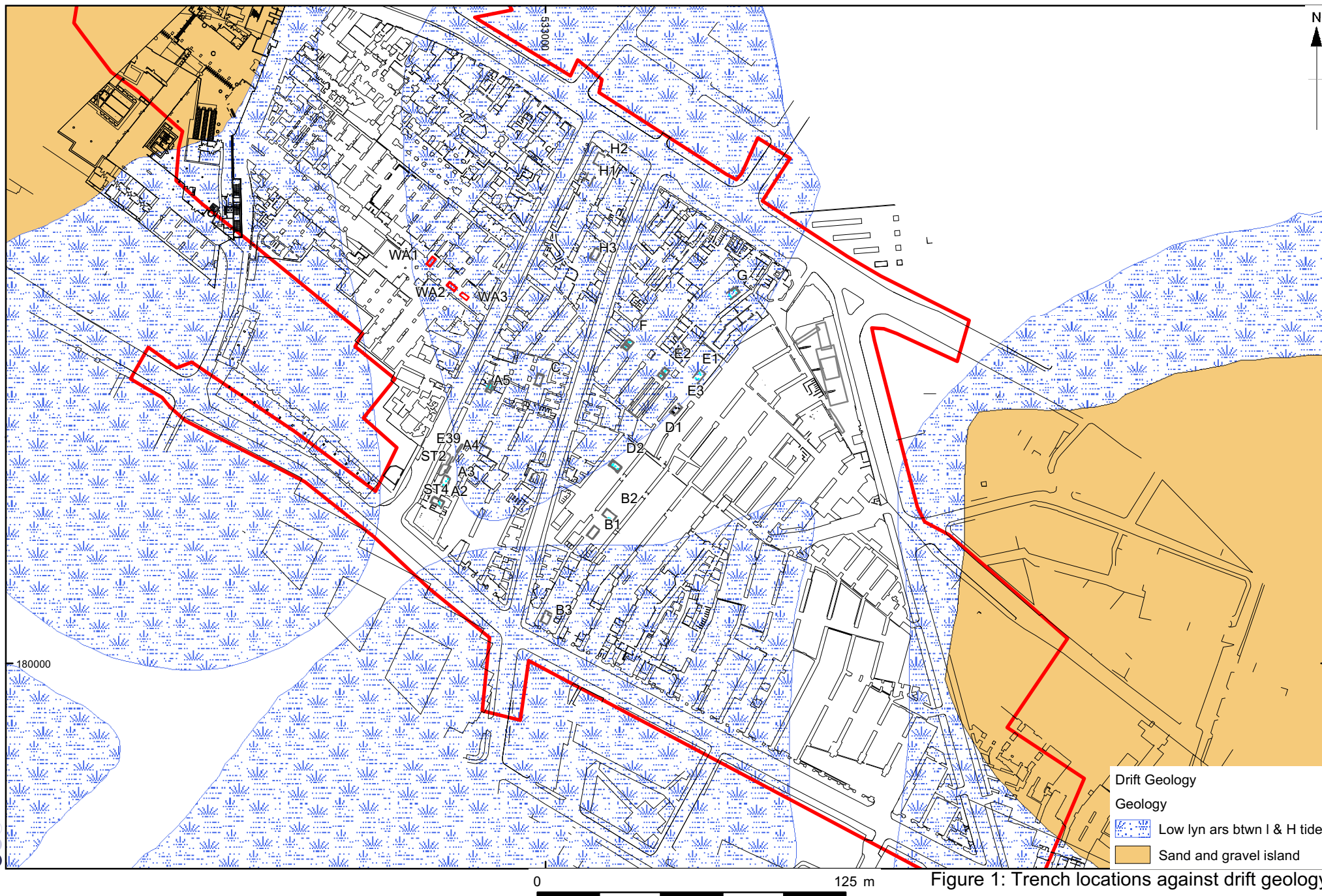
The new trench data from Western Arcade will help to develop a detailed understanding of the sequence of floodplain/foreshore environmental change and evidence of late medieval and post-medieval foreshore modification and management. This data will contribute to the current understanding of the site's development and has been used to update the foreshore deposit model generated in the previous assessments.

No dating or palaeoenvironmental analysis is recommended from the sequences identified in Trenches WA1-3. The results of the survey will help by contributing to the overall spatial coverage of the site and the mapping of channel edges and environments during the late medieval and post-medieval periods. Further palaeoenvironmental analysis of the sedimentary sequences revealed within these trenches is unlikely to contribute any new insights into the sequence of foreshore environmental change. The peat deposits identified within WA3 is the only deposit that is suitable for dating and this will be considered in relation to its importance compared to other sequences recorded during the previously assessments.

### **Bibliography**

MOLA, 2011. *Thameslink Programme-London Bridge Station, London SE1. London Borough of Southwark. Historical environment and geoarchaeological assessment report*, Museum of London Archaeology Unpublished Report.

Taylor, J. & Champness, C. 2013. *Thameslink Archaeological Assessment 9: Archaeological Excavations at Western Approach Viaduct, London Borough of Southwark*. Oxford Archaeology-Pre-Construct Archaeology Unpublished Report.



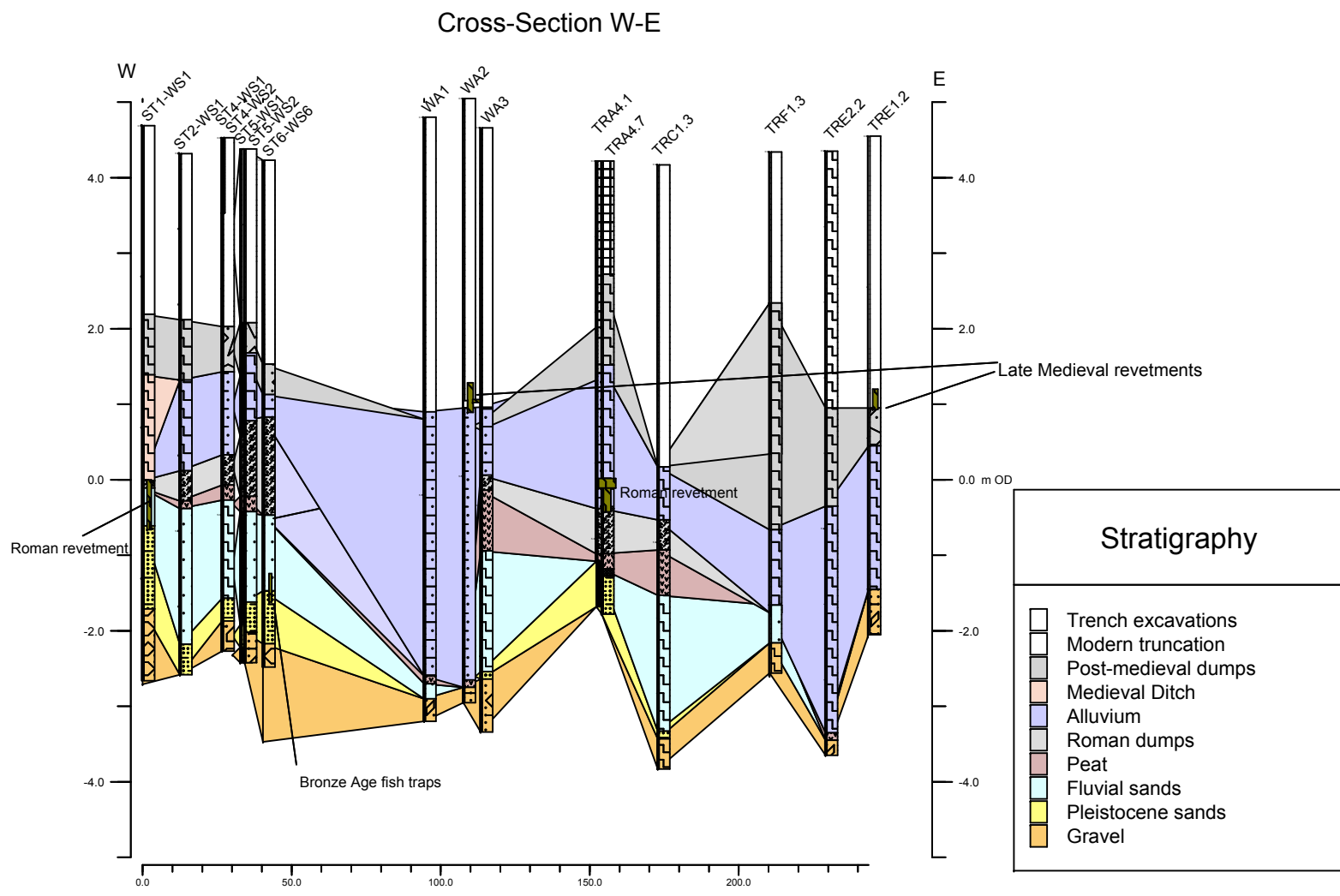


Figure 2: Updated East-West Cross-section

## OASIS Form

OASIS ID: preconst1-175896

### Project details

Project name Thameslink Archaeological Assessment 10 (Western Arcade)

### Short description of the project

Three additional mitigation trenches, including seven augerholes, were excavated as part of the ongoing London Bridge Redevelopment project. The trenches supplement the results from adjacent excavations within Thameslink Archaeological Assessments 9 and 10. Pleistocene gravels were identified in all trenches and overlain by a series of fluvial sands and silts associated with Guys Channel. The earliest evidence of activity comprised medieval ground consolidation deposits dating between the 11th to 13th centuries. Land reclamation layers and the disposal of domestic refuse as dumped debris or within pits were identified throughout the medieval and post-medieval periods. A former watercourse was identified extending throughout one trench. The western bank of this was reinforced with a pile and plank revetment during the late 16th to 17th centuries, and may relate to the artificial narrowing of a pre-existing watercourse such as Guy's Channel. This was modified during the 17th to 18th century prior to the abandonment of the channel. The construction of substantial brick walls using timber planks as foundation material suggests the revetment was deconstructed and timbers recycled at this time. Increased development was evident during the post-medieval period. A number of boundary walls were identified which were sub-divided and modified throughout the post-medieval period. Although no firmly identified evidence of industry was recorded, a substantial number of copper alloy pins were recovered from post-medieval deposits and may suggest pin manufacture in the near vicinity. Earlier structures were demolished and levelled in the mid 19th century in advance of the railway viaducts.

Project dates Start: 07-10-2013 End: 31-01-2014

Previous/future work Yes / Not known

Any associated project reference codes BVM-12 - Sitecode

Type of project Recording project

Site status Area of Archaeological Importance (AAI)

Current Land use Transport and Utilities 2 - Other transport infrastructure

Monument type REVETMENT Post Medieval

Monument type PIT Medieval

Monument type PIT Post Medieval

Monument type LAND RECLAMATION Medieval

Monument type LAND RECLAMATION Post Medieval

Monument type	DITCH Medieval
Monument type	STAKEHOLE Medieval
Monument type	POSTHOLE Post Medieval
Monument type	BUILDING Post Medieval
Monument type	CULVERT Post Medieval
Significant Finds	BOTTLE Post Medieval
Significant Finds	WINDOW GLASS Post Medieval
Significant Finds	JETTON Post Medieval
Significant Finds	PINS Post Medieval
Significant Finds	DRESS HOOK Post Medieval
Significant Finds	PURSE RING Post Medieval
Significant Finds	BODKIN Post Medieval
Significant Finds	TOBACCO PIPE Post Medieval
Investigation type	"Full excavation"
Prompt	Direction from Local Planning Authority - PPS
Project location	
Country	England
Site location	GREATER LONDON SOUTHWARK SOUTHWARK Archaeological Excavations at London Bridge Station Improvement Works (Western Arcade)
Postcode	SE1 9QU
Study area	266.50 Square metres
Site coordinates	TQ 329 801 51.503688137 -0.0849463246055 51 30 13 N 000 05 05 W Point
Lat/Long Datum	Unknown
Height OD / Depth	Min: -2.88m Max: -2.59m

Project creators	
Name of Organisation	OA-PCA (Joint Venture)
Project brief originator	Network Rail and Southwark Council
Project design originator	Network Rail and Southwark Council
Project director/manager	Dan Poore and Peter Moore
Project supervisor	Amelia Fairman
Type of sponsor/funding body	Network Rail
Name of sponsor/funding body	Network Rail
Project archives	
Physical Archive recipient	LAARC
Physical Archive ID	BVM-12
Physical Contents	"Animal Bones", "Ceramics", "Environmental", "Glass", "Leather", "Metal", "Textiles", "Wood", "Worked stone/lithics"
Digital Archive recipient	LAARC
Digital Archive ID	BVM-12
Digital Media available	"Database", "GIS", "Images raster / digital photography", "Spreadsheets", "Survey", "Text"
Paper Archive recipient	LAARC
Paper Archive ID	BVM-12
Paper Media available	"Context sheet", "Diary", "Drawing", "Map", "Matrices", "Miscellaneous Material", "Photograph", "Plan", "Report", "Section", "Survey ", "Unpublished Text"

Project  
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Publication type    Grey literature (unpublished document/manuscript)

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